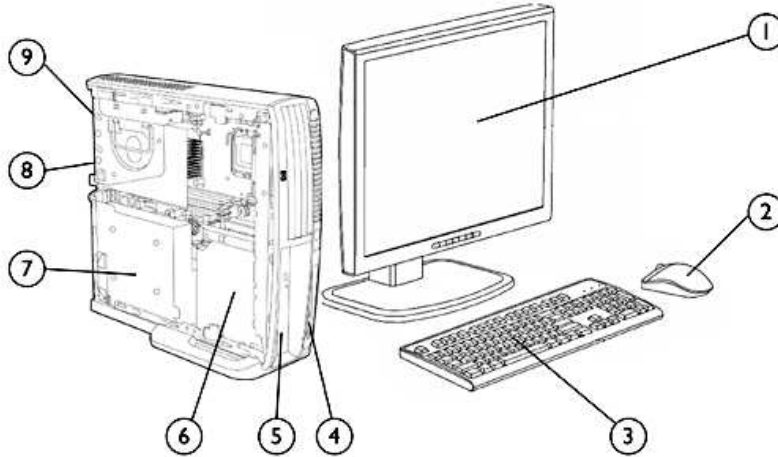


### Overview

HP Compaq dc7700 Business PC

HP recommends Windows® XP Professional

Ultra-slim Desktop

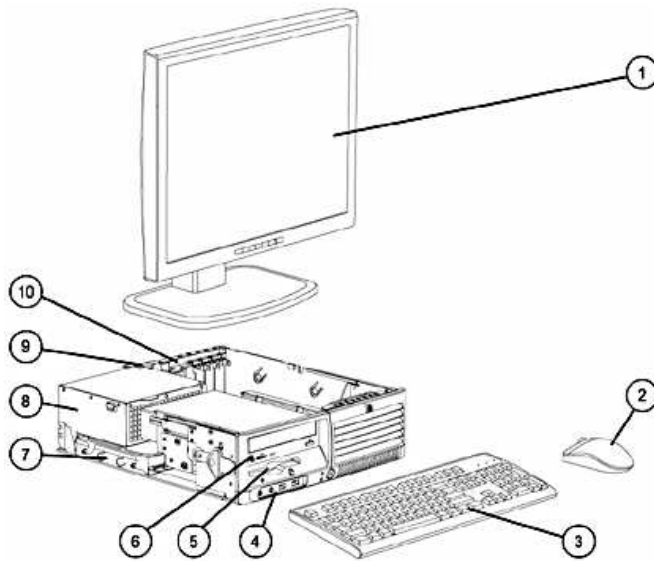


- |                                                                         |                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Monitor (sold separately)                                            | 6. (1) 3.5" internal bay                                                                                                                                                                                                                      |
| 2. 2-Button Scroll Mouse (PS/ 2) or Optical Scroll Mouse (PS/ 2 or USB) | 7. 200-watt Active Power Factor Correction (PFC) power supply                                                                                                                                                                                 |
| 3. HP Standard Keyboard (PS/ 2 or USB) or HP USB Smartcard Keyboard     | 8. (1) full-height PCI slot (with optional riser) , (1) low profile PCI Express x16 slot (with optional riser)*                                                                                                                               |
| 4. Front I/ O: (2) USB 2.0, headphone and microphone                    | 9. Rear I/ O: (6) USB 2.0, (1) optional serial port (available via adapter), (1) optional parallel port (available via adapter), (1) optional DVI graphics port (available via DVI ADD2 adapter), (2) PS/ 2, (1) RJ45, (1) VGA, audio in/ out |
| 5. (1) Slimline Drive Bay                                               |                                                                                                                                                                                                                                               |

\* NOTE: Only one optional riser is allowed: either the PCI riser or the PCI Express x16 riser.

### Overview

Small Form Factor

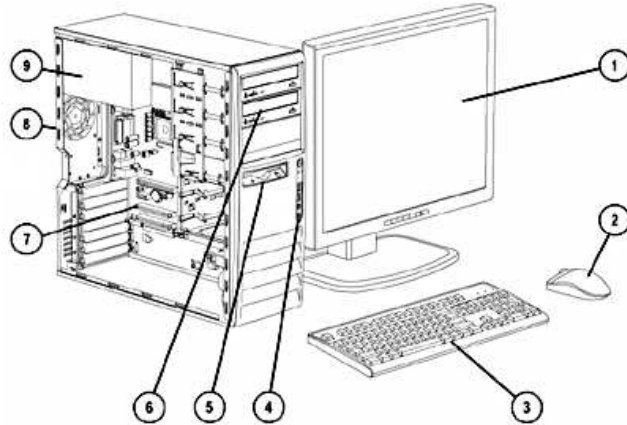


- |                                                                                                                             |                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Monitor (sold separately)                                                                                                | 7. (1) 3.5" internal bay                                                                                                                                                                                       |
| 2. 2-Button Scroll Mouse (PS/ 2) or Optical Scroll Mouse (PS/ 2 or USB)                                                     | 8. 240-watt Active Power Factor Correction (PFC) power supply                                                                                                                                                  |
| 3. HP Standard Keyboard (PS/ 2 or USB) or HP USB Smartcard Keyboard                                                         | 9. Rear I/ O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) parallel port, (2) PS/ 2, (1) RJ45, (1) VGA, (1) optional DVI graphics port (available via DVI ADD2 adapter), audio in/ out |
| 4. Front I/ O: (2) USB 2.0, headphone and microphone                                                                        | 10. (2) low profile PCI slots, (1) low profile PCI Express x1 slot, (1) low profile PCI Express x16 slot standard* ; (2) full-height PCI slots with optional riser card                                        |
| 5. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device                    |                                                                                                                                                                                                                |
| 6. (1) 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion) |                                                                                                                                                                                                                |

\* NOTE: With riser card option, PCI Express x1 and x16 slots are inaccessible.

### Overview

Convertible Minitower



1. Monitor (sold separately)
2. 2-Button Scroll Mouse (PS/ 2) or Optical Scroll Mouse (PS/ 2 or USB)
3. HP Standard Keyboard (PS/ 2 or USB) or HP USB Smartcard Keyboard
4. Front I/ O: (2) USB 2.0, headphone and microphone
5. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device
6. (3) 5.25" external bays and (2) 3.5" internal bays
7. (2) full-height PCI slots, (1) full-height PCI Express x1 slot, (1) full-height PCI Express x16 slot, (2) additional full-height PCI slots optional
8. Rear I/ O: 6 USB 2.0, 1 standard serial port, 1 optional serial port, 1 parallel port, 2 PS/ 2, 1 RJ45, 1 VGA, audio in/ out, mic in
9. 365-watt Active Power Factor Correction (PFC) power supply

### Overview

#### At A Glance

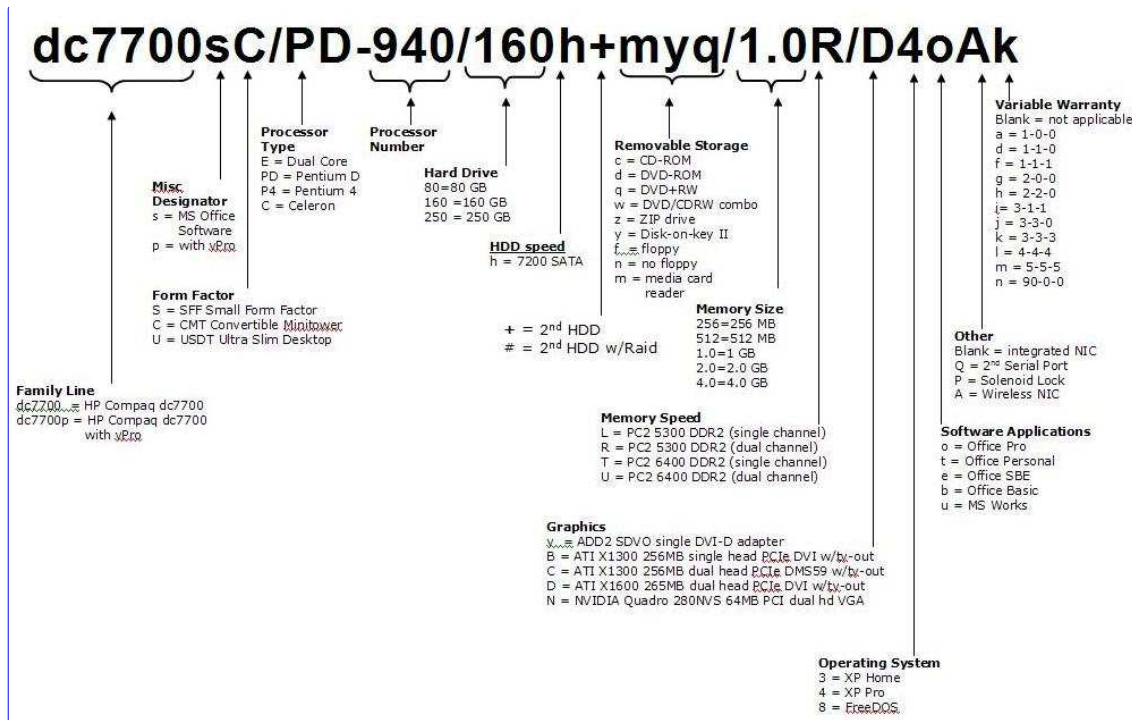
- Designed for long-term, networked deployment within medium and large organizations in commercial business, finance and public sector industries
- Created using industry leading Design for Environment standards. Upgradeable, recyclable and energy efficient.
- Long purchase lifecycles and image stability for demanding enterprise environments
- Support for new Intel technologies introduced in 2006: Intel® Q965 Express chipset, Intel Core™ 2 Duo Processors, and Intel Graphics Media Accelerator 3000 integrated graphics
- Select models with new Intel vPro technology support the latest in manageability and security technology
- Value-added software
  - HP ProtectTools Security Software Suite, including embedded security, now preinstalled standard
  - HP Client Manager (<http://h18000.www1.hp.com/im/index.html>)
  - HP OpenView Configuration Management Solutions
  - Altiris Deployment Solution Agent
  - Symantec AntiVirus 10.0 with 60 day Live Update Subscription
  - HP Insight Diagnostics software
- Fully compatible software OS image across all three models (Ultra-slim Desktop, Small Form Factor, and Convertible Minitower)
- HP BIOS for better security, manageability and software image stability
- Selected configurations with global availability easily set up and ordered through HP.com Business to Business portals (<http://h10019.www1.hp.com/businesssite/index.html>)
- Tailored HP Factory Express deployment and lifecycle services available (<http://h71028.www7.hp.com/enterprise/cache/97688-0-0-225-121.aspx>)
- Protected by HP Services, including standard warranties up to 5-5-5 (terms and conditions vary by country; certain restrictions and exclusions apply)
- Security
  - Embedded TPM 1.2 compliant security module (requires HP ProtectTools Embedded Security software), providing compatibility with future security features expected in Microsoft Vista
  - Redundant Array of Independent Disks (RAID) 1 configurations to protect data against hardware failures
  - HP Backup and Recovery Manager to protect data against software corruption or incompatibilities due to patching or upgrades
- Tool-less serviceability features for easier upgrades and repairs
- Choice of professional chassis form factors to accommodate the desired mix between expandability and size



### 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.



## Configurable Components

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating System –<br>One of the following | Genuine Windows XP Professional SP2                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                            | Genuine Windows XP Home SP2                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                            | FreeDOS                                                                                                                                                                                                                                                                                                                                                                                                                                |
|                                            | Windows Vista Capable - Not all Windows Vista features are available for use on all Windows Vista Capable PCs. All Windows Vista Capable PCs will run the core experiences of Windows Vista, such as innovations in organizing and finding information, security, and reliability. Some features available in premium editions of Windows Vista – like the new Windows Aero™ user interface – require advanced or additional hardware. |
|                                            | Check <a href="http://www.windowsvista.com/getready">www.windowsvista.com/ getready</a> for details.                                                                                                                                                                                                                                                                                                                                   |
|                                            | NOTE: Microsoft Windows NT 4.0 and Microsoft Windows 2000 are not available on these systems. Some drivers for Windows 2000 are available for download from <a href="http://www.hp.com">http:// www.hp.com</a> .                                                                                                                                                                                                                       |

|                                                        |                                                                                                                                                |                                                 |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Value-added Software<br>(not included with<br>FreeDOS) | HP ProtectTools Security Solutions                                                                                                             | Microsoft Office 2003 Basic                     |
|                                                        | Altiris Deployment Solution Agent                                                                                                              | Microsoft Office 2003 Personal                  |
|                                                        | HP OpenView Configuration Management Solutions Agent (visit <a href="http://www.hp.com/go/easydeploy">http:// www.hp.com/ go/ easydeploy</a> ) | Microsoft Office 2003 Professional              |
|                                                        |                                                                                                                                                | Microsoft Office 2003 Small Business            |
|                                                        | HP Insight Diagnostics (on documentation CD)                                                                                                   | Microsoft Works 8.5                             |
|                                                        | Computer Setup Utility                                                                                                                         | Microsoft Internet Explorer with Google Toolbar |
|                                                        | HP Backup and Recovery Manager                                                                                                                 | Adobe Acrobat Reader                            |
|                                                        | Symantec AntiVirus 10.0 with 60 day Live Update Subscription                                                                                   | PDF Complete                                    |

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

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service and Support | <p>On-site Warranty and Service <sup>Note 1</sup>: This three-year (3-3-3), limited warranty and service offering delivers three years of parts, labor and on-site repair. Response time is next businessday <sup>Note 2</sup> and includes free telephone support <sup>Note 3</sup> 24 x 7. Global coverage <sup>Note 2</sup> ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. Some countries/ regions do not offer one year onsite and labor.</p> <p>NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.</p> <p>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.</p> <p>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.</p> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                   | Ultra-slim Desktop                                  | Small Form Factor                                   | Convertible Minitor                                 |
|-----------------------------------|-----------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| Dimensions                        |                                                     |                                                     |                                                     |
| Chassis Dimensions<br>(H x W x D) | 2.95 x 12.4 x 13.18 in<br>(7.49 x 31.50 x 33.48 cm) | 3.95 x 13.3 x 14.9 in<br>(10.03 x 33.78 x 37.85 cm) | 17.65 x 6.6 x 17.8 in<br>(44.83 x 16.76 x 45.21 cm) |



