# DELL™

# OPTIPLEX™790

## TECHNICAL GUIDEBOOK

### INSIDE THE OPTIPLEX 790

# TABLE OF CONTENTS

# MINI TOWER COMPUTER (MT) VIEW



| FRONT VIEW | | | |
|---|---|---|---|
| 1 | Power Button, Power Light | 6 | Optical Drive (optional) |
| 2 | Optical Drive Bay (optional) | 7 | Optical Drive Eject Button |
| 3 | Headphone Connector | 8 | USB 2.0 Connectors (4) |
| 4 | Microphone Connector | 9 | Drive Activity Light |
| 5 | Diagnostic Lights (4) | | |

| BACK VIEW | | | |
|---|---|---|---|
| 10 | Power Supply Diagnostic Light | 14 | Expansion card slots(4) |
| 11 | Power Supply Diagnostic Button | 15 | Security cable slot |
| 12 | Power Connector | 16 | Padlock Ring |
| 13 | Back Panel Connectors | | |

| BACK PANEL CONNECTORS | | | |
|---|---|---|---|
| 1 | Mouse Connector | 7 | Keyboard Connector |
| 2 | Link Integrity Light | 8 | USB Connectors (6) |
| 3 | Network Connector | 9 | Display Port Connector |
| 4 | Network Activity Light | 10 | VGA Connector |
| 5 | Serial connector | 11 | Line-in/Microphone connector |
| 6 | Line-out Connector | | |
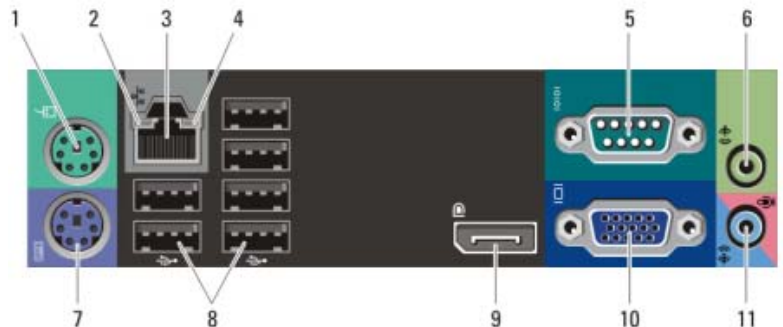
# MINI TOWER COMPUTER (MT) VIEW
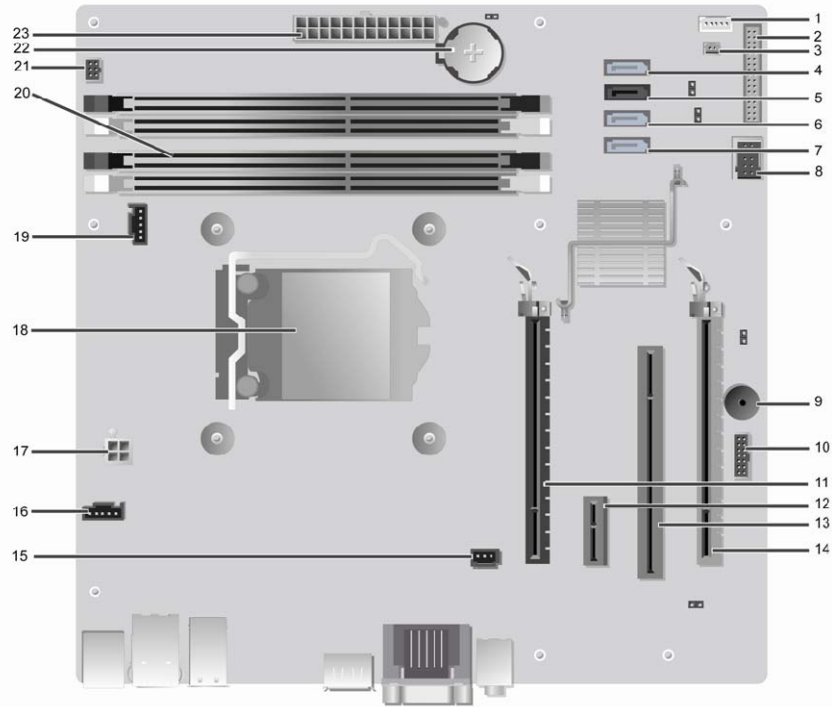


| Number | Name | Number | Name |
|--------|------|--------|------|
| 1 | Internal speaker connector(INT_SPKR) | 13 | PCI connector(SLOT3) |
| 2 | Front IO connector(FRONTPANEL) | 14 | PCI-e 4x connector(SLOT4) |
| 3 | Thermal sensor connector(THRM_2) | 15 | Intrusion switch connector(INTRUDER) |
| 4 | SATA 0 connector(SATA0) | 16 | System fan connector(FAN_HDD) |
| 5 | SATA 1 connector(SATA1) | 17 | P2 power connector(12V_PWRCONN) |
| 6 | SATA 2 connector(SATA2) | 18 | Processor connector(N/A) |
| 7 | SATA 3 connector(SATA3) | 19 | CPU fan connector(FAN_CPU) |
| 8 | Internal USB connector(INT_USB) | 20 | Memory connectors(DIMM1, DIMM2, DIMM3, DIMM4) |
| 9 | Buzzer(BEEP) | 21 | Power switch connector(PWR_SW) |
| 10 | LPC debug connector(LPC_DEBUG) | 22 | Battery connector(BATTERY) |
| 11 | PCI-e 16x connector(SLOT1) | 23 | P1 power connector(POWER) |
| 12 | PCI-e 1x connector(SLOT2) | | |

## DESKTOP COMPUTER (DT) VIEW
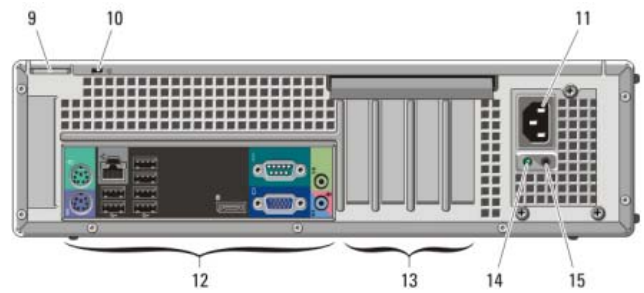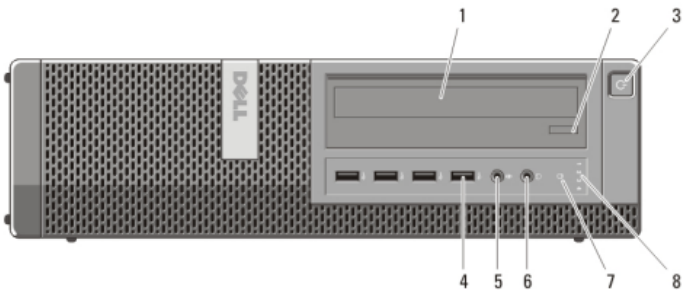


| FRONT VIEW | | | |
|---|---|---|---|
| 1 | Optical Drive | 5 | Microphone Connector |
| 2 | Optical Drive Eject Button | 6 | Headphone Connector |
| 3 | Power Button, Power Light | 7 | Drive Activity Light |
| 4 | USB Connectors (4) | 8 | Diagnostic Lights (4) |

| BACK VIEW | | | |
|---|---|---|---|
| 9 | Padlock Ring | 13 | Expansion card slots(4) |
| 10 | Security cable slot | 14 | Power Supply Diagnostic Light |
| 11 | Power Connector | 15 | Power Supply Diagnostic Button |
| 12 | Back Panel Connectors | | |

| BACK PANEL CONNECTORS | | | |
|---|---|---|---|
| 1 | Mouse Connector | 7 | Keyboard Connector |
| 2 | Link Integrity Light | 8 | USB Connectors (6) |
| 3 | Network Connector | 9 | Display Port Connector |
| 4 | Network Activity Light | 10 | VGA Connector |
| 5 | Serial connector | 11 | Line-in/Microphone connector |
| 6 | Line-out Connector | | |