### Configurable Components

|                                                |                                                              |                                                 |                                                               |
|------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------------|
| System weight                                  | 13.2 lb (5.99 kg)                                            | 19.5 lb (8.85 kg)                               | 32.5 lb (14.74 kg)                                            |
| System volume                                  | 7.9 liters                                                   | 12.8 liters                                     | 33.8 liters                                                   |
| Shipping weight                                | 19 lb (8.62 kg)                                              | 30 lb (13.61 kg)                                | 43 lb (19.50 kg)                                              |
| Maximum supported weight (desktop orientation) | 77.1 lb (35 kg)                                              | 77.1 lb (35 kg)                                 | 77.1 lb (35 kg)                                               |
| Shipping box dimensions (H x W x D)            | 12.63 x 18.75 x 20 in (32.08 x 47.63 x 50.8 cm)              | 12.63 x 18.75 x 20 in (32.08 x 47.63 x 50.8 cm) | 23.38 x 13.06 x 22.88 in (59.39 x 33.17 x 58.12 cm)           |
| Power Supply                                   | 200W power supply – Active PFC                               | 240W power supply – Active PFC                  | 365W power supply – Active PFC                                |
| Ports                                          | Ultra-slim Desktop                                           | Small Form Factor                               | Convertible Minitower                                         |
| USB 2.0                                        | 8 (2 front, 6 rear)                                          | 8 (2 front, 6 rear)                             | 8 (2 front, 6 rear)                                           |
| Serial                                         | 1 optional via Serial & parallel I/ O adapter                | 1 standard with 2nd optional                    | 1 standard with 2nd optional                                  |
| Parallel                                       | 1 optional via Serial & parallel I/ O adapter                | 1                                               | 1                                                             |
| PS/ 2                                          | 1 keyboard, 1 mouse                                          |                                                 |                                                               |
| Video                                          | analog for integrated graphics                               |                                                 |                                                               |
| DVI output                                     | available via ADD2 card, PCI-E x16 card, or PCI card         |                                                 |                                                               |
| Support for Multi-Monitor                      | available via ADD2 card, PCI-E x16 card, or PCI card         |                                                 |                                                               |
| Audio                                          | Front – mic and headphone<br>Rear – line in, line out        |                                                 | Front – mic and headphone<br>Rear – line in, line out, mic in |
| NIC (RJ45)                                     | Integrated Intel 82566DM Gigabit Network Connection Ethernet |                                                 |                                                               |

|         |                            | USDT | SFF | CMT |
|---------|----------------------------|------|-----|-----|
| Chipset | Intel Q965 Express chipset | X    | X   | X   |

|                      |                                                                          |   |   |   |
|----------------------|--------------------------------------------------------------------------|---|---|---|
| Processor and Speed* | Intel Celeron D Processors:                                              |   |   |   |
| One of the following | Intel Celeron D 352 Processor (3.20-GHz, 512K L2 cache, 533-MHz FSB)     | X | X | X |
|                      | Intel Celeron D 360 Processor (3.46-GHz, 512K L2 cache, 533-MHz FSB)     | X | X | X |
|                      | Intel Pentium 4 Processors with Hyper Threading Technology:              |   |   |   |
|                      | Intel Pentium 4 524 Processor (3.06-GHz, 1-MB L2 cache, 533 -MHz FSB)    | X | X | X |
|                      | Intel Pentium 4 531 Processor (3.0-GHz, 1-MB L2 cache, 800-MHz FSB)      | X | X | X |
|                      | Intel Pentium 4 541 Processor (3.2-GHz, 1 -MB L2 cache, 800-MHz FSB)     | X | X | X |
|                      | Intel Pentium D Processors:                                              |   |   |   |
|                      | Intel Pentium D 915 Processor (2.8-GHz, 2x1MB L2 cache, 800-Mhz FSB)     | X | X | X |
|                      | Intel Pentium D 925 Processor (3.0-GHz, 2x2MB L2 cache, 800-MHz FSB)     | X | X | X |
|                      | Intel Pentium D 945 Processor (3.4-GHz, 2x2MB L2 cache, 800-MHz FSB)     | X | X | X |
|                      | Intel Core 2 Duo Processors:                                             |   |   |   |
|                      | Intel Core 2 Duo E6300 Processor (1.86-GHz, 2 MB L2 cache, 1066-MHz FSB) | X | X | X |
|                      | Intel Core 2 Duo E6400 Processor (2.13-GHz, 2 MB L2 cache, 1066-MHz FSB) | X | X | X |



## Configurable Components

FSB)

|                                                                          |   |   |   |
|--------------------------------------------------------------------------|---|---|---|
| Intel Core 2 Duo E6600 Processor (2.40-GHz, 4 MB L2 cache, 1066-MHz FSB) | X | X | X |
|--------------------------------------------------------------------------|---|---|---|

|                                                                          |   |   |   |
|--------------------------------------------------------------------------|---|---|---|
| Intel Core 2 Duo E6700 Processor (2.66-GHz, 4 MB L2 cache, 1066-MHz FSB) | X | X | X |
|--------------------------------------------------------------------------|---|---|---|

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

|                        |                                                                                                                                                                       |   |   |   |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|
| Intel vPro Technology* | Uses AMT 2.0 (Active Management Technology) for network alerting and management of systems regardless of power state, as well as operating system-absent environments | X | X | X |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|

\* NOTE: Units configured with this feature are referred to as HP Compaq dc7700p Business PCs.

**Memory**

DDR2 SYNCH DRAM NON-ECC MEMORY

Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations. The Intel Q965 Express chipsets support non-ECC DDR2 PC2-5300 (667-MHz) and PC2-6400 (800-MHz) memory.

**CAUTION:** You must shut down the computer and disconnect the power cord before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the computer is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.

HP recommends dual-channel symmetric configurations for maximum performance. For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

## Ultra-slim Desktop

**Maximum Memory\*** Supports up to 3-GB of DDR2 SYNCH DRAM. Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.

| DIMM Size                       | Slot      |           |           |
|---------------------------------|-----------|-----------|-----------|
|                                 | Channel A |           | Channel B |
|                                 | 1 (black) | 2 (white) | 3 (white) |
| 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    |
| 3-GB maximum                    | 1-GB      | 1-GB      | 1-GB      |

\* NOTE: The Intel Q965 Express chipset includes a built-in Management Engine (ME), which allocates memory for manageability functions. Management Engine memory is shared with system memory. If the PC contains a single DIMM, 8 MB of memory is pre-allocated for it at system startup. If the PC contains two DIMMs, 16 MB of memory is pre-allocated. This memory is not made



### Configurable Components

available to the operating system, just as pre-allocated video memory is not available.

### Small Form Factor and Convertible Minitower

#### 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.

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

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

\* NOTE: The Intel Q965 Express chipset includes a built-in Management Engine (ME), which allocates memory for manageability functions. Management Engine memory is shared with system memory. If the PC contains a single DIMM, 8 MB of memory is pre-allocated for it at system startup. If the PC contains two DIMMs, 16 MB of memory is pre-allocated. This memory is not made available to the operating system, just as pre-allocated video memory is not available.

#### Memory Configurations –

One of the following

|                                                             | USDT | SFF | CMT |
|-------------------------------------------------------------|------|-----|-----|
| 512-MB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 512) | X    | X   | X   |
| 512-MB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 256) | X    | X   | X   |
| 1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 1GB)   | X    | X   | X   |
| 1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 512)   | X    | X   | X   |
| 2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 1GB)   | X    | X   | X   |
| 2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 512)   |      | X   | X   |
| 3-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (3 x 1GB)   | X    | X   | X   |
| 4-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 1GB)   |      | X   | X   |
| 512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 512) | X    | X   | X   |
| 512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 256) | X    | X   | X   |
| 1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 1GB)   | X    | X   | X   |
| 1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 512)   | X    | X   | X   |
| 2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 1GB)   | X    | X   | X   |

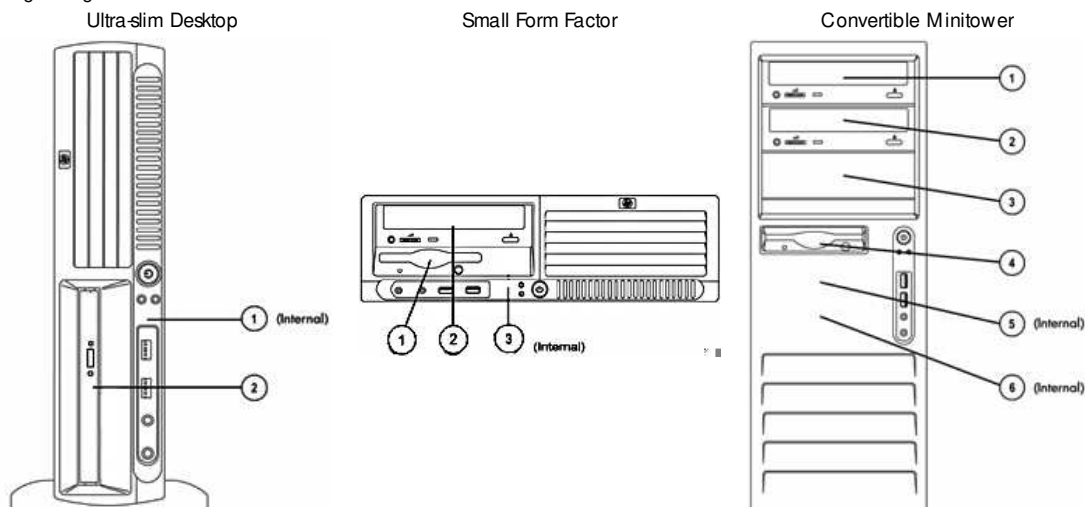


### Configurable Components

|                                                            |   |   |   |
|------------------------------------------------------------|---|---|---|
| 2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 512)  |   | X | X |
| 3-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (3 x 1 GB) | X | X | X |
| 4-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 1 GB) |   | X | X |

| Expandability                         | USDT                                                                | SFF                                                                                                                                                                                                  | CMT                                                                                                                     |
|---------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| PCI slots                             | Optional with riser card:<br>1 full-height (4.2"), length (6.6")    | 2 low-profile (2.5"), length (6.6") standard;<br>2 full-height (4.2"), length (6.875") via optional riser card.<br><b>NOTE: With riser card option, express x1 and x16 slots are not accessible.</b> | 2 full-height (4.2"), length (13.4") standard;<br>(2 additional full-height slots available via optional extender card) |
| Max power per slot                    | 25W                                                                 | 25W                                                                                                                                                                                                  | 25W                                                                                                                     |
| PCI Express x16 slot                  | Optional with riser card:<br>1 low-profile (3.987"), length (6.60") | 1 low-profile (2.5"), length (6.6")                                                                                                                                                                  | 1 full-height (4.2"), length (10.5")                                                                                    |
| Max power per slot                    | 25W                                                                 | 25W                                                                                                                                                                                                  | 75W                                                                                                                     |
| PCI Express x1 slot                   | -                                                                   | 1 low profile (2.5"), length (6.6")                                                                                                                                                                  | 1 full-height (4.2"), length (13.4")                                                                                    |
| Max power per slot                    | N / A                                                               | 10W                                                                                                                                                                                                  | 10W                                                                                                                     |
| External Bays                         | 1 Slimline (W xDxH):<br>128 x 127 x 12.7 mm                         | 2                                                                                                                                                                                                    | 4                                                                                                                       |
|                                       | USDT                                                                | SFF                                                                                                                                                                                                  | CMT                                                                                                                     |
| 3.5"                                  | N / A                                                               | 1                                                                                                                                                                                                    | 1                                                                                                                       |
| 5.25"                                 | N / A                                                               | 1 (length 8.189")                                                                                                                                                                                    | 3 (2 – length 8.189", 1 – length 5.71")                                                                                 |
| Internal 3.5" HDD Bays                | 1                                                                   | 1                                                                                                                                                                                                    | 2                                                                                                                       |
| Hard Drive Controller (PCI) Supported | Serial ATA (support for SATA 1.5-Gb/ s and 3.0-Gb/ s hard drives)   |                                                                                                                                                                                                      |                                                                                                                         |
| Hard Drive Interfaces Supported       | 1 Serial ATA interface                                              | 3 Serial ATA interfaces                                                                                                                                                                              | 4 Serial ATA interfaces                                                                                                 |

### Storage Diagrams



## Configurable Components

### Storage – Drive Support

|                    | USDT               |                            |                                                    | SFF               |                             | CMT                 |                                  |                                                |                             |
|--------------------|--------------------|----------------------------|----------------------------------------------------|-------------------|-----------------------------|---------------------|----------------------------------|------------------------------------------------|-----------------------------|
|                    | Slimline Drive Bay | 3.5" Serial ATA Hard Drive | Diskette Drive or PCI Media Card Reader (optional) | Storage Drive Bay | 3.5" Serial ATA Hard Drives | Diskette Drive      | PCI Media Card Reader (optional) | Storage Drive Bays for multiple Optical Drives | 3.5" Serial ATA Hard Drives |
| Quantity Supported | 1                  | 1                          | 1                                                  | 1                 | 2                           | 1                   | 1                                | 3                                              | 3                           |
| Position Supported | (2)                | (1)                        | (1)                                                | (2)               | (1), (3)                    | (4)                 | (4), (1), (2), (3)               | (1), (2), (3)                                  | (4), (5), (6)               |
| Controller         | SATA to IDE Bridge | SATA                       | Diskette Controller or USB header on PCI card      | SATA              | SATA                        | Diskette Controller | USB header on PCI card           | SATA                                           | SATA                        |

|                                          |                                                                        | USDT | SFF | CMT |
|------------------------------------------|------------------------------------------------------------------------|------|-----|-----|
| Hard Drive – One or two of the following | 80-GB SATA 3.0-Gb/ s Hard Drive (8MB Cache, 7200 rpm)                  | X    | X   | X   |
|                                          | 160-GB SATA 3.0-Gb/ s Hard Drive (8MB Cache, 7200 rpm)                 | X    | X   | X   |
|                                          | 250-GB SATA 3.0-Gb/ s Hard Drive (8MB Cache, 7200 rpm)                 | X    | X   | X   |
|                                          | RAID 80-GB SATA 3.0-Gb/ s Hard Drive (7200 rpm)                        |      | X   | X   |
|                                          | RAID 160-GB SATA 3.0-Gb/ s Hard Drive (7200 rpm)                       |      | X   | X   |
|                                          | 2nd hard drive, 80-GB SATA 3.0-Gb/ s Hard Drive (8MB Cache, 7200 rpm)  |      | X   | X   |
|                                          | 2nd hard drive, 160-GB SATA 3.0-Gb/ s Hard Drive (8MB Cache, 7200 rpm) |      | X   | X   |
|                                          | 2nd hard drive, 250-GB SATA 3.0-Gb/ s Hard Drive (8MB Cache, 7200 rpm) |      | X   | X   |

|                                                                                                       |                                          |   |   |   |
|-------------------------------------------------------------------------------------------------------|------------------------------------------|---|---|---|
| Removable Storage – One or more of the following depending on form factor (see Storage section below) | Diskette Drives                          |   |   |   |
|                                                                                                       | 1.44-MB Diskette Drive                   |   | X | X |
|                                                                                                       | Optical Drives                           |   |   |   |
|                                                                                                       | SATA CD-ROM Drive                        |   | X | X |
|                                                                                                       | SATA CD-RW / DVD-ROM Combo Drive         |   | X | X |
|                                                                                                       | SATA DVD-ROM Drive                       |   | X | X |
|                                                                                                       | SATA DVD+/-RW (DL/ DF) LightScribe Drive |   | X | X |
|                                                                                                       | Slimline Optical Drives                  |   |   |   |
|                                                                                                       | PATA CD-ROM Slim Drive                   | X |   |   |
|                                                                                                       | PATA CD-RW / DVD-ROM Combo Slim Drive    | X |   |   |
|                                                                                                       | PATA DVD+/-RW Slim Drive                 | X |   |   |
|                                                                                                       | PATA DVD-ROM Slim Drive                  | X |   |   |



### Configurable Components

|                                             |                                                                                                                                                                                                             |      |      |      |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|
| Media Card Reader –<br>One of the following | HP 16-in-1 3.5" Media Card Reader w/ PCI card                                                                                                                                                               | X    |      |      |
|                                             | HP 16-in-1 5.25" Media Card Reader w/ PCI card                                                                                                                                                              |      |      | X    |
| Security                                    | Integrated 1.2 TPM Embedded Security Chip                                                                                                                                                                   | X    | X    | X    |
|                                             | Drive Lock                                                                                                                                                                                                  | X    | X    | X    |
|                                             | HP ProtectTools Embedded Security Software                                                                                                                                                                  | X    | X    | X    |
|                                             | Serial, Parallel, USB Enable/ Disable (via BIOS)                                                                                                                                                            | X    | X    | X    |
|                                             | Removable Media Write/ Boot Control                                                                                                                                                                         | X    | X    | X    |
|                                             | Power-On Password (via BIOS)                                                                                                                                                                                | X    | X    | X    |
|                                             | Setup Password (via BIOS)                                                                                                                                                                                   | X    | X    | X    |
|                                             | Solenoid Hood Lock / Sensor                                                                                                                                                                                 |      | X    | X    |
|                                             | Hood Removal Sensor                                                                                                                                                                                         | X    |      |      |
| NIC                                         | Intel 82566DM Gigabit Network Connection (integrated on system board)                                                                                                                                       | X    | X    | X    |
|                                             | Intel PRO/ 1000 PT PCIe Gigabit NIC (full height bracket)                                                                                                                                                   |      |      | X    |
|                                             | Intel PRO/ 1000 PT PCIe Gigabit NIC (low profile bracket)                                                                                                                                                   |      | X    |      |
|                                             | Broadcom NetXtreme Gigabit PCIe NIC (full height bracket)                                                                                                                                                   |      |      | X    |
|                                             | Broadcom NetXtreme Gigabit PCIe NIC (low profile bracket)                                                                                                                                                   | X*   | X    |      |
|                                             | NOTE: * Requires optional PCIe riser card.                                                                                                                                                                  |      |      |      |
| Modem                                       |                                                                                                                                                                                                             | USDT | SFF  | CMT  |
|                                             | Agere 2006 PCI 56K International SoftModem (full height)                                                                                                                                                    | X*   | X*   | X    |
|                                             | Agere 2006 PCI 56K International SoftModem (low profile)                                                                                                                                                    |      | X    |      |
|                                             | NOTE: * Requires optional PCI riser card.                                                                                                                                                                   |      |      |      |
| Graphics                                    | Integrated Intel Graphics Media Accelerator 3000                                                                                                                                                            | X    | X    | X    |
|                                             | DVI ADD2 SDVO single head Graphics Adapter for USDT (PCIe x16)                                                                                                                                              | X    |      |      |
|                                             | DVI ADD2 SDVO single head low profile Graphics Adapter (PCIe x16)                                                                                                                                           |      | X    |      |
|                                             | DVI ADD2 SDVO single head full-height Graphics Adapter (PCIe x16)                                                                                                                                           |      |      | X    |
|                                             | ATI RADEON X1300 256MB low profile PCIe Card, DVI w/ TV                                                                                                                                                     | X*   | X    |      |
|                                             | ATI RADEON X1300 256MB full-height PCIe Card, DVI w/ TV                                                                                                                                                     |      |      | X    |
|                                             | ATI RADEON X1600XT 256MB, full-height PCIe Card, dual DVI w/ TV-out                                                                                                                                         |      |      | X    |
|                                             | NVIDIA Quadro NVS 280 64-MB PCI dual head VGA Card                                                                                                                                                          | X**  | X*** | X*** |
|                                             | NOTES:<br>* USDT requires optional PCIe riser card.<br>** USDT requires optional PCI riser card.<br>*** Two NVIDIA Quadro NVS 280 PCI graphics cards can be installed to provide support for four monitors. |      |      |      |
| Audio                                       |                                                                                                                                                                                                             |      |      |      |
|                                             | Integrated High Definition audio with Realtek 2 channel ALC262 codec (all ports are stereo)                                                                                                                 | X    | X    | X    |



### Configurable Components

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                 |      |     |     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------|-----|-----|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Microphone and Headphone front ports                            | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Microphone rear port*                                           |      |     | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Line-out and Line-In rear ports*                                | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Multistreaming capable*                                         | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Internal Speaker                                                | X    | X   | X   |
| NOTE: * Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in. External speakers must be powered externally. Multistreaming can be enabled in the Realtek control panel to allow independant audio streams to be sent to/ from the front and rear jacks. This allows for different audio applications to use separate audio ports on the system. For example, the front jacks could be used with a headset for a communications application while the rear jacks are being used with external speakers and a multimedia application. |                                                                 |      |     |     |
| Keyboard –<br>One of the following                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | HP PS/ 2 Standard Keyboard                                      | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP USB BG1650 Keyboard                                          | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP USB Standard Keyboard                                        | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP USB Smartcard Keyboard                                       | X    | X   | X   |
| Mouse –<br>One of the following                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP PS/ 2 2-Button Scroll Mouse                                  | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP PS/ 2 2-Button Optical Scroll Mouse                          | X    | X   | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP USB 2-Button Optical Scroll Mouse                            | X    | X   | X   |
| Miscellaneous                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | HP FireWire / IEEE 1394 PCI Card (full height)                  | X*   | X*  | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | HP FireWire / IEEE 1394 PCI Card (low profile)                  |      | X   |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                 | USDT | SFF | CMT |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PCI Express riser card – adds 1 low profile PCIe slot           | X    |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PCI riser card – adds 1 full-height PCI slot                    | X    |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PCI riser card – adds 2 full-height PCI slots                   |      | X   |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NOTE: Low profile slots are unusable with riser card installed. |      |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PCI extender card for CMT (adds 2 PCI slots)                    |      |     | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | PCI Serial and parallel I/O adapter                             | X*   |     |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2nd serial port adapter (full height)                           |      |     | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2nd serial port adapter (low profile)                           |      | X   |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Tower stand                                                     | X    | X   |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Configure dc7700 CMT in desktop orientation                     |      |     | X   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | NOTE: * Requires optional PCI riser card.                       |      |     |     |

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

|                                                   |                                                                               | USDT | SFF | CMT | After-Market Options<br>Part Number |
|---------------------------------------------------|-------------------------------------------------------------------------------|------|-----|-----|-------------------------------------|
| Communications                                    | Wireless                                                                      |      |     |     |                                     |
|                                                   | HP BT450 USB Bluetooth Wireless Printer and PC Adapter                        | X    | X   | X   | IPQ639A                             |
|                                                   | NICs                                                                          |      |     |     |                                     |
|                                                   | Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card                             | X* * | X   | X   | EA833AA                             |
|                                                   | Intel/ PRO 1000 PT PCIe Gigabit NIC Card                                      | X* * | X   | X   | EH352AA                             |
|                                                   | Modem                                                                         |      |     |     |                                     |
|                                                   | Agere 2006 PCI 56K International SoftModem                                    | X*   | X   | X   | EK694AA                             |
| NOTES:                                            |                                                                               |      |     |     |                                     |
| * USDT requires optional PCI riser card.          |                                                                               |      |     |     |                                     |
| * * USDT requires optional PCIe riser card.       |                                                                               |      |     |     |                                     |
| Graphics                                          | Single head solutions                                                         |      |     |     |                                     |
|                                                   | Intel DVI ADD2 Graphics Adapter (PCIe x16)                                    |      | X   | X   | DY674A                              |
|                                                   | ATI Radeon X1300 (256MB SH) PCIe Graphics Card                                | X* * | X   | X   | AG392AA                             |
|                                                   | Multi head solutions                                                          |      |     |     |                                     |
|                                                   | NVIDIA Quadro NVS 280 PCI Graphics Card (DMS59 DVI Dual-head Connector Cable) | X*   | X   | X   | DY599A                              |
|                                                   | NVIDIA Quadro NVS 285 with TurboCache Technology PCIe Graphics Card           | X* * | X   | X   | EE061AA                             |
|                                                   | HP DMS59 DVI Dual-head Connector Cable* * *                                   |      | X   | X   | DL139A                              |
| NOTE: * Requires optional PCI riser card.         |                                                                               |      |     |     |                                     |
| * * USDT requires optional PCIe riser card.       |                                                                               |      |     |     |                                     |
| * * * Requires NVIDIA Quadro NVS 280 PCI Graphics |                                                                               |      |     |     |                                     |
| Hard Drives                                       | Serial ATA Hard Drives                                                        |      |     |     |                                     |
|                                                   | HP 80-GB SATA 3.0-Gb/ s Hard Drive                                            | X    | X   | X   | PY276AA                             |
|                                                   | HP 160-GB SATA 3.0-Gb/ s Hard Drive                                           | X    | X   | X   | PY277AA                             |
|                                                   | HP 250-GB SATA 3.0-Gb/ s Hard Drive                                           | X    | X   | X   | PY278AA                             |
| Input/ Output Devices                             | Keyboards                                                                     |      |     |     |                                     |
|                                                   | HP PS/ 2 Standard Keyboard                                                    | X    | X   | X   | DT527A                              |
|                                                   | HP USB Standard Keyboard                                                      | X    | X   | X   | DT528A                              |
|                                                   | Pointing Devices                                                              |      |     |     |                                     |
|                                                   | HP PS/ 2 2-Button Scroll Mouse                                                | X    | X   | X   | DD440B                              |
|                                                   | HP PS/ 2 2-Button Optical Scroll Mouse                                        | X    | X   | X   | EY703AA                             |
|                                                   | HP USB 2-Button Optical Scroll Mouse                                          | X    | X   | X   | DC172B                              |
| Memory (DIMMs)                                    | PC2-5300 (DDR2, 667 MHz) DIMMs Non-ECC                                        |      |     |     |                                     |
|                                                   | HP 1 GB PC2-5300 (DDR2-667) DIMM                                              | X    | X   | X   | PX976AA                             |