## DESKTOP COMPUTER (DT) VIEW
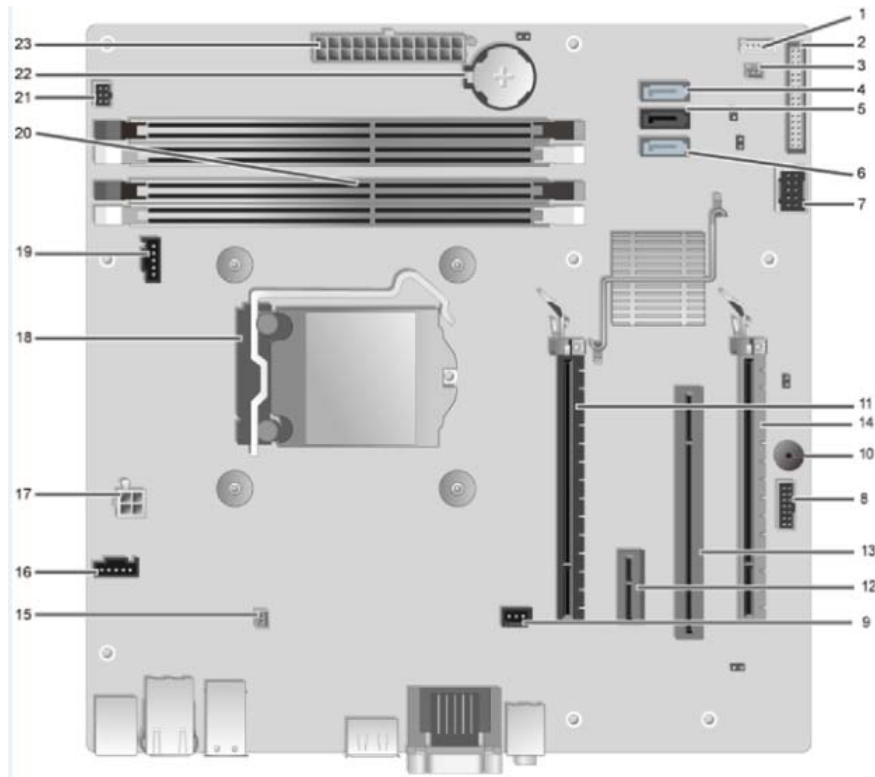


| Number | Name | Number | Name |
|---|---|---|---|
| 1 | Internal speaker connector(INT_SPKR) | 13 | PCI connector(SLOT3) |
| 2 | Front IO connector(FRONTPANEL) | 14 | PCI-e 4x connector(SLOT4) |
| 3 | Thermal sensor connector(THRM_2) | 15 | Thermal sensor connector(THRM_1) |
| 4 | SATA 0 connector(SATA0) | 16 | System fan connector(FAN_HDD) |
| 5 | SATA 1 connector(SATA1) | 17 | P2 power connector(12V_PWRCONN) |
| 6 | SATA 2 connector(SATA2) | 18 | Processor connector(N/A) |
| 7 | Internal USB connector(INT_USB) | 19 | CPU fan connector(FAN_CPU) |
| 8 | LPC debug connector(LPC_DEBUG) | 20 | Memory connectors(DIMM1, DIMM2, DIMM3, DIMM4) |
| 9 | Intrusion switch connector (INTRUDER) | 21 | Power switch connector(PWR_SW) |
| 10 | Buzzer(BEEP) | 22 | Battery connector(BATTERY) |
| 11 | PCI-e 16x connector(SLOT1) | 23 | P1 power connector(POWER) |
| 12 | PCI-e 1x connector(SLOT2) | | |

## SMALL FORM FACTOR COMPUTER (SFF) VIEW
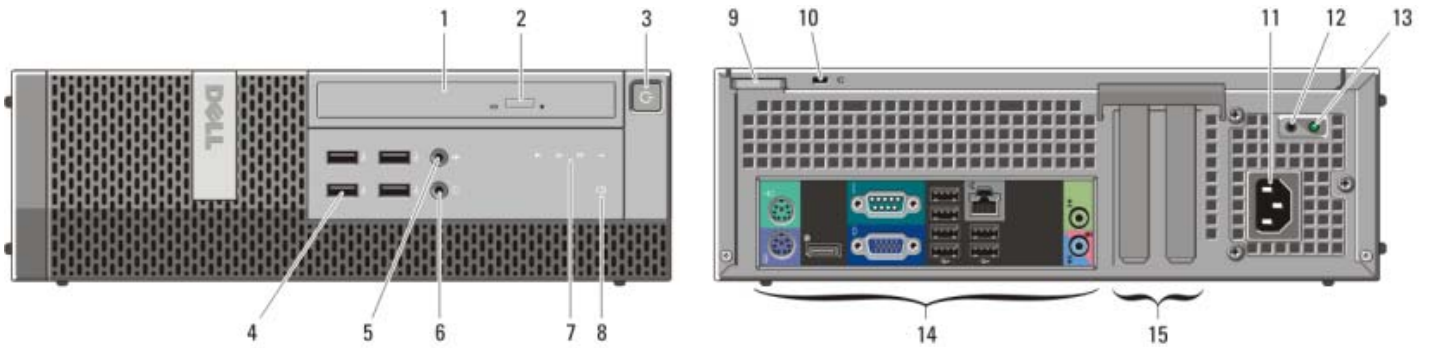


| FRONT VIEW | | | |
|---|---|---|---|
| 1 | Optical Drive | 5 | Microphone Connector |
| 2 | Optical Drive Eject Button | 6 | Headphone Connector |
| 3 | Power Button, Power Light | 7 | Diagnostic Lights (4) |
| 4 | USB 2.0 Connectors (4) | 8 | Drive Activity Light |

| BACK VIEW | | | |
|---|---|---|---|
| 9 | Padlock Ring | 13 | Power Supply Diagnostic Light |
| 10 | Security cable slot | 14 | Back Panel Connectors |
| 11 | Power Connector | 15 | Expansion card slots(2) |
| 12 | Power Supply Diagnostic Button | | |

| BACK PANEL CONNECTORS | | | |
|---|---|---|---|
| 1 | Mouse Connector | 7 | Keyboard Connector |
| 2 | Serial connector | 8 | Display Port Connector |
| 3 | Link Integrity Light | 9 | VGA Connector |
| 4 | Network Connector | 10 | USB Connectors (6) |
| 5 | Network Activity Light | 11 | Line-in/Microphone connector |
| 6 | Line-out Connector | | |
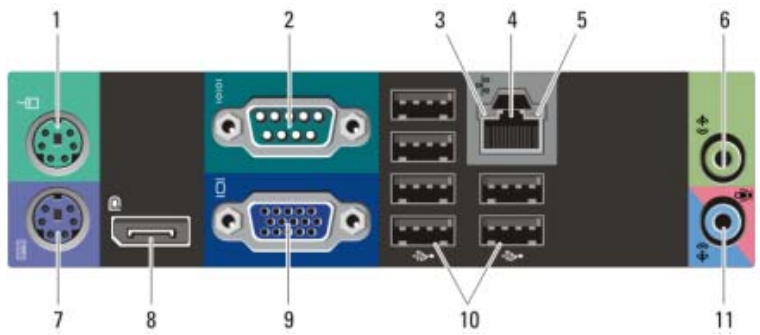
## SMALL FORM FACTOR COMPUTER (SFF) VIEW
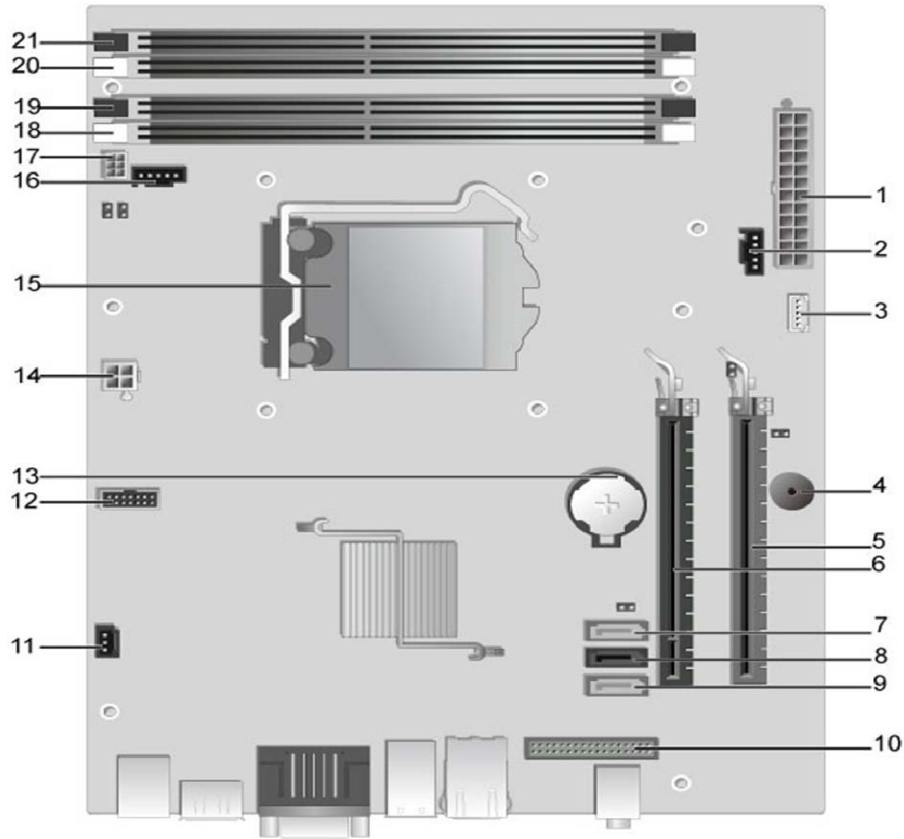