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

|                                        |      |     |     |                                     |
|----------------------------------------|------|-----|-----|-------------------------------------|
| HP 512 MB PC2-5300 (DDR2-667) DIMM     | X    | X   | X   | PX975AA                             |
| HP 256 MB PC2-5300 (DDR2-667) DIMM     | X    | X   | X   | PX974AA                             |
| PC2-6400 (DDR2, 800 MHz) DIMMs         | USDT | SFF | CMT | After-Market Options<br>Part Number |
| HP 1-GB PC2-6400 (DDR2 800 MHz) DIMM   | X    | X   | X   | AH058AA                             |
| HP 512-MB PC2-6400 (DDR2 800 MHz) DIMM | X    | X   | X   | AH056AA                             |
| HP 256-MB PC2-6400 (DDR2 800 MHz) DIMM | X    | X   | X   | AH054AA                             |

|          |                                                                   |   |   |   |             |
|----------|-------------------------------------------------------------------|---|---|---|-------------|
| Monitors | TFTs                                                              |   |   |   |             |
|          | HP L1506 15 TFT Flat Panel Monitor – Analog only                  | X | X | X | PX848AA#ABA |
|          | HP L1706 17 TFT Flat Panel Monitor – Analog only                  | X | X | X | PX849AA#ABA |
|          | HP L1740 17 TFT Flat Panel Display – Analog/ Digital              | X | X | X | PL766AA#ABA |
|          | HP L1755 17 TFT Flat Panel Display – Analog/ Digital              | X | X | X | PL777AA#ABA |
|          | HP L1906 19 TFT Flat Panel Display – Analog only                  | X | X | X | PX850AA#ABA |
|          | HP L1940T 19 TFT Flat Panel Display – Analog/ Digital             | X | X | X | EM869AA#ABA |
|          | HP L1955 19 TFT Flat Panel Display – Analog/ Digital              | X | X | X | PD974AA#ABA |
|          | HP L2065 20 TFT Flat Panel Display – Analog/ Digital              | X | X | X | EF227A4#ABA |
|          | HP LP2465 24 TFT W idescreen Flat Panel Display – Analog/ Digital | X | X | X | EF224A4#ABA |
|          | CRTs                                                              |   |   |   |             |
|          | HP s7540 17 (16.0 vis) CRT Monitor                                | X | X | X | PF997AA#ABA |
|          | HP v7650 17 (16.0 vis) Flat-face CRT Monitor                      | X | X | X | PF996AA#ABA |

|            |                         |   |   |   |         |
|------------|-------------------------|---|---|---|---------|
| Multimedia | HP USB Powered Speakers | X | X | X | FD628AA |
|------------|-------------------------|---|---|---|---------|

|                          |                                                   |   |  |  |         |
|--------------------------|---------------------------------------------------|---|--|--|---------|
| PATA Slim Optical Drives | DVD-ROM Drive                                     |   |  |  |         |
|                          | HP PATA DVD-ROM Slim Drive                        | X |  |  | AH041AA |
|                          | Combo Drive                                       |   |  |  |         |
|                          | HP PATA CD-RW / DVD-ROM Combo Slim Drive          | X |  |  | AH042AA |
|                          | DVD+/ -RW Drive                                   |   |  |  |         |
|                          | HP PATA DVD+/ -RW (DL/ DF) LightScribe Slim Drive | X |  |  | AH043AA |

|                                 |                                              |  |   |   |         |
|---------------------------------|----------------------------------------------|--|---|---|---------|
| SATA Half-Height 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) LightScribe Drive |  | X | X | AH048AA |

|                   |                   |  |  |  |  |
|-------------------|-------------------|--|--|--|--|
| Removable Storage | Drive Key Options |  |  |  |  |
|-------------------|-------------------|--|--|--|--|



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

|          |                                            |      |     |     |                                     |
|----------|--------------------------------------------|------|-----|-----|-------------------------------------|
|          | HP 512MB USB 2.0 Drive Key                 | X    | X   | X   | ED516AA                             |
|          | HP 1GB USB 2.0 Drive Key                   | X    | X   | X   | AG382AA                             |
|          | Diskette and Digital Drives                |      |     |     |                                     |
|          | HP 1.44-MB External USB Diskette Drive     | X    | X   | X   | DC141B                              |
|          | HP 1.44-MB Internal Diskette Drive         |      | X   | X   | DS710G                              |
|          | Multimedia                                 | USDT | SFF | CMT | After-Market Options<br>Part Number |
|          | HP 16-in-1 Media Card Reader with PCI Card |      | X   | X   | EM718AA                             |
| Security | Kensington Lock                            | X    | X   | X   | PC766A                              |
|          | HP Business PC Security Lock               | X    | X   | X   | PV606AA                             |
|          | HP USB Biometric Fingerprint Reader        | X    | X   | X   | EM717AA                             |
|          | HP (USDT) Wall Mount Security Sleeve*      | X    |     |     | PA719A                              |
|          | HP (SFF) Wall Mount Security Sleeve**      |      | X   |     | PA717A                              |
|          | HP USB Smartcard Keyboard                  | X    | X   | X   | ED707AA                             |

#### NOTES:

\* Dimensions (W x H x L): 12.7 x 3.5 x 12.0 inches; Weight: 3.8 lb

\*\* Dimensions (W x H x L): 13.5 x 4.4 x 14.4 inches; Weight: 5.9 lb

|          |                                                                                                                                                                                                                                                            |   |   |   |                                                |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|------------------------------------------------|
| Software | HP OpenView Client Configuration Manager                                                                                                                                                                                                                   | X | X | X | T3488AA<br>(use T3489AA for<br>1000 licenses)  |
|          | HP Client Foundation Suite<br>Includes:<br>HP Client Manager<br>HP Systems Insight Manager Connector<br>Altiris Local Recovery Pro<br>Altiris Inventory Solution<br>Altiris Deployment Solution                                                            | X | X | X | EF117AA<br>(use EF118AA for<br>1000+ licenses) |
|          | HP Client Premium Suite<br>Includes:<br>HP Client Manager<br>HP Systems Insight Manager Connector<br>HP OpenView Connector<br>Altiris Connector Solution<br>Altiris Local Recovery Pro<br>Altiris Audit Express<br>Altiris Client Management Suite Level 1 | X | X | X | EF119AA<br>(use EF120AA for<br>1000+ licenses) |

|                  |                                 |   |   |  |        |
|------------------|---------------------------------|---|---|--|--------|
| Brackets/ Stands | HP Integrated Work Center Stand | X |   |  | DL641B |
|                  | Tower Stand                     |   | X |  | PS797A |

|               |                                 |   |   |   |        |
|---------------|---------------------------------|---|---|---|--------|
| Miscellaneous | HP Serial & Parallel IO Adapter | X |   |   | PD825A |
|               | HP 2nd Serial Port              |   | X | X | PA716A |



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

|             |                                  |    |   |   |         |
|-------------|----------------------------------|----|---|---|---------|
| Accessories | HP (50 Pk) 5.25" Blank Bezel Kit |    | X | X | DC177B  |
|             | HP (USDT) PCI Riser Board        | X  |   |   | ED247AA |
|             | HP (USDT) PCIe Riser Board       | X  |   |   | EU054AA |
|             | HP (SFF) PCI Riser Board         |    | X |   | PD824A  |
|             | HP PCI Extender                  |    |   | X | DC179B  |
|             | HP FireWire / IEEE 1394 PCI Card | X* | X | X | PA997A  |
|             | Belkin USB to Serial Adapter     | X  | X | X | EM449AA |

NOTE: \* Requires optional PCI riser card.

### Technical Specifications

| Unit Environment and Operating Conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ultra-slim Desktop                                                                                        | Small Form Factor | Convertible Minitor |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------|---------------------|
| General Unit Operating Guidelines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                           |                   |                     |
| <ul style="list-style-type: none"><li>Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.</li><li>Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.</li><li>Never restrict airflow into the computer by blocking any vents or air intakes.</li><li>Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.</li><li>Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.</li><li>If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.</li></ul> |                                                                                                           |                   |                     |
| Temperature Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Operating: 50° to 95° F (10° to 35° C)*<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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                           |                   |                     |

| Power Supply                                                                                                                                                                                 | Ultra-slim Desktop                                                                                                             | Small Form Factor                                                                  | Convertible Minitor                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Power Supply                                                                                                                                                                                 | 200 watt custom power supply<br>– Active PFC)                                                                                  | 240 watt custom power supply<br>– Active PFC                                       | 365 watt custom power supply<br>– Active PFC)                                      |
| Operating Voltage Range                                                                                                                                                                      | 90 – 264 VAC                                                                                                                   | 90 – 264 VAC                                                                       | 90 – 264 VAC                                                                       |
| Rated Voltage Range                                                                                                                                                                          | 100 – 240 VAC                                                                                                                  | 100 – 240 VAC                                                                      | 100 – 240 VAC                                                                      |
| Rated Line Frequency                                                                                                                                                                         | 50/ 60 Hz                                                                                                                      | 50/ 60 Hz                                                                          | 50/ 60 Hz                                                                          |
| Operating Line Frequency Range                                                                                                                                                               | 47 – 63 Hz                                                                                                                     | 47 – 63 Hz                                                                         | 47 – 63 Hz                                                                         |
| Rated Input Current                                                                                                                                                                          | 4A                                                                                                                             | 5A                                                                                 | 6A                                                                                 |
| System Heat Dissipation                                                                                                                                                                      | Typical 340 btu/ hr<br>(86 kg-cal/ hr)<br>Maximum 1050 btu/ hr<br>(265 kg-cal/ hr)                                             | Typical 340 btu/ hr<br>(86 kg-cal/ hr)<br>Maximum 1260 btu/ hr<br>(318 kg-cal/ hr) | Typical 375 btu/ hr<br>(95 kg-cal/ hr)<br>Maximum 1916 btu/ hr<br>(483 kg-cal/ hr) |
| Power Supply Fan                                                                                                                                                                             | 70mm variable speed                                                                                                            | 80mm variable speed                                                                | 92mm variable speed                                                                |
| Energy Star 3.0 Compliant                                                                                                                                                                    | X                                                                                                                              | X                                                                                  | X                                                                                  |
| Blue Angel Compliant<br>(<5w in S5 – Power Off)                                                                                                                                              | X                                                                                                                              | X                                                                                  | X                                                                                  |
| FEMP Standby Power<br>Compliant<br>(<2W in S5 – Power Off) * *                                                                                                                               | X                                                                                                                              | X                                                                                  | X                                                                                  |
| Power Consumption in ES<br>Mode – Suspend to RAM (S3)<br>(Instantly Available PC)                                                                                                            | < 3W                                                                                                                           | < 3W                                                                               | < 3W                                                                               |
| Environmental and Mechanical<br>Engineering Support Center<br>(EMESC) – Intranet Web Site<br>only                                                                                            | <a href="http://env-webserver.ccm.cpqcorp.net/EMESC/default.htm">http:// env-webserver.ccm.cpqcorp.net/ EMESC/ default.htm</a> |                                                                                    |                                                                                    |
| * * NOTE: Power consumption in the Off/ Apparent Off mode is measured and reported with the network interface controller "Wake on LAN" feature disabled in F10 Setup (default is "enabled"). |                                                                                                                                |                                                                                    |                                                                                    |



## Technical Specifications

## ROM BIOS Information

Key features of the HP BIOS in the dc7700 include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP Business desktop computer into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages. Select models offer Intel vPro technology including AMT (Active Management Technology).
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Security – HP BIOS Configuration for ProtectTools 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.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP Business Desktop computer in any enterprise environment.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (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.

## Additional HP BIOS Features

- Power-On password – Helps prevent an unauthorized user from powering on the system. After a TPM Basic User password is established in windows, the user or admin can require TPM hardware based authentication during the power-on process.
- Administrator password – Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) – Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. HP Compaq dc7700 models use ACPI to provide power conservation features under Windows XP.

| Other Features               | Description                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACPI-Ready Hardware          | Advanced Configuration and Power Management Interface (ACPI). <ul style="list-style-type: none"> <li>• Allows the system to wake from a low power mode.</li> <li>• Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.</li> </ul> |
| SM BIOS 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 |                                                                                             |
| <ul style="list-style-type: none"> <li>System/ Emergency ROM</li> </ul>                             | <ul style="list-style-type: none"> <li>Flash ROM</li> </ul>                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>CMOS Battery Holder for easy Replacement</li> </ul>  |
| <ul style="list-style-type: none"> <li>Flash Recovery with Video Configuration Record SW</li> </ul> | <ul style="list-style-type: none"> <li>5 Aux Power LED on System PCA</li> </ul>                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Processor ZIF Socket for easy Upgrade</li> </ul>     |
| <ul style="list-style-type: none"> <li>Over-Temp Warning on Screen (Requires IM Agents)</li> </ul>  | <ul style="list-style-type: none"> <li>Clear Password Jumper</li> </ul>                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>DIMM Connectors for easy Upgrade</li> </ul>          |
| <ul style="list-style-type: none"> <li>HP Backup and Recovery Manager</li> </ul>                    | <ul style="list-style-type: none"> <li>Clear CMOS Button</li> </ul>                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>NIC LEDs (integrated) (Green &amp; Amber)</li> </ul> |

| Serviceability Features of Chassis                                                                                                 |                                                                                                                                              |                                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Dual Color Power and HD LED – To Indicate Normal Operations and Fault Conditions</li> </ul> | <ul style="list-style-type: none"> <li>Color coordinated cables and connectors</li> </ul>                                                    | <ul style="list-style-type: none"> <li>Tool-less Hood Removal</li> </ul>                          |
| <ul style="list-style-type: none"> <li>Front power switch</li> </ul>                                                               | <ul style="list-style-type: none"> <li>System memory can be upgraded without removing the system board or any internal components</li> </ul> | <ul style="list-style-type: none"> <li>Tool-less Hard Drive, CD &amp; Diskette Removal</li> </ul> |
| <ul style="list-style-type: none"> <li>Green Pull Tabs, and Quick Release Latches for easy Identification</li> </ul>               |                                                                                                                                              | <ul style="list-style-type: none"> <li>Tool-less System Board Removal</li> </ul>                  |

NOTE: Thumb screw release mechanism is used with the Ultra-slim Desktop chassis cover.

| Feature                                        | Description                                                                                                                                                                                |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AMT 2.0 support (Active Management Technology) | Select models offer new Intel vPro Technology utilizing AMT 2.0 for network alerting and management of systems regardless of power state, as well as operating system-absent environments. |
| ASF 2.0 support (Alert Standard Format)        | Industry-standard specification for network alerting in operating system-absent environments                                                                                               |



## Technical Specifications

|                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tower                                                                                                                  | Product can be oriented as a tower (in addition to desktop orientation)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Drive Lock*                                                                                                            | Implementation of the industry standard ATA Security feature set. When enabled, it prevents software access to user data on the drive until one or two user-defined passwords are provided.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Drive Self Tests (DPS)*                                                                                                | <ul style="list-style-type: none"><li>• Drive Protection System</li><li>• A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user.</li><li>• Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced.</li><li>• The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures.</li></ul> |
| DPS Access through F10 Setup during Boot                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SMART Technology*<br>(Self-Monitoring, Analysis and Reporting Technology)                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SMART I – Drive Failure Prediction                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| SMART II – Off-Line Data Collection                                                                                    | <ul style="list-style-type: none"><li>• Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count</li><li>• By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure</li></ul>                                                                                                                                                                                                                                                                                                                                     |
| SMART III – Off-Line Read Scanning with Defect Reallocation                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>* NOTE: This feature is inoperable when a RAID (Redundant Array of Independent Disks) configuration is enabled.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

### Technical Specifications - Audio

|                                                                                                                                                                                            |                                               |                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High Definition Audio                                                                                                                                                                      | Type                                          | Integrated                                                                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                            | High Definition Stereo Codec                  | Yes – Realtek ALC262                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                            | Audio Jacks                                   | Microphone-In (64-K ohm Input Impedance); front and rear stereo analog microphone ports available except for USDT and SFF, which has front stereo microphone only<br>Line-In (64-K ohm Input Impedance)<br>Line-Out * (200 ohms Output Impedance, expects at least a 10-K ohm load)<br>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. Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in. |                                               |                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                            | Multistreaming Capable                        | Multistreaming can be enabled in the Realtek control panel to allow independent audio streams to be sent to/ from the front and rear jacks.                                                                                                                                                                                                                   |
|                                                                                                                                                                                            | Sampling                                      | 8 kHz – 192 kHz                                                                                                                                                                                                                                                                                                                                               |
|                                                                                                                                                                                            | Waveable Syntheses (software)                 | Yes – Uses OS soft wavetable                                                                                                                                                                                                                                                                                                                                  |
|                                                                                                                                                                                            | Analog Audio                                  | Yes                                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                            | Number of Channels on Line-Out (mono/ stereo) | Stereo (Left & Right channels)                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                            | Internal Audio Speaker Power Rating           | 1.5 W                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                                                                                                            | Internal Speaker                              | Yes                                                                                                                                                                                                                                                                                                                                                           |
|                                                                                                                                                                                            | External Speaker Jack (Line-Out)              | Yes                                                                                                                                                                                                                                                                                                                                                           |

## Technical Specifications - Communications

|                                                           |                                 |                                                                                                                                          |
|-----------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Integrated Intel<br>82566DM Gigabit<br>Network Connection | Connector                       | RJ45                                                                                                                                     |
|                                                           | Controller                      | Intel Nineveh Gigabit platform LAN Connect Networking Controller                                                                         |
|                                                           | Memory                          | Integrated 96KbB on chip buffer memory                                                                                                   |
|                                                           | Data rates supported            | 10/ 100/ 1000 Mbps                                                                                                                       |
|                                                           | Compliance                      | IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3 ab and 802.3u compliant,                                                                        |
|                                                           | Bus architecture                | GLCI, LCI interface. Intel specific MAC to PHY interface                                                                                 |
|                                                           | Data transfer mode              | At gigabit GLCI (802.3 serdes) is for Data, LCI (parallel bus)for MDIO, at 10/ 100 LCI for both data and MDIO, GLCI is idle.             |
|                                                           | Hardware certifications         | FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union                                                   |
|                                                           | Power requirement               | Require 3.3Vaux, 1.8V and 1.0V or just 3.3V with integrated regulators<br>Power consumption 1.16 W atts for 82566, whole LOM 2.53 W atts |
|                                                           | ACBS                            | Intel Auto Connect Battery Saving feature                                                                                                |
|                                                           | 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)<br>To 70° C for external regulator                                                      |
|                                                           |                                 | Operating humidity 85% at 131° F (55° C)                                                                                                 |
|                                                           | Operating system driver support | Microsoft 2000, Microsoft XP                                                                                                             |
|                                                           | Management capabilities         | WOL, auto MDI crossover, PXE, Multi-port teaming, RSS, Advanced cable diagnostic.                                                        |
|                                                           | Alerting                        | ASF 2.0 support                                                                                                                          |

---

|                                        |                         |                                                                                        |
|----------------------------------------|-------------------------|----------------------------------------------------------------------------------------|
| Intel PRO/ 1000 PT PCIe<br>Gigabit NIC | Connector               | RJ45                                                                                   |
|                                        | 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      | Busmaster DMA                                                                          |
|                                        | Hardware certifications | FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union |
|                                        |                         |                                                                                        |



### Technical Specifications - Communications

|                                 |                                                                     |                            |
|---------------------------------|---------------------------------------------------------------------|----------------------------|
| Power requirement               | Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 W Watts in 100Base-T      |                            |
| Boot ROM support                | Yes                                                                 |                            |
| Network transfer rate           | 10BASE-T (half-duplex) 10 Mbps                                      |                            |
|                                 | 10BASE-T (full-duplex) 20 Mbps                                      |                            |
|                                 | 100BASE-TX (half-duplex) 100 Mbps                                   |                            |
|                                 | 100BASE-TX (full-duplex) 200 Mbps                                   |                            |
|                                 | 1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus) |                            |
| Environmental                   | Operating temperature                                               | 32° to 131°F (0° to 55° C) |
|                                 | Operating humidity                                                  | 85% at 131° F (55° C)      |
| Dimensions                      | 6.4 x 2.6 x 0.8 in (16.3 x 6.6 x 1.9 cm)                            |                            |
| Operating system driver support | Microsoft 2000, Microsoft XP                                        |                            |
| Management capabilities         | ASF, WOL, PXE, DMI, WFM 2.0.                                        |                            |

|                                            |                                                                                                                                                                                                                                  |                                                                                                                                    |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Agere 2006 PCI 56K International SoftModem | Data Transmission                                                                                                                                                                                                                | Technology speeds: 56,000 Kbps maximum downstream data, controllerless                                                             |
|                                            | <b>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.</b> |                                                                                                                                    |
|                                            | 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                                                                                                                                                                                                                         | ITU-T T.31 class 1 FAX, V.17, V.29, V.27ter, and V.21 Channel 2                                                                    |
|                                            | Capabilities                                                                                                                                                                                                                     |                                                                                                                                    |
|                                            | Error Correction and Data Compression                                                                                                                                                                                            | V.44, 42bis, V.42 and MNP2-5                                                                                                       |
|                                            | Power Management                                                                                                                                                                                                                 | ACPI; PPM1 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements                             |
|                                            | Upgradeability                                                                                                                                                                                                                   | Driver upgradeable for future enhancements                                                                                         |
|                                            | Video                                                                                                                                                                                                                            | ITU-T V.80 video ready interface                                                                                                   |
|                                            | Other                                                                                                                                                                                                                            | TIA/ EIA 602 standard AT command set                                                                                               |
|                                            |                                                                                                                                                                                                                                  | Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface                                |
|                                            |                                                                                                                                                                                                                                  | Optional ring wakeup signal                                                                                                        |
| Operating Temperature                      | Operating                                                                                                                                                                                                                        | 32° to 158° F (0° to 70° C)                                                                                                        |
|                                            | Humidity                                                                                                                                                                                                                         | 20% to 90% non-condensing                                                                                                          |
|                                            | Operating System Support                                                                                                                                                                                                         | Microsoft Windows 2000 and Microsoft Windows XP                                                                                    |
|                                            | OS Driver Support                                                                                                                                                                                                                | Microsoft Windows 2000 and Microsoft Windows XP                                                                                    |



## Technical Specifications - Communications

|                    |                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Power              | Requires a 3.3-V auxiliary power rail on PCI bus<br>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 RJ11 connector                                                                                                                           |
| Other Features     | Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PhP ID support  |
| Safety             | UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark |
| EMC                | FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8                                                     |
| Telecom            | FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals<br>Not available in Korea or the Republic of South Africa.                              |
| Health             | Bare PCB material compliant to 94V0 or better (marked as such)                                                                                  |
| Other              | PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant                                                                               |

### Technical Specifications - Graphics

|                        |                               |                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Integrated Graphics    | 3D/ 2D Controller             | Microsoft DirectX® 9 based with support for Pixel Shader 2.0, 4:1 anisotropic filtering, Gaussian texture filtering, shadow maps, volumetric textures, double-sided stencil buffers, and 4 pixel pipes.                                                                                                                                                                                      |
| Media Accelerator 3000 | VGA Controller                | Integrated                                                                                                                                                                                                                                                                                                                                                                                   |
|                        | Bus Type                      | PCI Express™ x16 (If an external graphics card is installed in a PCI slot, the internal graphics can be enabled or disabled using the system's BIOS setup utility. If an external graphics card is installed in the PCI Express™ slot, the internal graphics cannot be enabled).                                                                                                             |
|                        | RAMDAC                        | Integrated, 400 MHz                                                                                                                                                                                                                                                                                                                                                                          |
|                        | Memory                        | Graphics memory is shared with system memory. Graphics memory usage varies depending on the amount of system memory installed and system load. 8 MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use. |
|                        |                               | System memory equal or greater than 512 MB and less than 1024 MB<br>8 MB pre-allocated + 248 MB DVMT = max frame buffer of 256 MB                                                                                                                                                                                                                                                            |
|                        |                               | System memory equal or greater than 1024 MB<br>8 MB pre-allocated + 376 MB DVMT = max frame buffer of 384 MB                                                                                                                                                                                                                                                                                 |
|                        | Controller Clock Speed        | 400 MHz                                                                                                                                                                                                                                                                                                                                                                                      |
|                        | Overlay Planes                | Single overlay support with 5x3 filtering                                                                                                                                                                                                                                                                                                                                                    |
|                        | Maximum Color Depth           | 32 bits/ pixel                                                                                                                                                                                                                                                                                                                                                                               |
|                        | Maximum Vertical Refresh Rate | 85 Hz at up to 1920x1440, 85 Hz at 2048x1536. Varies with mode and configuration. See table below.                                                                                                                                                                                                                                                                                           |
|                        | Multi-display Support         | Support for one CRT via the motherboard's VGA connector. Support for an additional DVI-D display via the optional DVI ADD2 card. Dual independent displays and dual synchronous (Twin or Clone mode) displays are supported.                                                                                                                                                                 |
|                        | Operating Systems             | Microsoft Windows XP and Windows 2000                                                                                                                                                                                                                                                                                                                                                        |
|                        | Graphics/ Video API Support   | Microsoft DirectX®9, DirectXVA®, VMF9, GDI/ GDI+; OpenGL® 1.4.                                                                                                                                                                                                                                                                                                                               |

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

<sup>1</sup> Modes listed are supported with a single active display. The supported mode list for multiple active displays is a subset of this



## Technical Specifications - Graphics

list. Not all modes will support video playback and some supported modes may use software MC (motion compensation) rather than hardware MC. Not all modes will support 3D acceleration depending on the system configuration (e.g., resolution selected, size of frame buffer, number of installed memory modules, etc.).

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

|                   |                                                                                                           |                                                                                                                                       |       |       |       |
|-------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------|-------|-------|
| DVI ADD2 Graphics | Models                                                                                                    | DY674A Intel DVI ADD2 adapter                                                                                                         |       |       |       |
|                   | Form Factor                                                                                               | Low-profile card                                                                                                                      |       |       |       |
|                   | DVID Connector                                                                                            | Compliant with DDW G (Digital Display W orking 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                                                                                 | HPL1530<br>HPL1740<br>HPL1755<br>HPL1940<br>HPL1955<br>HPL2035<br>HPL2335                                                             |       |       |       |
|                   | NOTE: The DVI ADD2 card offers optimal performance with any display that meets applicable VESA standards. |                                                                                                                                       |       |       |       |
|                   | Color Depth                                                                                               | All modes support 8-bpp, 16-bpp, and 24-bpp color depths (up to 16.7 million colors)                                                  |       |       |       |
|                   | Host Interface Connector                                                                                  | Mechanically compliant with PCIe standard<br>Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications |       |       |       |
|                   | Dot Clock                                                                                                 | 165 MHz maximum                                                                                                                       |       |       |       |
|                   | Display Modes                                                                                             | Supports display modes that require up to 165-MHz bandwidth on the link, as shown in the following table.                             |       |       |       |
| Resolution        |                                                                                                           | 60-Hz LCD                                                                                                                             | 60-Hz | 75-Hz | 85-Hz |
| Blanking          |                                                                                                           | 5% reduced                                                                                                                            | GTF   | GTF   | GTF   |
| 640 x 480         | VGA                                                                                                       | Yes                                                                                                                                   | Yes   | Yes   | Yes   |
| 800 x 600         | SVGA                                                                                                      | Yes                                                                                                                                   | Yes   | Yes   | Yes   |
| 1024 x 768        | XGA                                                                                                       | Yes                                                                                                                                   | Yes   | Yes   | Yes   |
| 1280 x 1024       | SXGA                                                                                                      | Yes                                                                                                                                   | Yes   | No    | No    |
| 1600 x 1200       | UXGA                                                                                                      | Yes                                                                                                                                   | Yes   | No    | No    |

|                                                    |                               |                                                                                                               |  |  |  |
|----------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------|--|--|--|
| ATI RADEON X1300<br>PCIe Graphics Card<br>(256 MB) | Bus Type                      | PCI Express (x16 lanes)                                                                                       |  |  |  |
|                                                    | Maximum Vertical Refresh Rate | 85 Hz                                                                                                         |  |  |  |
|                                                    | Display Support               | Integrated 400 MHz RAMDAC                                                                                     |  |  |  |
|                                                    | Display Max Resolution        | 2048 x 1536                                                                                                   |  |  |  |
|                                                    | Board Display Options         | DVI + TV<br>DVI supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVI connector) |  |  |  |