| Number | Name | Number | Name |
|--------|------|--------|------|
| 1 | P1 power connector(POWER) | 12 | LPC debug connector(LPC_DEBUG) |
| 2 | System fan connector(FAN_HDD) | 13 | Battery connector(BATTERY) |
| 3 | Internal speaker connector(INT_SPKR) | 14 | P2 power connector(12V_PWRCONN) |
| 4 | Buzzer(BEEP) | 15 | Processor connector(N/A) |
| 5 | PCI-e 4x connector(SLOT2) | 16 | CPU fan connector(FAN_CPU) |
| 6 | PCI-e 16x connector(SLOT1) | 17 | Power switch connector(PWR_SW) |
| 7 | SATA 2 connector(SATA2) | 18 | Memory connector(DIMM3) |
| 8 | SATA 1 connector(SATA1) | 19 | Memory connector(DIMM1) |
| 9 | SATA 0 connector(SATA0) | 20 | Memory connector(DIMM4) |
| 10 | Front IO connector(FRONTPANEL) | 21 | Memory connector(DIMM2) |
| 11 | Intrusion switch connector(INTRUDER) | | |

# ULTRA SMALL FORM FACTOR COMPUTER (USFF) VIEW
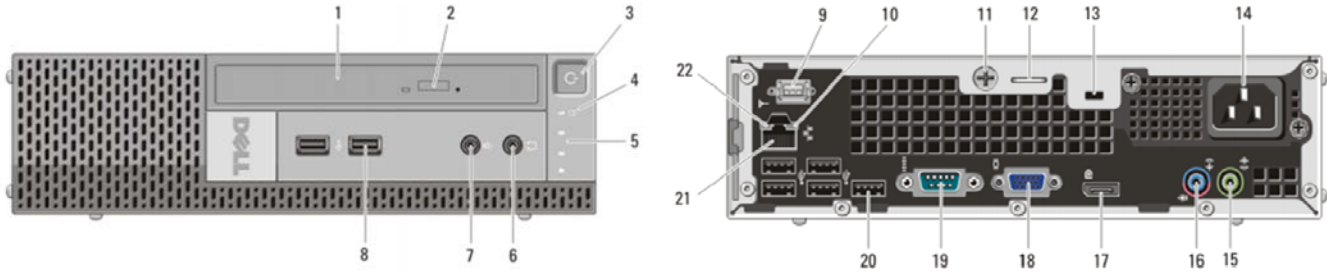


| FRONT VIEW | | | |
|---|---|---|---|
| 1 | Optical Drive | 5 | Diagnostic Lights (4) |
| 2 | Optical Drive Eject Button | 6 | Headphone Connector |
| 3 | Power Button, Power Light | 7 | Microphone Connector |
| 4 | Drive Activity Light | 8 | USB Connectors (2) |

| BACK VIEW | | | |
|---|---|---|---|
| 9 | Wi-Fi Antenna (optional) | 16 | Line-in/ Microphone Connector |
| 10 | Network Activity Light | 17 | Display Port Connector |
| 11 | Captive Thumbscrew | 18 | VGA Connector |
| 12 | Padlock Ring | 19 | Serial Connector |
| 13 | Security Cable Slot | 20 | USB Connectors (5) |
| 14 | Power Connector | 21 | Network Connector |
| 15 | Line-Out Connector | 22 | Link Integrity Light |

## SMALL FORM FACTOR COMPUTER (USFF) VIEW
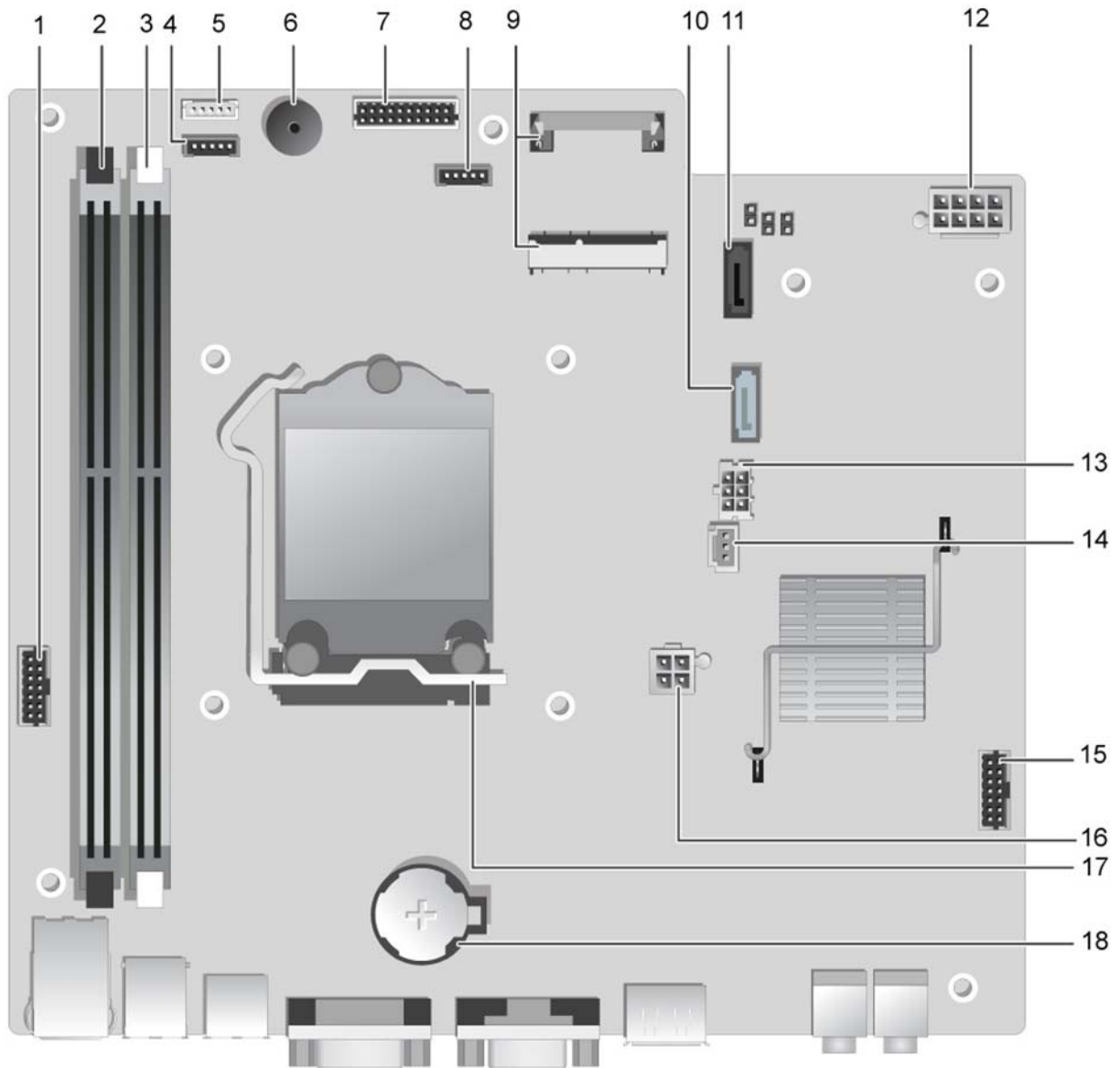


| Number | Name | Number | Name |
|--------|------|--------|------|
| 1 | Front panel connector(FRONTPANEL) | 10 | SATA 1 connector(SATA_1) |
| 2 | Memory connector(DIMM_2) | 11 | SATA 0 connector(SATA_0) |
| 3 | Memory connector(DIMM_1) | 12 | P1 power connector(POWER1) |
| 4 | CPU fan connector(FAN_CPU) | 13 | HDD-ODD power connector (HDD_ODD_POWER) |
| 5 | Internal speaker connector(INT_SPKR) | 14 | Intrusion switch connector(INTRUDER) |
| 6 | Buzzer(BEEP) | 15 | LPC debug connector(LPC_DEBUG) |
| 7 | Front IO connector(F_USB_AUDIO) | 16 | P2 power connector(12V_PWRCONN) |
| 8 | System fan connector(FAN_HDD) | 17 | Processor connector(N/A) |
| 9 | Mini-PCI socket(PCIE_MINICARD) | 18 | Battery connector(BATTERY) |

# MARKETING SYSTEM CONFIGURATIONS

**NOTE: Offerings may vary by country. For more information regarding the configuration of your computer, click Start>Help and Support and select the option to view information about your computer.**

## OPERATING SYSTEM

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Windows 7®** operating system | Microsoft® Windows 7® Home Basic (32 and 64 bit) (select countries), Microsoft® Windows 7® Home Basic SP1 (32 and 64 bit) (select countries), Microsoft® Windows 7® Home Premium (32 and 64 bit), Microsoft® Windows 7® Professional (32 and 64 bit), Microsoft® Windows 7® Ultimate (32 and 64 bit), Microsoft® Windows 7 Starter SP1(32 bits), Microsoft® Windows 7 Starter SP1 w/MUI (32 bits) | | | |
| **Windows Vista®** operating system | Windows Vista® Home Basic SP2 (32 bits), Windows Vista® Business SP2 (32 and 64 bit), Windows Vista®  Ultimate SP2 (32 bit) | | | |
| **Windows XP®** operating system | Basic Driver support only via Dell.com | | | |
| **Other** | FreeDOS for (N-series), Ubuntu® Linux version 10.10 (China only) | | | |
| **OS Media Support** | Optional | | | |

## CHIPSET

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Chipset** | Intel Q65 Express Chipset | | | |
| **Non-volatile memory on chipset** | | | | |
| BIOS Configuration SPI (Serial Peripheral Interface) | 64Mbit (8MB) and 16Mbit(2MB)located at SPI_FLASH on chipset | | | |
| TPM 1.2 Security Device (Trusted Platform Module)[1] | 18KB located at TPM1.2 on chipset | | | |
| Non-TPM | Available in select countries | | | |
| NIC EEPROM | LOM configuration contained within SPI_FLASH – no dedicated LOM EEPROM | | | |

## PROCESSOR

NOTE:  Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and synchro-nized transitions on a worldwide basis.  They ensure the same platform is available for purchase globally.  This allows customers to reduce the number of configurations managed on a worldwide basis, thereby reducing their costs.  They also enable companies to implement global IT standards by locking in specific product configurations worldwide.  The following GSP processors identified below will be made available to Dell customers.

NOTE:  Processor numbers are not a measure of performance.  Processor availability subject to change and may vary by region/country.

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Intel® Quad Core Processors** | | | | |
| Intel® Core™ i7 2600 / 3.40GHz, 8M, VT-x, VT-d, TXT (vPro™), 95W | X-GSP | X-GSP | X-GSP | |
| Intel® Core™ i7 2600S / 2.80GHz, 8M, VT-x, VT-d, TXT (vPro™), 65W | | | | X-GSP |
| Intel® Core™ i5 2500 / 3.30GHz, 6M, VT-x, VT-d, TXT (vPro™), 95W | X-GSP | X-GSP | X-GSP | |
| Intel® Core™ i5 2500S / 2.70GHz, 6M, VT-x, VT-d, TXT (vPro™), 65W | | | | X-GSP |
| Intel® Core™ i5 2400 / 3.10GHz, 6M, VT-x, VT-d, TXT (vPro™), 95W | X-GSP | X-GSP | X-GSP | |
| Intel® Core™ i5 2400S / 2.50GHz, 6M, VT-x, VT-d, TXT (vPro™), 65W | | | | X-GSP |
| **Intel® Dual Core Processors** | | | | |
| Intel® Core™ i3 2120 / 3.30GHz, 3M, VT-x, 65W | X | X | X | X |
| Intel® Core™ i3 2100 / 3.10GHz, 3M, VT-x, 65W | X | X | X | X |
| Intel® Core™ i3 2130 / 3.40GHz, 3M, VT-x, 65W (after Oct 2011) | X | X | X | X |
| **Intel® Pentium Processors** | | | | |
| IPP G850 SANDY BRIDGE Q-0 3MB 2c FCLGA 2.9GHz 65W HD GRAPHICS 2000 QS | X | X | X | X |
| IPP G840 SANDY BRIDGE Q-0 3MB 2c FCLGA 2.8GHZ 65W HD GRAPHICS 2000 QS | X | X | X | X |
| IPP G630 SANDY BRIDGE Q-0 3MB 2c FCLGA 2.7GHZ 65W HD GRAPHICS 2000 QS (after Oct 2011) | X | X | X | X |
| IPP G620 SANDY BRIDGE Q-0 3MB 2c FCLGA 2.6GHZ 65W HD GRAPHICS 2000 QS | X | X | X | X |
| **Intel® Celeron Processors (After October 2011)** | | | | |
| ICPG530 SANDY BRIDGE Q-02MB 2c FCLGA 2.4GHZ 65W HD GRAPHICS QS | X | X | X | X |
| IPP G440 SANDY BRIDGE Q-0 2MB 1.6GHZ 35W FCLGA11AQC | X | X | X | X |

## MEMORY

**NOTE: Memory modules should be installed in pairs of matched memory size, speed, and technology. If the memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. The entire 16-GB memory range is available to 64-bit operating systems.**

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Type: DDR3 Synch DRAM Non-ECC Memory** | 1333MHz | | | |
| **DIMM Slots** | 4 | 4 | 4 | 2 |
| **DIMM Capacities** | Up to 4GB | Up to 4GB | Up to 4GB | Up to 4GB |
| **Minimum Memory** | 1GB | 1GB | 1GB | 1GB |
| **Maximum System Memory** | 16GB[1] | 16GB[1] | 16GB[1] | 8GB[1] |
| **Memory configurations** | | | | |
| 16GB[1] DDR3, 1333MHz, (4 DIMM) | X | X | X | |
| 8GB[1] DDR3, 1333MHz, (2 DIMM) | X | X | X | X |
| 4GB[1] DDR3, 1333MHz, (2 DIMM) | X | X | X | X |
| 4GB[1] DDR3, 1333MHz, (1 DIMM) | | | | X |
| 3GB DDR3, 1333MHz, (2 DIMM) | X | X | X | X |
| 2GB DDR3, 1333MHz, (1 DIMM) | X | X | X | X |
| 1GB DDR3, 1333MHz, (1 DIMM) | X | X | X | X |

[1]The total amount of available memory will be less than 4GB. The amount less depends on the actual system configuration. To fully utilize 4GB or more of memory requires a 64-bit enabled processor and 64-bit operating system.