## Technical Specifications - Graphics

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |             |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                           | DVIH supports analog CRT or flat panel (with VGA connector and DVIH to VGA dongle)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |
|                           | TV connector is a 4-pin mini-DIN S-video connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |             |
| Board Configuration       | Specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Description |
| 128 MB Frame Buffer       | Graphics Chip                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | RV515       |
|                           | Core clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 450 MHz     |
|                           | Memory clock                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 250 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
| Operating Systems Support | Windows 2000, Windows XP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |             |
| Core Power                | 25 W (Max board power)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |             |
| Option kit contents       | <ul style="list-style-type: none"><li>ATI RADEON X1300 PCIe graphics card with full height bracket attached</li><li>Low profile bracket</li><li>DVI-to-VGA Adapter</li><li>Software CD with graphics drivers</li><li>Warranty documentation</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |             |
| Compliance standards      | <p>EMC Emissions:</p> <p>a) FCC Part 15, Subpart B – Unintentional Radiators, Class B Computing Devices for Home &amp; Office Use</p> <p>b) CISPR22: 1997/ EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment</p> <p>c) Canadian Standard ICES-003 is equivalent to CISPR22</p> <p>d) Taiwanese Standard BSMI</p> <p>e) Japanese VCCI</p> <p>f) Australian C-Tick</p> <p>EMC Immunity:</p> <p>CISPR24:1997/ EN 55024:1998 – Information Technology Equipment - Immunity Characteristics – Limits and Methods of Measurement.</p> <p>Safety:</p> <p>UL60950 (USA) &amp; EN 60950 (EU): Safety of Information Technology Equipment, Including Electrical Business Equipment. All boards meet UL PCB flammability requirements.</p> |             |

|                                                            |                               |                         |
|------------------------------------------------------------|-------------------------------|-------------------------|
| ATI RADEON X1600XT<br>(256 MB DH) FH PCIe<br>Graphics Card | Bus Type                      | PCI Express (x16 lanes) |
|                                                            | Maximum Vertical Refresh Rate | 85 Hz                   |



## Technical Specifications - Graphics

|                           |                                                                                                                                                                                                    |                            |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Display Support           | Integrated 400 MHz RAMDAC                                                                                                                                                                          |                            |
| Display Max Resolution    | 2560 x 1600 digital, 2048 x 1536 analog                                                                                                                                                            |                            |
| Board Display Options     | 2 DVH ports (one port supports dual link DVI). DVH supports an analog CRT or flat panel with a VGA connector via the provided DVH to VGA adapter<br>4-pin mini-DIN S-video connector for TV output |                            |
| Board Configuration       | Specification                                                                                                                                                                                      | Description                |
|                           | Graphics chip                                                                                                                                                                                      | RV530                      |
|                           | Core clock                                                                                                                                                                                         | 590 MHz                    |
|                           | Memory clock                                                                                                                                                                                       | 690 MHz                    |
|                           | Frame buffer                                                                                                                                                                                       | 256 MB GDDR3, 128 bit wide |
| Operating Systems Support | Windows 2000, Windows XP                                                                                                                                                                           |                            |
| Core Power                | 56 W (Max board power)                                                                                                                                                                             |                            |

## NVIDIA Quadro NVS 280 64MB PCI Dual Head

|                                        |                                                                                                                                                                                                                                                          |  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Form Factor                            | Low profile (both ATX and low profile brackets included)                                                                                                                                                                                                 |  |
| Graphic Controller                     | Integrated Quadro 280 2-D graphics processor unit (GPU)                                                                                                                                                                                                  |  |
| Bus type                               | PCI                                                                                                                                                                                                                                                      |  |
| RAMDAC                                 | Dual 350 MHz integrated                                                                                                                                                                                                                                  |  |
| Memory                                 | 64 MB DDR with frame buffer and Texture storage                                                                                                                                                                                                          |  |
| Connector                              | Single High-density DMS59 Connector                                                                                                                                                                                                                      |  |
| Dimensions                             | Low-profile, 2.586 x 6.6 in (6.57 x 16.76 cm)                                                                                                                                                                                                            |  |
| Controller clock speed                 | 250 MHz                                                                                                                                                                                                                                                  |  |
| Color depth                            | 32-bits/ pixel max                                                                                                                                                                                                                                       |  |
| Overlay planes                         | One 16-bit Video overlay plane                                                                                                                                                                                                                           |  |
| Maximum vertical refresh rate          | 85 Hz                                                                                                                                                                                                                                                    |  |
| Multi-monitor support                  | Dual analog or digital monitors                                                                                                                                                                                                                          |  |
| Dual DVI Support                       | Yes (with kit DL139A)                                                                                                                                                                                                                                    |  |
| High-definition Video Processor (HDVP) | Full-screen, full-frame video playback of HDTV and DVD content<br>DVD-ready motion compensation for MPEG-2<br>Independent hardware color controls for video overlay<br>Hardware color-space conversion (YUV 4:2:2 and 4:2:0)<br>IDCT motion compensation |  |
| Available graphics drivers             | Microsoft Windows 2000 and Microsoft Windows XP (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode)                                                                                                                          |  |

NOTE: HP qualified drivers may be preloaded or available from the HP support Web site:  
[http://welcome.hp.com/country/us/eng/software\\_drivers.html](http://welcome.hp.com/country/us/eng/software_drivers.html).

| Analog Resolution | Maximum Colors Supported | Maximum Refresh Rate |
|-------------------|--------------------------|----------------------|
| 640 x 480         | 16.7 M                   | 240 Hz               |
| 800 x 600         | 16.7 M                   | 240 Hz               |
| 1024 x 768        | 16.7 M                   | 200 Hz               |
| 1600 x 1200       | 16.7 M                   | 170 Hz               |



Technical Specifications - Graphics

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



### Technical Specifications - Hard Drives

|                                    |        |                                                                             |                                                                   |        |
|------------------------------------|--------|-----------------------------------------------------------------------------|-------------------------------------------------------------------|--------|
| 7200 rpm Serial ATA<br>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)                                       |        |
|                                    |        |                                                                             |                                                                   |        |
|                                    | 80-GB  | Capacity                                                                    | 80,026,361,856 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                                                      | 2.0 ms |
|                                    |        |                                                                             | Average                                                           | 9.3 ms |
|                                    |        |                                                                             | Full-Stroke                                                       | 21 ms  |
|                                    |        | Rotational Speed                                                            | 7,200 rpm                                                         |        |
|                                    |        |                                                                             |                                                                   |        |
|                                    |        |                                                                             |                                                                   |        |
|                                    |        |                                                                             |                                                                   |        |



## Technical Specifications - Hard Drives

|                       |                             |
|-----------------------|-----------------------------|
| 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 $\pm$ 5%                                             |
|                       |                          | Power consumption           | 50-mA maximum (with three LEDs ON)                          |
|                       |                          | System interface            | USB Type A plug connector                                   |
|                       |                          | ESD                         | CE level 4, 15-kV air discharge                             |
|                       |                          | EMI – RFI                   | Conforms to FCC rules for a Class B computing device        |
|                       |                          | Microsoft® PC 99 – 2001     | Functionally compliant                                      |
|                       | 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                |
|                       | Operating system support | Windows 2000 and Windows XP |                                                             |
|                       |                          | Approvals                   | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC |
|                       |                          | Ergonomic compliance        | ANSI HFS 100, ISO 9241-4, and TUVGS                         |
|                       | Kit contents             | Keyboard                    |                                                             |
|                       |                          | Installation guide          |                                                             |
|                       |                          | Warranty card               |                                                             |
|                       |                          | Safety and comfort guide    |                                                             |

|                        |                          |      |                                                         |
|------------------------|--------------------------|------|---------------------------------------------------------|
| PS/2 Standard Keyboard | Physical characteristics | Keys | 104, 105, 106, 107, 109 layout (depending upon country) |
|------------------------|--------------------------|------|---------------------------------------------------------|



### Technical Specifications - Input/Output Devices

|                          |                                                                                                |                                                      |
|--------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Electrical               | 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                                |
|                          | Operating voltage                                                                              | + 5VDC $\pm$ 5%                                      |
|                          | Power consumption                                                                              | 50 mA maximum (with three LEDs ON)                   |
|                          | System interface                                                                               | PS/ 2 6-pin mini din connector                       |
|                          | ESD                                                                                            | CE level 4, 15 kV air discharge                      |
| Mechanical               | EMI – RFI                                                                                      | Conforms to FCC rules for a Class B computing device |
|                          | Microsoft PC 99 – 2001                                                                         | Functionally compliant                               |
|                          | Languages                                                                                      | 38 available                                         |
|                          | Keycaps                                                                                        | Low-profile design                                   |
|                          | Switch actuation                                                                               | 55-g nominal peak force with tactile feedback        |
|                          | Switch life                                                                                    | 20 million keystrokes (using Hasco modified tester)  |
| Environmental            | Switch type                                                                                    | Contamination-resistant switch membrane              |
|                          | Keyleveling mechanisms                                                                         | For all double-wide and greater-length keys          |
|                          | Cable length                                                                                   | 6 ft (1.8 m)                                         |
|                          | Microsoft PC 99 – 2001                                                                         | Mechanically compliant                               |
|                          | Acoustics                                                                                      | 43 dBA maximum sound pressure level                  |
|                          | Operating temperature                                                                          | 50° to 122° F (10° to 50° C)                         |
|                          | Non-operating temperature                                                                      | -22° to 140° F (-30° to 60° C)                       |
|                          | Operating humidity                                                                             | 10% to 90% (non-condensing at ambient)               |
|                          | Non-operating humidity                                                                         | 20% to 80% (non-condensing at ambient)               |
|                          | Operating shock                                                                                | 40 g, six surfaces                                   |
|                          | Non-operating shock                                                                            | 80 g, six surfaces                                   |
|                          | Operating vibration                                                                            | 2-g peak acceleration                                |
|                          | Non-operating vibration                                                                        | 4-g peak acceleration                                |
|                          | Drop (out of box)                                                                              | 26 in (66 cm) on carpet, six-drop sequence           |
|                          | Drop (in box)                                                                                  | 42 in (107 cm) on concrete, 16-drop sequence         |
| Operating system support | Microsoft Windows 2000 and Windows XP                                                          |                                                      |
| Approvals                | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC                                    |                                                      |
| Ergonomic compliance     | ANSI HFS 100, ISO 9241-4, and TUVGS                                                            |                                                      |
| Kit contents             | Keyboard, keyboard software media, installation guide, warranty card, safety and comfort guide |                                                      |

|                           |                          |                        |                                                         |
|---------------------------|--------------------------|------------------------|---------------------------------------------------------|
| HP USB Smartcard Keyboard | Physical characteristics | Keys                   | 104, 105, 106, 107, 109 layout (depending upon country) |
|                           |                          | Form factor            | USB basic Smart Card keyboard                           |
|                           |                          | Colors                 | Carbonite/ Silver                                       |
|                           |                          | Dimensions (H x W x D) | 18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)              |



### Technical Specifications - Input/Output Devices

|                    |                           |                                                                                                   |
|--------------------|---------------------------|---------------------------------------------------------------------------------------------------|
| Electrical         | Weight                    | 2 lb (0.9 kg) minimum                                                                             |
|                    | Operating voltage         | + 5VDC $\pm$ 5%                                                                                   |
|                    | Power consumption         | 100-mA maximum (with four LEDs ON)                                                                |
|                    | System interface          | USB Type A plug connector                                                                         |
|                    | ESD                       | CE level 4, 15-kV air discharge                                                                   |
| Mechanical         | EMI – RFI                 | Conforms to FCC rules for a Class B computing device                                              |
|                    | Microsoft PC 99 – 2001    | Functionally compliant                                                                            |
|                    | Languages                 | 30+ available                                                                                     |
|                    | Keycaps                   | Low-profile design                                                                                |
|                    | Switch actuation          | 55 g nominal peak force with tactile feedback                                                     |
|                    | Switch life               | 20 million keystrokes (using Hasco modified tester)                                               |
|                    | Switch type               | Contamination-resistant membrane                                                                  |
|                    | Key-leveling mechanisms   | For all double-wide and greater-length keys                                                       |
|                    | Cable length              | 6 ft (1.8 m)                                                                                      |
|                    | Microsoft PC 99 - 2001    | Mechanically compliant                                                                            |
| Environmental      | Acoustics                 | 43-dBA maximum sound pressure level                                                               |
|                    | Operating temperature     | 50° to 122° F (10° to 50° C)                                                                      |
|                    | Non-operating temperature | -22° to 140° F (-30° to 60° C)                                                                    |
|                    | Operating humidity        | 10% to 90% (non-condensing at ambient)                                                            |
|                    | Non-operating humidity    | 20% to 80% (non-condensing at ambient)                                                            |
|                    | Operating shock           | 40 g, six surfaces                                                                                |
|                    | Non-operating shock       | 80 g, six surfaces                                                                                |
|                    | Operating vibration       | 2-g peak acceleration                                                                             |
|                    | Non-operating vibration   | 4-g peak acceleration                                                                             |
|                    | Drop (out of box)         | 26 in (66 cm) on carpet, six-drop sequence                                                        |
| SMARTCARD function | Drop (in box)             | 42 in (107 cm) on concrete, 16-drop sequence                                                      |
|                    | Support                   | All ISO 7816 smart cards                                                                          |
|                    | Interface                 | Reads from and writes to all ISO 7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1) |
|                    | Chipset                   | SCM STCII                                                                                         |
|                    | Standard APIs supported   | PC/ SC, EMV2000, SET                                                                              |
|                    | Power                     | USB Port                                                                                          |
|                    |                           | Short circuit detection (protects smart card and reader)                                          |
|                    |                           | Power supply compliant with ISO 7816 and EMV (5V, 60 mA)                                          |
|                    | Power consumption         | Supports 3-V and 5-V cards                                                                        |
|                    |                           | 250-mA maximum draw (50 mA for the keyboard with three LEDs ON and 200-mA                         |