## DRIVES AND REMOVABLE STORAGE

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Bays:** | | | | |
| 5.25-inch bay (External Optical) | 2 | 1 | 1 (slim-line) | 1 (slim-line) |
| Hard Drives Supported (Internal and External) | 2 | 1 | 1 | 1 |
| Optical Drives Supported | 2 | 1 | 1 | 1 |
| **Interface:** | | | | |
| SATA 2.0 | 3 | 2 | 2 | 1 |
| SATA 3.0 | 1 | 1 | 1 | 1 |
| **3.5" Hard Drives:** | | | | |
| 1TB[1]  SATA 7200 RPM HDD | X | X | X | |
| 500GB[1] SATA 7200 RPM HDD | X | X | X | |
| 320GB[1] SATA 7200 RPM HDD | X | X | X | |
| 250GB[1] SATA 7200 RPM HDD | X | X | X | |
| **2.5" Hard Drives:** | | | | |
| 500GB[1] SATA 7200 RPM HDD | X | X | X | X |
| 500GB[1] SATA 7200 RPM Hybrid HDD | X | X | X | X |
| 320GB[1] with and without FIPS Full DISK EnCRYPTION SATA HDD  (available after May19, 2011) | X | X | X | X |
| 250GB[1] SATA 7200 RPM HDD | X | X | X | X |
| 128GB[1] SATA Solid State Drive HDD | X | X | X | X |

## DRIVES AND REMOVABLE STORAGE

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Optical Drive:** (SFF/USFF require slim-line optical drive) | | | | |
| DVD+/-RW[2] | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s |
| DVD-ROM[3] | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s |
| **Media Card Reader:** | | | | |
| Dell 19 in 1 Media Card Reader | X | X | | |

**NOTE: Dell 19 in 1 Media Card Reader is supported via a F5 to F3 bracket on the MT and DT**

## SYSTEM EXPANSION SLOTS

**NOTE: See Detailed Engineering Specifications for supported voltage, maximum wattage and card dimensions.**

**NOTE: Add in card location and priority: PCI: 1394; PCIe x16: GFX, USB 3.0, Serial, Parallel/Serial, NIC, Wireless; PCIe x4: GFX, USB 3.0, Serial, Parallel/Serial, NIC, Wireless; PCIe x1: USB 3.0, Serial, Parallel/Serial, NIC, Wireless**

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **PCI Slot(s): number of** | 1 | 1 | | |
| **PCIe x16 Slot: number of** | 1 | 1 | 1 | |
| **PCIe x16 (wired x4)Slot: number of** | 1 | 1 | 1 | |
| **PCIe x1 Slot: number of** | 1 | 1 | | |
| **miniPCIe connector: number of** | | | | 1 |
| **Serial ATA (SATA)** | 4 | 3 | 3 | 2 |

[1] For hard drives, GB means 1 billion bytes; actual capacity varies with preloaded material and operating environment and will be less.

[2] Discs burned with this drive may not be compatible with some existing drives and players; using DVD+R media provides maximum compatibility.

[3] DVD-ROM drives may have write-capable hardware that has been disabled via firmware modifications.

## GRAPHICS/VIDEO CONTROLLER

**NOTE: MT supports full height card, DT supports low profile card. SFF supports low profile card.**

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Intel HD Graphics [with Celeron/Pentium class CPU-GPU combo] Intel HD Graphics 2000[with iCore Dual/Quad core class CPU-GPU combo] | Integrated on CPU | | | |
| **Enhanced Graphic/Video Options** | | | | |
| 1GB AMD RADEON HD 6450 with DP and DVI | Optional card | | | |
| 512MB AMD RADEON HD 6350 with dual DVI or dual VGA (adapters convert to dual DVI or dual VGA) | Optional card | | | |

## EXTERNAL PORTS/CONNECTORS

**NOTE: MT supports full height card, DT supports low profile card.  SFF supports low profile card.**

| See chassis diagrams section for port/connector locations | MT | DT | SFF | USFF |
|---|---|---|---|---|
| USB 2.0 (1 internal on MT and DT) | 4 Front, 6 Rear | | | 2 Front, 5 Rear |
| Serial | 1 Rear | | | |
| Parallel/2nd Serial via optional PCIex1 card | Optional  FH card | | | |
| 2nd Parallel via optional PCIex1 card (after August 2011) | | Optional LP card | | |
| Network Connector (RJ-45) | 1 Rear | | | |
| PS/2 | 2 Rear | | | |
| 1394 Controller via optional PCI card | Optional FH card | Optional LP card | | |
| USB 3.0 via optional PCIex1 card | Optional FH card | Optional LP card | | |
| **Video:** | | | | |
| VGA | 1 Rear | | | |
| DisplayPort | 1 Rear | | | |
| **Audio:** | | | | |
| Line in for microphone | 1 Front | | | |
| Line in for microphone or stereo | 1 Rear | | | |
| Line out for headphones or speakers | 1 Front, 1 Rear | | | |

## COMMUNICATIONS - NETWORK ADAPTER (NIC)

**NOTE: MT supports full height card, DT supports low profile card. SFF supports low profile card.**

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Intel® 82579LM Gigabit[1] Ethernet LAN 10/100/1000 (Remote Wake Up, PXE support and Intel Active Management Technology support) | Integrated on system board | | | |
| Broadcom NetXtreme 10/100/1000 PCIe Gigabit Networking Card | Optional via add-in card | | | |

[1] This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

## COMMUNICATIONS – WIRELESS

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Dell Wireless 1520 PCIe WLAN card (802.11n) | Optional via add-in card | | | |
| Dell Wireless 1520 half miniPCIe WLAN card (802.11n) | | | | Optional |

## AUDIO AND SPEAKERS

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Realtek ALC269Q High Definition Audio Codec | Integrated on system board | | | |
| Internal Dell Business Audio Speaker | Optional | | | |
| Dell AX210 2.0 Desktop Speakers | Optional | | | |
| Dell AX510/AX510PA Flat Panel Soundbar Speakers | Optional | | | |

## KEYBOARD AND MOUSE

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Dell USB Entry Keyboard with optional palmrest | Standard | | | |
| Dell Multimedia Pro Keyboard | Optional | | | |
| Dell Smartcard Keyboard | Optional | | | |
| Dell USB Optical Mouse | Standard | | | |
| Dell Laser Mouse | Optional | | | |

## SECURITY

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Trusted Platform Module (TPM) 1.2[1] | Integrated on system board | | | |
| Chassis Intrusion Switch | Optional | | | |
| Dell Smartcard Keyboard | Optional | | | |
| Chassis lock slot and loop support | Standard | | | |
| Dell Data Protection \| Hardware Encryption Engine | Optional. Available in Q3 2011 | | | |

[1]TPM is not available in all countries. Depending on your country regulations, No-TPM system boards will be made available.

## SOFTWARE

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Dell Client Manager | Available via Dell.com | | | |
| Dell Data Protection/Access (DDPA) | Standard | | | |
| Norton 2010 Internet Security | 30 Day Trial or Optional Subscription | | | |
| McAfee 10 SecurityCenter | 30 Day Trial or Optional Subscription | | | |
| Dell Data Protection \| Encryption (DDPE) | Optional. Available in Q3 2011 | | | |

## ENVIRONMENTAL

NOTE: For more details on Dell Environmental features, please to go to Environmental Attributes section. See your specific region for availability.

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Sustainable packaging | X | X | X | |
| BFR/PVC—free limited configurations | | | | |
| MultiPack packaging | Optional, US only | | | |
| Energy Efficient Power Supply | Optional | | | Standard |

## ALL-IN-ONE STANDS AND MOUNTS

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Small Form Factor AIO Stand | | | Optional | |
| Ultra Small Form Factor AIO Stand | | | | Optional |
| Ultra Small Form Factor Wall Mount / Desk Mount | | | | Optional |

## SERVICE AND SUPPORT

NOTE: For more details on Dell Service Plans please to go to: **www.dell.com/service/service_plans**

| | MT | DT | SFF | USFF |
|---|---|---|---|---|
| 3 Year Warranty[1] Next Business Day On-site[2] (3-3-3) | Standard | | | |
| ProSupport | Optional | | | |

[1] For a copy of our guarantees or limited warranties, please write Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, TX 78682. For more information, visit www.dell.com/warranty.
[2] Service may be provided by third-party. Technician will be dispatched if necessary following phone-based troubleshooting. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell. U.S. only.

# DETAILED ENGINEERING SPECIFICATIONS
## SYSTEM DIMENSIONS (PHYSICAL)

NOTE: System Weight and Shipping Weight is based on a typical configuration and may vary based on PC configuration. A typical configuration includes: integrated graphics, one hard drive, one optical drive, and one diskette drive.

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Chassis Volume (**liters) | 26.27 | 15.06 | 8.38 | 3.70 |
| **Chassis Weight (**pounds/kilograms) | 19.55 / 8.87 | 16.67 / 7.56 | 12.57 / 5.70 | 7.20 / 3.27 |
| **Chassis Dimensions: (HxWxD)** |  |  |  |  |
| Height (inches/centimeters) | 14.17 / 36 | 14.17 / 36 | 11.42 / 29 | 9.32 / 23.67 |
| Width (inches/centimeters) | 6.89 / 17.5 | 4.02 / 10.2 | 3.65 / 9.26 | 2.56 / 6.5 |
| Depth (inches/centimeters) | 16.42 / 41.7 | 16.14 / 41 | 12.28/31.2 | 9.44 / 24 |
| **Shipping Weight (**pounds/kilograms - includes packaging materials) | 23.45 / 10.64 | 20.03 / 9.09 | 15.2 / 6.89 | 9.56/ 4.34 |
| **Packaging Parameters (HxWxD)** |  |  |  |  |
| Height (inches/centimeters) | 21.31/54.13 | 21.31 / 54.13 | 19.25/48.90 | 19.13/48.59 |
| Width (inches/centimeters) | 18.75/47.63 | 18.75/47.63 | 15.81/40.16 | 14.38/36.53 |
| Depth (inches/centimeters) | 14.09 / 35.79 | 10.84/27.53 | 10.19/25.88 | 9.63/24.46 |

## SYSTEM EXPANSION SLOTS

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **PCI Slot** (Voltage supported 3.3V/5V/12V/-12V) | 1 | 1 |  |  |
| Height (inches/centimeters) | 4.376 / 11.115 | 2.731 /6.89 |  |  |
| Length (inches/centimeters) | 6.6 / 16.765 | 6.6/16.765 |  |  |
| Maximum Wattage | 25W | 25W |  |  |
| **PCIex16 Slot (BLUE)** (Voltage supported 3.3V/12V) | 1 | 1 | 1 |  |
| Height (inches/centimeters) | 4.376 / 11.115 | 2.731 /6.89 | 2.731 /6.89 |  |
| Length (inches/centimeters) | 6.6/ 16.765 | 6.6 /16.765 | 6.6 /16.765 |  |
| Maximum Wattage | 35W | 35W | 35W |  |
| **PCIex16 wired as x4 Slot (BLACK)** (Voltage supported 3.3/12V) | 1 | 1 | 1 |  |
| Height (inches/centimeters) | 4.376 / 11.115 | 2.731 /6.89 | 2.731 /6.89 |  |
| Length (inches/centimeters) | 6.6 / 16.765 | 6.6 /16.765 | 6.6/16.765 |  |
| Maximum Wattage | 25W | 25W | 25W |  |
| **PCIe x1 Slot** (Voltage supported 3.3V/12V) | 1 | 1 |  |  |
| Height (inches/centimeters) | 4.376 / 11.115 | 2.731 / 6.89 |  |  |
| Length (inches/centimeters) | 4.5 / 11.44 | 4.5 / 11.44 |  |  |
| Maximum Wattage | 10W | 10W |  |  |
| **Mini PCIe x1 Slot** |  |  |  | 1 |

* Card length can be longer than standard Half-Length Card but cannot be a Full-Length Card.

## SYSTEM LEVEL ENVIRONMENTAL AND OPERATING CONDITIONS

|  | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Temperature** | | | | |
| Operating | 10° to 35° C (50° to 95° F) | | | |
| Non-Operating (Storage) | -40° to 65° C (-40° to -149° F) | | | |
| **Relative Humidity** | 20% to 80% (non-condensing) | | | |
| **Maximum vibration** | | | | |
| Operating | 0.25 G at 3 to 200 Hz at 0.5 octave/min | | | |
| Non-Operating | 0.5 G at 3 to 200 Hz at 1 octave/min | | | |
| **Maximum Shock** | | | | |
| Operating | Bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec) | | | |
| Non-Operating | 27-G faired square wave with a velocity change of 508 cm/sec (200 inches/sec) | | | |
| **Maximum Altitude** | | | | |
| Operating | −15.2 to 3048 m (−50 to 10,000 ft) | | | |
| Non-Operating | −15.2 to 10,668 m (−50 to 35,000 ft) | | | |

## POWER

NOTE: These form factors utilize a more efficient Active Power Factor Correction (APFC) power supply. Dell recommends only Universal Power Supplies (UPS) based on Sine Wave output for APFC PSUs, not an approximation of a Sine Wave, Square Wave, or quasi-Square Wave. If you have questions, please contact the manu-

| | MT | | DT | | SFF | | USFF |
| | APFC | EPA | APFC | EPA | APFC | EPA | EPA |
|---|---|---|---|---|---|---|---|
| Power Supply Wattage | 265W | 265W High Efficiency | 250W | 250W High Efficiency | 240W | 240W High Efficiency | 200W High Efficiency |
| AC input Voltage Range | 90 – 264Vac | 90 – 264Vac | 90 – 264Vac | 90 – 264Vac | 90 – 264Vac | 90 – 264Vac | 90 – 264Vac |
| AC input current (low ac range/high AC range) | 5.0A / 2.5A | 5.0A / 2.5A | 4.4A / 2.2A | 4.4A / 2.2A | 4.0A / 2.0A | 4.0A / 2.0A | 2.9A / 1.45A |
| AC input Frequency | 47HZ / 63HZ | 47HZ / 63HZ | 47HZ / 63HZ | 47HZ / 63HZ | 47HZ / 63HZ | 47HZ / 63HZ | 47 – 63 Hz |
| AC holdup time (80% load) | 16MSEC | 16MSEC | 16MSEC | 16MSEC | 16MSEC | 16MSEC | 16 ms |
| Average Efficiency (Energy Star 5.0 Compliant) | | 87 – 90 – 87% @ 20 – 50 – 100% load | | 87 – 90 – 87% @ 20 – 50 – 100% load | | 87 – 90 – 87% @ 20 – 50 – 100% load | 87 – 90 – 87% @ 20 – 50 – 100% load |
| Typical Efficiency (Active PFC) | 65% | | 65% | | 65% | | N/A |
| **DC parameters** | | | | | | | |
| +3.3v output | 10.0A | 10.0A | 7.0 A | 7.0 A | 3.5A | 3.5A | N/A |
| +5.0v output | 13A | 13A | 15A | 15A | 11A | 11A | N/A |
| +12.0v output | 12VA/17A; 12VB/9A | 12VA/17A; 12VB/9A | 17.8A | 17.8A | 17A | 17A | +12VA - 12.5 A & +12VB - 6.0 A Note: +12VB Rated at 0.4A when in Standby Mode. |
| +5.0v auxiliary output | 4.0A | 4.0A | 4.0 | 4.0 | 4.0A | 4.0A | N/A |
| -12.0v output | 0.5A | 0.5A | 0.5A | 0.5A | 0.5A | 0.5A | 0.1 A |
| Max total power | 265W | 265W | 255W | 255W | 235W | 235W | 200W |
| Max combined +3.3v / +5.0v power | 90W | 90W | 90W | 90W | 60W | 60W | N/A |
| Max combined 12.0v power (note: only if more than one 12v rail) | 240W | 240W | N/A | N/A | N/A | N/A | 200W |
| BTUs/h (based on PSU max wattage) | 904 BTU | 904 BTU | 853 BTU | 853 BTU | 819 BTU | 819 BTU | 682 BTU |
| **Power Supply Fan** | 80*25mm | 80*25mm | 80*20/25mm | 80*20/25mm | 60*25mm | 60*25mm | N/A |
| **Compliance:** | | | | | | | |
| 1watt requirement | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Blue Angel Compliant | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Climate Savers / 80Plus Compliant | No | Yes | No | Yes | No | Yes | Yes |
| FEMP (CECP) Standby Power Compliant | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

## POWER

**NOTE: These form factors utilize a more efficient Active Power Factor Correction (APFC) power supply. Dell recommends only Universal Power Supplies (UPS) based on Sine Wave output for APFC PSUs, not an approximation of a Sine Wave, Square Wave, or quasi-Square Wave. If you have questions, please contact the manufacture to confirm the output type.**

| 3.0v CMOS battery (Type and estimated battery life) | | | | |
|---|---|---|---|---|
| Brand | Type | Voltage | Composition | Life |
| PANASONIC | CR-2032L/BE | 3V | Lithium | Continuous Discharge Under 15 kΩ Load to 2.5V End-Voltage.<br>20 ±2 .1183Hrs. or Longer.1133Hrs.or Longer after 12 months. |
| MITSUBISHI | CR2032 | 3V | Lithium | Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage.<br>20 ±2 .1000Hrs. or Longer.970Hrs.or Longer after 12 months.<br>0 ±2 . 910Hrs. or Longer.890Hrs.or Longer after 12 months. |