### Technical Specifications - Input/Output Devices

|                                     |                            |                                                                 |                                                                                                    |                                                      |  |
|-------------------------------------|----------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------|--|
|                                     |                            | maximum startup current using a high-current, 60-mA smart card) |                                                                                                    |                                                      |  |
| USB Standard BG1650 Keyboard (gray) | Physical characteristics   | Communication                                                   | From card Programmable from 9,600 baud to 115,200 baud                                             |                                                      |  |
|                                     |                            | Landing mechanism                                               | From computer Up to 38,400 baud                                                                    |                                                      |  |
|                                     |                            |                                                                 | Contact device Friction contact                                                                    |                                                      |  |
|                                     | Electrical                 | 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                                                                                     |                                                      |  |
|                                     | 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)                                                       |                                                      |  |
|                                     |                            | W eight                                                         | 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 |  |
| Mechanical                          |                            | Microsoft PC 99 – 2001                                          | Functionally compliant                                                                             |                                                      |  |
|                                     |                            | Languages                                                       | 38 available                                                                                       |                                                      |  |
|                                     |                            | Keycaps                                                         | Low-profile design                                                                                 |                                                      |  |
|                                     |                            | Switch actuation                                                | 55-g nominal peak force with tactile feedback                                                      |                                                      |  |
|                                     |                            | Switch life                                                     | 20 million keystrokes (using Hasco modified tester)                                                |                                                      |  |
| Environmental                       |                            | Switch type                                                     | Contamination-resistant switch membrane                                                            |                                                      |  |
|                                     |                            | Key-leveling mechanisms                                         | For all double-wide and greater-length keys                                                        |                                                      |  |
|                                     | Cable length               | 6 ft (1.8 m)                                                    |                                                                                                    |                                                      |  |
|                                     | Microsoft PC 99 – 2001     | Mechanically compliant                                          |                                                                                                    |                                                      |  |
|                                     | Acoustics                  | 43-dBA maximum sound pressure level                             |                                                                                                    |                                                      |  |
|                                     | Operating temperature      | 50° to 122° F (10° to 50° C)                                    |                                                                                                    |                                                      |  |
|                                     | Non-operating temperature  | -22° to 140° F (-30° to 60° C)                                  |                                                                                                    |                                                      |  |
|                                     | Operating humidity         | 10% to 90% (non-condensing at ambient)                          |                                                                                                    |                                                      |  |
|                                     | Non-operating humidity     | 20% to 80% (non-condensing at ambient)                          |                                                                                                    |                                                      |  |
|                                     | Operating shock            | 40 g, six surfaces                                              |                                                                                                    |                                                      |  |



### Technical Specifications - Input/Output Devices

|                      |                          |                                                                              |                                                      |
|----------------------|--------------------------|------------------------------------------------------------------------------|------------------------------------------------------|
|                      |                          | Non-operating shock                                                          | 80 g, six surfaces                                   |
|                      |                          | Operating vibration                                                          | 2-g peak acceleration                                |
|                      |                          | Non-operating vibration                                                      | 4-g peak acceleration                                |
|                      |                          | Drop (out of box)                                                            | 26 in (66 cm) on carpet, six-drop sequence           |
|                      |                          | Drop (in box)                                                                | 42 in (107 cm) on concrete, 16-drop sequence         |
|                      | Operating system support | Windows 2000 and Windows XP                                                  |                                                      |
|                      | Approvals                | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC, BG Prufert Mark |                                                      |
|                      | Ergonomic compliance     | ANSI HFS 100, ISO 9241-4, and TUVGS                                          |                                                      |
|                      | Kit contents             | Keyboard, installation guide, warranty card, safety and comfort guide        |                                                      |
| HP PS/2 Scroll Mouse | Dimensions               | 3.8 x 6.3 x 11.6 cm (1.5 x 2.5 x 4.6 in)                                     |                                                      |
|                      | Weight                   | 4.44 oz (126 g)                                                              |                                                      |
|                      | Environmental            | Operating temperature                                                        | 50° to 122° F (10° to 50° C)                         |
|                      |                          | Non-operating temperature                                                    | 22° to 140° F (30° to 60° C)                         |
|                      |                          | Operating humidity                                                           | 10% to 90% (non condensing at ambient)               |
|                      |                          | 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 $\pm$ 10%                                      |
|                      |                          | Power consumption                                                            | 15 mA                                                |
|                      |                          | System consumption                                                           | PS/2 mini-din connector                              |
|                      |                          | ESD                                                                          | CE level 4, 15 kV air discharge                      |
|                      |                          | EMI/RFI                                                                      | Conforms to FCC rules for a Class B computing device |
|                      |                          |                                                                              |                                                      |
|                      | Mechanical               | Microsoft PC99 – 2001                                                        | Functionally compliant                               |
|                      |                          | Resolution                                                                   | 400 $\pm$ 20% DPI                                    |
|                      |                          | Tracking speed                                                               | 10 in/ s (25.4 cm/ s) maximum                        |
|                      |                          | Acceleration                                                                 | 100 in/ s <sup>2</sup> (2.54 m/ s <sup>2</sup> )     |
|                      |                          | 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)                                         |
|                      |                          |                                                                              |                                                      |



### Technical Specifications - Input/Output Devices

|                               |                        |                                               |                                                                                                         |             |  |
|-------------------------------|------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------|--|
|                               |                        | Microsoft PC99 – 2001                         | Mechanically compliant                                                                                  |             |  |
|                               | Scroll wheel           | W idth                                        | 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                                             |             |  |
|                               | Compatibility          | Operating system support                      | Windows 2000 and Windows XP                                                                             |             |  |
|                               |                        |                                               |                                                                                                         |             |  |
| HP PS/ 2 Optical Scroll Mouse | Dimensions (H x Lx W ) | 3.95 x 6.21 x 11.7 cm (1.56 x 2.44 x 4.61 in) |                                                                                                         |             |  |
|                               | W eight                | 4.44 oz (126 g)                               |                                                                                                         |             |  |
|                               | Environmental          | Operating temperature                         | -32° to 104°F (0° to 40° C)                                                                             |             |  |
|                               |                        | Non-operating temperature                     | -4° to 140°F ( -20° to 60° C)                                                                           |             |  |
|                               |                        | Operating humidity                            | 10%to 90%(non condensing at ambient)                                                                    |             |  |
|                               |                        | Non-operating humidity                        | 10%to 90%non condensing                                                                                 |             |  |
|                               |                        | Operating shock                               | 40 g, 6 surfaces                                                                                        |             |  |
|                               |                        | Non-operating shock                           | 80 g, 6 surfaces                                                                                        |             |  |
|                               |                        | Operating vibration                           | 2 g peak acceleration                                                                                   |             |  |
|                               |                        | Non-operating vibration                       | 4 g peak acceleration                                                                                   |             |  |
|                               |                        | Drop (out of box)                             | 80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face |             |  |
|                               |                        | Electrical                                    | Operating voltage                                                                                       | 5 VDC ± 10% |  |
|                               |                        |                                               | Power consumption                                                                                       | 100mA       |  |
|                               | System consumption     |                                               | PS/ 2 mini-din connector                                                                                |             |  |
|                               | ESD                    |                                               | CE level 4, 15 kV air discharge                                                                         |             |  |
|                               | EMI/RFI                |                                               | Conforms to FCC rules for a Class B computing device                                                    |             |  |
|                               | Mechanical             | Microsoft PC99 – 2001                         | Functionally compliant                                                                                  |             |  |
|                               |                        | Resolution                                    | 400 ± 20%DPI                                                                                            |             |  |
|                               |                        | Tracking speed                                | 10 in/ s (25.4 cm/ s) maximum                                                                           |             |  |
|                               |                        | Acceleration                                  | 100 in/ s/ s (2.54 m/ s/ s)                                                                             |             |  |
|                               |                        | Switch actuation                              | 61 g nominal peak force                                                                                 |             |  |
|                               |                        | Switch life                                   | 3,000,000 operations (using Hasco modified tester)                                                      |             |  |
|                               |                        | Switch type                                   | Low force micro-switches                                                                                |             |  |
|                               |                        | Tracking mechanism life                       | 155 mi (250 km) at average speed of 10 in/ s                                                            |             |  |
|                               |                        | Cable length                                  | 6 ft (1.8 m)                                                                                            |             |  |



Technical Specifications - Input/Output Devices

|                             |                         |                                                                  |
|-----------------------------|-------------------------|------------------------------------------------------------------|
| Scroll wheel                | Microsoft PC99 – 2001   | Mechanically compliant                                           |
|                             | Width                   | 8 mm                                                             |
|                             | Diameter                | 1.01 in (25.6 mm)                                                |
|                             | Maximum rotation speed  | 48 rats/ sec                                                     |
|                             | Switch type             | Light force micro-switch                                         |
|                             | Switch life             | 1 million operations                                             |
| Regulatory approvals        | Mechanical life         | Minimum 200,000 revolutions                                      |
|                             | Compliant               | UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC      |
|                             | Compatibility           | Operating system support Windows 2000 and Windows XP             |
| <hr/>                       |                         |                                                                  |
| HP USB Optical Scroll Mouse | Dimensions (H x L x W ) | 1.5 x 4.5 x 2.5 in (3.8 x 11.6 x 6.3 cm)                         |
|                             | Weight                  | 0.27 lb (0.12 kg)                                                |
|                             | Cable length            | 72.8 in (185 cm)                                                 |
|                             | System requirements     | Microsoft Windows 95, 98, 2000, Me, and XP<br>Available USB port |



### Technical Specifications - Optical Storage

|                                    |                                                          |                                                                                                     |
|------------------------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| SATA DVD+/-RW<br>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 16X                                                                                   |
|                                    |                                                          | 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<br>(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 $\pm$ 5% 100 mV ripple p-p<br>12 VDC $\pm$ 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 conditions<br>(operating – non-condensing) | Temperature 41° to 122° F (5° to 50° C)                                                             |
|                                    |                                                          | Relative Humidity 10% to 90%                                                                        |
|                                    |                                                          | Maximum Wet Bulb 86° F (30° C)                                                                      |
|                                    |                                                          | Temperature                                                                                         |
|                                    | Operating systems support                                | Microsoft Windows 2000, Windows XP Professional, Windows XP Home                                    |

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|                    |                |                                   |
|--------------------|----------------|-----------------------------------|
| SATA DVD-ROM Drive | Height         | 5.25-inch, half-height, tray-load |
|                    | Orientation    | Either horizontal or vertical     |
|                    | Interface type | SATA/ ATAPI                       |



### Technical Specifications - Optical Storage

|                                                         |                                                                                                                     |                                                                                                                |        |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------|
| 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)                                                                           |                                                                                                                |        |
| W eight (max)                                           | 2.6 lb (1.2 kg)                                                                                                     |                                                                                                                |        |
| Read speeds                                             | DVD+R/-R/+RW /<br>-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                                                                                                      |        |
| Removable Storage –<br>Media Compatibility –<br>DVD-ROM | Media                                                                                                               | Read                                                                                                           | W rite |
|                                                         | 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<br>(typical reads, including<br>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<br>(all conditions<br>non-condensing)     | Temperature                                                                                                         | 41° to 122° F (5° to 50° C)                                                                                    |        |
|                                                         | Relative Humidity                                                                                                   | 10%to 90%                                                                                                      |        |
|                                                         | Maximum W et Bulb<br>Temperature                                                                                    | 86° F (30° C)                                                                                                  |        |
| Operating systems                                       | Microsoft W indows 2000, W indows XP Professional, W indows XP Home                                                 |                                                                                                                |        |



### Technical Specifications - Optical Storage

support

|                                     |                                                       |                                                          |                                                                     |  |
|-------------------------------------|-------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------|--|
| SATA CD-RW / DVD-ROM<br>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)  |                                                                     |  |
|                                     |                                                       | 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)                |                                                                     |  |
|                                     | W eight (max)                                         | 2.6 lb (1.2 kg)                                          |                                                                     |  |
|                                     | W rite speeds                                         | CD-R                                                     | Up to 48X                                                           |  |
|                                     |                                                       | CD-RW                                                    | Up to 32X                                                           |  |
|                                     | R ead speeds                                          | DVD+R/-R/+RW /<br>-RW / +RDL/ -RDL                       | Up to 8X                                                            |  |
|                                     |                                                       | DVD-ROM                                                  | Up to 16X                                                           |  |
|                                     |                                                       | CD-ROM, CD-R                                             | Up to 48X                                                           |  |
|                                     |                                                       | CD-RW                                                    | Up to 32X                                                           |  |
|                                     | Access time<br>(typical reads, including<br>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 $\pm$ 5%100 mV ripple p-p                                     |  |
|                                     |                                                       |                                                          | 12 VDC $\pm$ 5%200 mV ripple p-p                                    |  |
|                                     |                                                       | DC Current                                               | 5 VDC (< 1000 mA typical, < 1600 mA maximum)                        |  |
|                                     | Environmental (all<br>conditions non-<br>condensing)  | Temperature                                              | 41° to 122° F (5° to 50° C)                                         |  |
| 10% to 90%                          |                                                       |                                                          |                                                                     |  |
| Maximum W et Bulb<br>Temperature    |                                                       | 86° F (30° C)                                            |                                                                     |  |
|                                     |                                                       | Operating systems support                                | Microsoft W indows 2000, W indows XP Professional, W indows XP Home |  |

|              |                    |                                                                                                                              |                                                          |
|--------------|--------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| CD-ROM Drive | Interface          | SATA                                                                                                                         |                                                          |
|              | Data Transfer Rate | Variable (Audio CD) – 1,800 to 3,600 KB/ s (24X) Max                                                                         | Variable (CD-ROM, CD-R) – 2,400 to 7,200 KB/ s (48X) Max |
|              | Access Time (ms)   | Random: <125 ms                                                                                                              | Full-stroke seek: <210 ms                                |
|              | Data Buffer        | 2MB                                                                                                                          |                                                          |
|              | Disk Formats Read  | CD-ROM Mode 1, CD-ROM XA (Mode 2, Form 1 and 2), CD Digital Audio, CD-EXTRA, CD-I (Mode 2, Form 1 and 2) and CD-I Ready, CD- |                                                          |