## AUDIO

| INTEGRATED REALTEK ALC269Q HIGH DEFINITION AUDIO | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **High Definition Stereo support** | X | X | X | X |
| **Number of channels** | 2 | | | |
| **Number of Bits / Audio resolution** | 16, 20, and 24-bit resolution | | | |
| **Sampling rate (recording/playback)** | Support 44.1K/48K/96K/192 kHz sample rates | | | |
| **Signal to Noise Ratio** | 98 dB DAC outputs, 90 dB for ADC inputs | | | |
| **Analog Audio** | X | X | X | X |
| **Dolby Digital** | | | | |
| **THX** | | | | |
| **Digital out (S/PDIF)** | | | | |
| **Audio Jack Impedance** | | | | |
| Microphone | 40K ohm~60K ohm | | | |
| Line-In | 40K ohm~60K ohm | | | |
| Line-Out | 100~150 ohm | | | |
| Headphone | 1~4 ohm | | | |
| **Internal Speaker Power Rating** | 2Watt (peak) / 1Watt (average) | | | |

## COMMUNICATIONS - NETWORK ADAPTER (NIC)

NOTE: MT supports full height card, DT supports low profile card. SFF supports low profile card.

| INTEGRATED INTEL® 82579 GIGABIT1 ETHERNET LAN 10/100/1000 | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **External Connector Type** | RJ45 | | | |
| **Data Rates supported** | 10/100/1000 Mbps | | | |
| **Controller Details** | | | | |
| Controller bus architecture | PCIe-based interface for S0 state, SMBus for Sx low power state | | | |
| Integrated memory | N/A | | | |
| Data transfer mode (example Bus-Master DMA) | N/A | | | |
| Power consumption (full operation per data rate connection speed) | 711mW  (Max.) | | | |
| Power consumption (standby operation) | 227mW (Max.) | | | |
| **IEEE standards compliance (example 802.1P)** | 802.3 | | | |
| **Hardware Certifications (example FCC, B, GS mark…)** | N/A | | | |
| **Boot ROM Support** | EEPROM (located in SPI) | | | |
| **Network Transfer Mode (example Full Duplex, Half Duplex)** | | | | |
| Network Transfer Rate (example 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 | 10 Mb (full/half-duplex) 100 Mb (full/half-duplex) 1000 Mb (full-duplex) | | | |

## COMMUNICATIONS - NETWORK ADAPTER (NIC) (CONT.)

| INTEGRATED INTEL® 82579 GIGABIT[1] ETHERNET LAN 10/100/1000 (CONT.) | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Environmental** | | | | |
| Operating temperature | 0° C to 85° C (32° F to 185° F) | | | |
| Operating humidity | 20% to 80% (non-condensing) | | | |
| **Operating System Driver Support** | Windows XP, Windows Vista SP2,Windows 7 | | | |
| **Manageability (examples WOL, PXE)** | WOL, PXE 2.1 | | | |
| **Management Capabilities Alerting** | Intel® Standard Manageability | | | |

[1] This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

## COMMUNICATIONS – INTEGRATED LAN

**NOTE: MT supports full height card, DT supports low profile card. SFF supports low profile card.**

| Broadcom NetXtreme 10/100/1000 PCIe Gigabit[1] Networking Card | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Connector Type** | RJ45 | | | |
| **Data Rates supported** | 10/100/1000 Mbps Half/Full duplex | | | |
| **Controller Details** | | | | |
| Controller bus architecture (example PCIe 1.0a x1) | PCIe c1.0a x1 | | | |
| Integrated memory | 64KBytes RX, 8KBytes TX | | | |
| Data transfer mode (example Bus-Master DMA) | Bus-Master DMA | | | |
| Power consumption (full operation per data rate connection speed) | 2.84W (860mA @ +3.3V) | | | |
| Power consumption (standby operation) | Less than 300mW | | | |
| **IEEE standards compliance (example 802.1P)** | 802.3, 802.2, 802.3x, 802.1p | | | |
| **Hardware Certifications (example FCC, B, GS mark…)** | FCC B, VCCI B, CE | | | |
| **Boot ROM Support** | No | | | |
| **Network Transfer Mode (example Full Duplex, Half Duplex)** | Full Duplex/Half Duplex | | | |
| Network Transfer Rate (example 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 | 10BASE-T (full-duplex) 20 Mbps Max* 100BASE-TX (half-duplex) 100 Mbps Max* 100BASE-TX (full-duplex) 200 MbpsMax* 1000BASE-T (full-duplex) 2000 Mbps Max* * Depends on the system environment. | | | |

[1] This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

## COMMUNICATIONS – INTEGRATED LAN (CONT.)

| BROADCOM NETXTREME 10/100/1000 PCIE GIGABIT[1] NETWORKING CARD (CONT.) | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Environmental** | | | | |
| Operating temperature | 0° C to 55° C (32° F - 131° F) | | | |
| Operating humidity | 5% ~ 85% (non-condensing) | | | |
| **Operating System Driver Support** | Windows®  7, Windows® XP, Windows Vista® Ultimate, Windows Vista® Business 32 bit/64 bit, Windows Vista Home Basic, Linux | | | |
| **Manageability (examples WOL, PXE)** | WOL, PXE2.1, ACPI | | | |
| **Management Capabilities Alerting (example ASF 2.0)** | None | | | |

[1] This term does not connote an actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

## COMMUNICATIONS – WIRELESS

NOTE: Native DisplayPort on system is not supported with optional wireless card on the DT and SFF chassis.

| DELL WIRELESS 1520 PCIE MINI PCIE WLAN CARD (802.11N) | MT | DT | SFF | USFF |
|---|---|---|---|---|
| External Connector Type | Custom WLAN Antenna Connector | | | |
| **Controller Details** | | | | |
| Controller bus architecture | Electrically compatible with the PCI Express Base Specification v1.1 (x1 lane) and PCIe v1.0a. | | | |
| WLAN standards supported | 802.11a, 802.11b, 802.11g, 802.11n | | | |
| 802.11b Data Rates supported | 11, 5.5, 2, 1 Mbps | | | |
| 802.11a Data Rates supported | 54, 48, 36, 24, 18, 12, 9, 6 Mbps | | | |
| 802.11g Data Rates supported | 54, 48, 36, 24, 18, 12, 9, 6 Mbps | | | |
| 802.11n Data Rates supported | 300, 270, 243, 240, 180, 150, 144, 135, 130, 120, 117, 115.5, 90, 86.667, 72.2, 65, 60, 57.8, 45, 43.3, 30, 28.9, 21.7, 15, 14.4, 7.2 Mbps | | | |
| **Encryption** | WEP 64-bit and 128-bit, TKIP, AES-CCMP 128-bit | | | |
| Operating temperature | 0 to +70 °C | | | |
| Operating humidity | Max Operating Humidity 85 % | | | |
| **Operating System Driver Support** | Windows 7, Windows XP 32/64, Vista 32/64 | | | |

## COMMUNICATIONS – USB 3.0 ADD-IN CARD

NOTE: MT supports full height (FH) cards and DT and SFF supports low profile (LP) cards.

| USB 3.0 PORT PCIE ADD-IN CARD | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Connector Type | PCI Express Gen. 2.0 X1 | | | |
| **Controller Details** | | | | |
| Controller bus architecture (example PCIe 1.0a x1) | PCI Express one lane (x1) | | | |
| Chipset | NEC µPD720200 | | | |
| IO Ports | 2 * USB3.0 port | | | |
| Power Consumption | Under 30 mA | | | |
| Connector | USB 3.0 A Type | | | |
| Full height USB3.0 add-in card | Optional | | | |
| Half height USB3.0 add-in card | | Optional | | |
| OS Support | Win XP, Win Vista and Win 7 | | | |

## COMMUNICATIONS – SERIAL / PARALLEL PORT PCIE ADD-IN CARD

**NOTE: MT supports full height (FH) cards and DT and SFF supports low profile (LP) cards.**

| Serial / Parallel port PCIE add-in card | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Connector Type | RS-232 and IEEE1284 | | | |
| Data Rates supported | 50bps ~115.2Kbps（Serial）&Maximum 1.8MBp(Parallel) | | | |
| **Controller Details** | | | | |
| Controller bus architecture (example PCIe 1.0a x1) | PCI Express one lane (x1) | | | |
| Driver Support | Microsoft Client XP/Vista/7 (X86/X64)<br>Microsoft Server 2000/2003/2008 (X86/X64)<br>Microsoft Embedded XP Embedded/POS Ready 2009/<br>Embedded System 2009<br>Linux Linux 2.4.x/2.6.x<br>DOS DOS | | | |
| Full height Serial / Parallel add-in card | Optional | | | |
| **Environment** | | | | |
| Operation Temperature | 0 to 60°C (32 to 140°F) | | | |
| Operation Humidity | 5 to 95% RH | | | |
| Storage Temperature | -20 to 85°C (-4 to 185°F) | | | |