### Technical Specifications - Optical Storage

|                                 |                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | Text, CD-Bridge, Photo CD (Single and Multi Session), Video CD, CD-R and CD-RW Multi-Session                                                             |
| Disk Formats Written            | None                                                                                                                                                     |
| Disk Capacity (CD)              | 180 MB, 540 MB, 650 MB, and 700 MB                                                                                                                       |
| Block Size                      | Mode 1-2,048, 2,352 bytes<br>Mode 2-1, 2,048, 2,328, 2,336, 2,340, 2,353 bytes<br>Mode 2-2, 2,328, 2,336, 2,340, 2,352 bytes<br>CD-DA-2,352, 2,368 bytes |
| Diameter                        | 12 cm; 8 cm                                                                                                                                              |
| Thickness                       | 1.2 mm                                                                                                                                                   |
| Track Pitch                     | 1.6 $\mu$ m                                                                                                                                              |
| Audio Output Level              | Line-out 0.7 V @ 47 Kohm                                                                                                                                 |
| Startup Time                    | <7 seconds (typical); < 30 seconds with multi-session                                                                                                    |
| Operating Conditions            | Temperature 41° to 122° F (5° to 50° C)<br>Relative Humidity 10% to 90%                                                                                  |
| Dimensions (H x W x D, maximum) | 1.7 x 5.9 x 8.0 in (4.3 x 15.0 x 20.3 cm)                                                                                                                |
| Weight                          | 2.6 lb (1200 g)                                                                                                                                          |
| Operating Systems Supported     | Microsoft Windows 2000, Windows XP Professional, Windows XP Home                                                                                         |

|                                          |                                        |                                                        |
|------------------------------------------|----------------------------------------|--------------------------------------------------------|
| PATA DVD+/ -RW<br>LightScribe Slim Drive | Height                                 | 5.25-inch, half-height, tray-load                      |
|                                          | Orientation                            | Either horizontal or vertical                          |
|                                          | Interface type                         | ATAPI/ EIDE                                            |
|                                          | Disc recording capacity                | Up to 8.5 GB DL or 4.7 GB standard                     |
|                                          | Dimensions (W x H x D)                 | 5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)               |
|                                          | Weight (max)                           | 0.42 lb (190 g)                                        |
|                                          | Write speeds                           | DVD+R Up to 8X                                         |
|                                          |                                        | DVD+RW Up to 8X                                        |
|                                          |                                        | DVD+RDL Up to 4X                                       |
|                                          |                                        | DVD-R Up to 8X                                         |
|                                          |                                        | DVD-RW Up to 6X                                        |
|                                          |                                        | CD-R Up to 24X                                         |
|                                          | Read speeds                            | CD-RW Up to 16X                                        |
|                                          |                                        | DVD+RW, DVD-RW, DVD-ROM, DVD+R, DVD-R Up to 8X         |
|                                          |                                        | DVD-RDL Up to 4X                                       |
|                                          |                                        | CD-ROM, CD-R Up to 24X                                 |
|                                          |                                        | CD-RW Up to 24X                                        |
|                                          | Access time (typical reads, including) | Random DVD: < 140 ms (typical), CD: < 125 ms (typical) |



### Technical Specifications - Optical Storage

|                                                       |                                  |                                                                                                                 |
|-------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------|
| settling)                                             | Full Stroke                      | DVD: < 250 ms (seek), CD: < 210 ms (seek)                                                                       |
|                                                       | Stop Time                        | < 4 seconds                                                                                                     |
|                                                       | 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                           | Four-pin, DC power receptacle                                                                                   |
|                                                       | DC Power Requirement             | 5 VDC $\pm$ 5%100 mV ripple p-p<br>12 VDC $\pm$ 5%200 mV ripple p-p                                             |
|                                                       | DC Current                       | 5 VDC (< 1000 mA typical, 1600 mA maximum)                                                                      |
|                                                       |                                  | 12 VDC (< 600 mA typical, 1400 mA maximum)                                                                      |
|                                                       | Total Drive Power (standby mode) | < 2.5 W att                                                                                                     |
| Audio output                                          | Line-Out                         | 0.7 VRMS                                                                                                        |
|                                                       | Signal-to-Noise Ratio            | 74 dB                                                                                                           |
|                                                       | Channel Separation               | 65 dB                                                                                                           |
| Environmental conditions (operating – non-condensing) | Temperature                      | 41° to 122° F (5° to 50° C)                                                                                     |
|                                                       | Relative Humidity                | 10% to 90%                                                                                                      |
|                                                       | Maximum Wet Bulb Temperature     | 86° F (30° C)                                                                                                   |
|                                                       | Operating systems support        | Microsoft Windows 2000, Windows XP Professional, Windows XP Home                                                |

|                                       |                                                 |                                                            |
|---------------------------------------|-------------------------------------------------|------------------------------------------------------------|
| PATA CD-RW / DVD-ROM Combo Slim Drive | Height                                          | 12.7 mm height slim CD-RW                                  |
|                                       | Orientation                                     | Either horizontal or vertical                              |
|                                       | Interface type                                  | PATA/ ATAPI                                                |
|                                       | Disc capacity                                   | Single layer: Up to 4.7 GB (6 times capacity of CD-ROM)    |
|                                       | Dimensions (W x H x D)                          | 5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)                   |
|                                       | Weight (max)                                    | 0.42 lb (190 g)                                            |
|                                       | Write speeds                                    | CD-R Up to 24X                                             |
|                                       |                                                 | CD-RW Up to 24X                                            |
|                                       | Read speeds                                     | DVD+R / -R / +RW / -RW / +RDL / -RDL Up to 4X              |
|                                       |                                                 | DVD-ROM Up to 8X                                           |
|                                       |                                                 | CD-ROM, CD-R Up to 24X                                     |
|                                       |                                                 | CD-RW Up to 24X                                            |
|                                       | Access time (typical reads, including settling) | Random DVD DVD: < 140 ms (typical), CD: < 125 ms (typical) |
|                                       |                                                 | Random CD DVD: < 250 ms (typical), CD: < 210 ms (typical)  |



### Technical Specifications - Optical Storage

|                                               |                                          |                                                                                                                             |
|-----------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|                                               | Cache Buffer                             | 2 MB (minimum)                                                                                                              |
|                                               | Data Transfer Modes                      | ATA PIO mode 4); ATA Multi-word DMA mode 2; ATA UltraDMA mode 0; ATA UltraDMA mode 1, mode 2; ATA UltraDMA Mode 3 (default) |
|                                               | Power                                    |                                                                                                                             |
|                                               | Source                                   | Fourpin, DC power receptacle                                                                                                |
|                                               | DC Power Requirement                     | 5 VDC $\pm$ 5%100 mV ripple p-p                                                                                             |
|                                               | DC Current                               | 5 VDC (< 1000 mA typical, < 1600 mA maximum)                                                                                |
|                                               | Total Drive Power (standby mode)         | < 2.5 Watt                                                                                                                  |
|                                               | Audio output level                       | 0.7 Vrms (typical)                                                                                                          |
| Environmental (all conditions non-condensing) | Temperature                              | 41° to 122° F (5° to 50° C)                                                                                                 |
|                                               | Relative Humidity                        | 5% to 85%                                                                                                                   |
|                                               | Maximum Wet Bulb Temperature (operating) | 86° F (30° C)                                                                                                               |
|                                               | Operating systems support                | Microsoft Windows 2000, Windows XP Professional, Windows XP Home                                                            |

|                         |                                                 |                                                                                         |
|-------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------|
| PATA DVD-ROM Slim Drive | Height                                          | 12.7mm                                                                                  |
|                         | Orientation                                     | Either horizontal or vertical                                                           |
|                         | Interface type                                  | PATA/ ATAPI                                                                             |
|                         | Dimensions (W x H x D)                          | 5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)                                                |
|                         | Weight (max)                                    | 0.42 lb (190 g)                                                                         |
|                         | Read speeds                                     | DVD+R/-R/+RW / Up to 4X                                                                 |
|                         |                                                 | -RW / +RDL/-RDL                                                                         |
|                         |                                                 | DVD-ROM Up to 8X                                                                        |
|                         |                                                 | CD-ROM, CD-R Up to 24X                                                                  |
|                         | Access time (typical reads, including settling) | CD-RW Up to 24X                                                                         |
|                         |                                                 | Random DVD DVD: < 140 ms (typical), CD: < 125 ms (typical)                              |
|                         |                                                 | Random CD DVD: < 250 ms (seek), CD: < 210 ms (seek)                                     |
|                         |                                                 | Data Transfer Modes ATA PIO mode 4 (16.7 MB/ s); ATA Multi-word DMA mode 2 (16.7 MB/ s) |
|                         | Power                                           | Source Four-pin, DC power receptacle                                                    |
|                         |                                                 | DC Power Requirement 5 VDC $\pm$ 5%100 mV ripple p-p                                    |
|                         |                                                 | DC Current 5 VDC - <1000 mA typical, < 1600 mA maximum                                  |
|                         |                                                 | Total Drive Power (standby mode) < 2.5 Watt                                             |
|                         | Audio output                                    | Line-Out 0.7 VRMS                                                                       |
|                         |                                                 | Signal-to-Noise Ratio 74 dB                                                             |



Technical Specifications - Optical Storage

|                                                                                            |                         |                             |
|--------------------------------------------------------------------------------------------|-------------------------|-----------------------------|
| Environmental (all conditions non-condensing)                                              | Channel Separation      | 65 dB                       |
|                                                                                            | Temperature             | 41° to 122° F (5° to 50° C) |
|                                                                                            | Relative Humidity       | 5% to 85%                   |
|                                                                                            | Maximum Wet Bulb        | 86° F (30° C)               |
|                                                                                            | Temperature (operating) |                             |
| Operating systems support Microsoft Windows 2000, Windows XP Professional, Windows XP Home |                         |                             |



### Technical Specifications - Removable Storage

|                              |                                        |                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HP 16-in-1 Media Card Reader | USB Interface                          | USB 2.0 High-speed device                                                                                                                                                                                                                                                                                                                                                                          |
|                              | Advance protocol support               | Supports hardware ECC (Error Correction Code) function                                                                                                                                                                                                                                                                                                                                             |
|                              |                                        | <ul style="list-style-type: none"> <li>• Supports hardware CRC (Cyclic Redundancy Check) function</li> <li>• Supports MS 4-bit parallel transfer mode</li> <li>• Supports MS-PRO 4-bit parallel transfer mode</li> <li>• Supports SD 4-bit parallel transfer mode</li> <li>• Supports high-speed 50-MHz SD 4-bit card (version 1.1)</li> <li>• Support high-speed 52-MHz MMC 8-bit card</li> </ul> |
|                              | Supported media type with card adapter | <ul style="list-style-type: none"> <li>• MicroSD (T-Flash)</li> <li>• Memory Stick Micro</li> </ul>                                                                                                                                                                                                                                                                                                |
| Mechanical                   |                                        |                                                                                                                                                                                                                                                                                                                                                                                                    |
| Environmental                | Operational                            | Test Parameters/ Conditions – Power applied, unit operating on system $\pm 5\%$ nominal supply voltage.                                                                                                                                                                                                                                                                                            |
|                              | Environmental Extremes                 |                                                                                                                                                                                                                                                                                                                                                                                                    |
|                              |                                        | 10°C 10% RH. • 24 hours<br>10°C 90% RH. • 24 hours<br>20°C 90% RH. • 24 hours<br>30°C 90% RH. • 24 hours<br>40°C 90% RH. • 24 hours<br>50°C 90% RH. • 24 hours<br>50°C 10% RH. • 24 hours                                                                                                                                                                                                          |
|                              | Storage Environmental Extremes         | Test Parameters/ Conditions<br>60°C @ 80% RH. for 96 hours<br>-30°C @ 20% RH. for 48 hours<br>No power applied<br>Delta °C < 1.0°C/ min<br>Delta %RH. < 1.5% RH./ min                                                                                                                                                                                                                              |
|                              | Operating system support               | Microsoft Windows 2000 (Service Pack 3 or greater), Windows XP Home, Windows XP Professional                                                                                                                                                                                                                                                                                                       |
|                              | Approvals                              | USBIF, 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<br>FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T                                                                                                                                                                                    |

## Technical Specifications - Environmental Data

**Eco-Label Certifications & declarations** This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- Blue Angel
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- China Energy Conservation Program
- IT ECO declaration
- Korea Eco-label
- EPEAT
- Japan PC Green label\*

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

## Ultra-slim Desktop

**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
- 1 empty PCI slot (w/ optional PCI riser card) , or  
1 empty PCIe x16 slot (w/ optional PCIe riser card)
- 1 internal drive slot
- 1 Slimline optical drive slot
- 3 memory slots
- 1 Serial/ Parallel Port (optional)

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



## Technical Specifications - Environmental Data

- 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.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO 1043.
- This product contains 0% recycled materials (by wt.)
- This product is 90% recyclable when properly disposed of at end of life.

## Small Form Factor

**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 PCI slots (2 low profile or 2 full-height with optional riser)
- 1 empty PCIe x1 slot
- 1 empty PCIe x16 slot
- 1 internal drive slot
- 1 SATA optical drive slot
- 4 memory slots
- 1 Serial Port (optional)
- 1 external diskette drive (optional)

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 than 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.



## Technical Specifications - Environmental Data

- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO 1043.
- This product contains 0% recycled materials (by wt.)
- This product is 74% recyclable when properly disposed of at end of life.

## Convertible Minitower

**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
- 4 empty PCI slots (2 standard, 2 optional)
- 1 empty PCIe x1 slot
- 1 empty PCIe x16 slot
- 2 internal drive slots
- 3 external SATA drive slots
- 4 memory slots
- 1 Serial Port (optional)
- 1 external diskette drive (optional)

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 than 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.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO 1043.
- This product contains 0% recycled materials (by wt.)



## Technical Specifications - Environmental Data

- This product is 90% recyclable when properly disposed of at end of life.

## Ultra-slim Desktop, Small Form Factor, Convertible Minitower

## RoHS Compliance

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

## Material Usage

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

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



### Technical Specifications - Environmental Data

- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

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

**Hewlett-Packard Corporate Environmental Information** For more information about HP's commitment to the environment:  
 [link to new HP white paper now in progress]  
 Global Citizenship Report  
<http://www.hp.com/hpinfo/globalcitizenship/qcreport/index.html>  
 Eco-label certifications  
<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>  
 ISO 14001 certificates:  
<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

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