## COMMUNICATIONS – SERIAL  PORT PCIE ADD-IN CARD

**NOTE: MT supports full height (FH) cards and DT and SFF supports low profile (LP) cards.**

| Low Profile Parallel port PCIE add-in card | MT | DT | SFF | USFF |
|---|---|---|---|---|
| Connector Type | IEEE1284 | | | |
| Data Rates supported | Maximum 1.8MBp | | | |
| **Controller Details** | | | | |
| Controller bus architecture (example PCIe 1.0a x1) | PCI Express one lane (x1) | | | |
| Driver Support | Microsoft Client XP/Vista/7 (X86/X64)<br>Microsoft Server 2000/2003/2008 (X86/X64)<br>Microsoft Embedded XP Embedded/POS Ready<br>2009/ Embedded System 2009<br>Linux Linux 2.4.x/2.6.x<br>DOS DOS | | | |
| Half height Serial add-in card | | Optional | | |
| **Environment** | | | | |
| Operation Temperature | 0 to 60°C (32 to 140°F) | | | |
| Operation Humidity | 5 to 95% RH | | | |
| Storage Temperature | -20 to 85°C (-4 to 185°F) | | | |

## GRAPHICS/VIDEO CONTROLLER

NOTE: MT supports full height card, DT supports low profile card. SFF supports low profile card.

| Onboard Graphics. 1. Intel HD Graphics [with Celeron/Pentium class CPU-GPU combo] 2. Intel HD Graphics 2000 [with iCore Dual/Quad core class CPU-GPU combo] | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Bus Type** | Integrated | | | |
| **GPU core clock** | Gen6 Core Intel® HD Graphics /HD Graphics 2000 @ 850MHz | | | |
| **Frame Buffer Memory (onboard and shared) Size and Speed** | Depends on available system memory(Up to 1.7GB with 4GB system Memory) | | | |
| **Overlay Planes** | Yes | | | |
| **Maximum Color Depth** | 32 bit | | | |
| **Maximum Vertical Refresh Rate** | 75 Hz | | | |
| **Multiple Display Support** | Yes | | | |
| **Operating Systems Graphics/ Video API Support** | OpenGL 3.0/DirectX 10.1 | | | |
| **Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/ or digital)** | Up to 2560x1600 @ 60Hz (DP) Up to 1920x1200 @ 60Hz (DVI & HDMI) Up to 2048x1536 @ 75Hz (VGA only) | | | |
| **External Connectors** | VGA, DisplayPort | | | |
| **DisplayPort** | | | | |
| **Bus Type** | DDPC | | | |
| **Maximum supported resolution** | Up to 2560x1600 @ 60Hz | | | |
| **Maximum power consumption** | N/A | | | |
| **External connectors** | DisplayPort | | | |
| **DisplayPort Audio Support** | Yes | | | |

[1] Up to 1.7 GB of system memory may be allocated to support integrated graphics, depending on operating system, system memory size and other factors.
[2] DVI and VGA can be used concurrently for multi-monitor display in DOS. The DisplayPort controller does not support multi-monitor display in DOS

## GRAPHICS/VIDEO CONTROLLER (CONT.)

| **1GB AMD RADEON™ HD6450** | **MT** | **DT** | **SFF** |
|---|---|---|---|
| Bus Type (example integrated or PCIe x16) | PCIEx16 | | |
| GPU core clock | 625Mhz | | |
| Frame Buffer Memory (onboard and shared) Size and Speed | 800Mhz | | |
| Maximum power consumption | 20W | | |
| Overlay Planes | Yes | | |
| Maximum Color Depth | 32-bit | | |
| Maximum Vertical Refresh Rate | 85Hz | | |
| Multiple Display Support | Yes | | |
| Operating Systems Graphics/ Video API Support | DX11 and OpenGL3 | | |
| Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital) | Dual-Link DVI Max: 2560 x 1600/32bpp @ 75Hz<br>DispalyPort Max: 2560 x 1600/32bpp @ 75Hz<br>VGA Max : 1920x1440/32bpp @ 75Hz<br>Min : 640x480/8bpp @ 60Hz | | |
| External connectors | 1 DVI-I and 1 DisplayPort | | |
| DisplayPort Audio Support | Yes | | |
| Dimensions of full height card inches/centimeters (L x H) | 6.6 x 4.7 / 16.764 x 12.0 | | |
| Dimensions of low profile card inches/centimeters (L x H) | | 6.6 x 3.35 / 16.764 x 8.5 | |
| **Environmental Operating Conditions (Non-Condensing):** | | | |
| Operating Temperature Range | 10°-50° C | | |
| Relative Humidity Range | 5-90% RH | | |
| Altitude Range | 0-20,000 ft. | | |

| **512MB AMD RADEON™ HD6350** | **MT** | **DT** | **SFF** |
|---|---|---|---|
| Bus Type (example integrated or PCIe x16) | PCIEx16 | | |
| GPU core clock | 650Mhz | | |
| Frame Buffer Memory (onboard and shared) Size and Speed | 800Mhz | | |
| Maximum power consumption | 20W | | |
| Overlay Planes | Yes | | |
| Maximum Color Depth | 32-bit | | |
| Maximum Vertical Refresh Rate | 85Hz | | |
| Multiple Display Support | Yes | | |
| Operating Systems Graphics/ Video API Support | DX11 and OpenGL3 | | |
| Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital) | DVI Max : 1920x1200/32bpp @ 75Hz<br>VGA Max: 1920x1440/32bpp @ 75Hz<br>Min : 640x480/8bpp @ 60Hz | | |
| External connectors | 1 DMS59 (DVI x2 or VGA x2) | | |
| Dimensions of full height card inches/centimeters (L x H) | 6.6 x 2.731 / 16.764 x 6.936 | | |
| Dimensions of low profile card inches/centimeters (L x H) | | 6.6 x 2.731 / 16.764 x 6.936 | |
| **Environmental Operating Conditions (Non-Condensing):** | | | |
| Operating Temperature Range | 10°-50° C | | |
| Relative Humidity Range | 5-90% RH | | |
| Altitude Range | 0-20,000 ft. | | |

## HARD DRIVES

| **3.5″ 1TB SATA 7200 RPM HDD** | |
| --- | --- |
| **Capacity (bytes)** | 1,000,204,886,016 |
| **Dimensions** inches (W x D x H) | 5.87 x 4 x 1 |
| **Interface type and Maximum speed** | Up to 6Gb/s (SATA 3.0)<br>Up to 3Gb/s (SATA 2.0) |
| **Internal buffer size** | 32 MB |
| **Average Seek Time** | 8.5 ms |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 1,953,525,168 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 5.0W, Active 10.0W(running IOmeter utility) |
| Spin Up Current (reference only) | 5V (1A) ,12V (2A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES (CONT.)

| 3.5″ 500GB SATA 7200 RPM HDD | |
|---|---|
| **Capacity (bytes)** | 500,107,862,016 |
| **Dimensions** inches (W x D x H) | 5.87 x 4 x 1 |
| **Interface type and Maximum speed** | Up to 6Gb/s (SATA 3.0)<br>Up to 3Gb/s (SATA 2.0) |
| **Internal buffer size** | 16 MB |
| **Average Seek Time** | 8.5 ms |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 976,773,168 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 5.0W, Active 10.0W(running IOmeter utility) |
| Spin Up Current (reference only) | 5V (1A) ,12V (2A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES(CONT.)

| 3.5″ 320GB SATA 7200 RPM HDD | |
|---|---|
| **Capacity (bytes)** | 320,072,933,376 |
| **Dimensions** inches (W x D x H) | 5.87 x 4 x 1 |
| **Interface type and Maximum speed** | Up to 6Gb/s (SATA 3.0)<br>Up to 3Gb/s (SATA 2.0) |
| **Internal buffer size** | 16 MB |
| **Average Seek Time** | 8.5 ms |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 625,142,448 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 5.0W, Active 10.0W(running IOmeter utility) |
| Spin Up Current (reference only) | 5V (1A) ,12V (2A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES(CONT.)

| 3.5″ 250GB SATA 7200 RPM HDD | |
|---|---|
| Capacity (bytes) | 250,059,350,016 |
| Dimensions inches (W x D x H) | 5.87 x 4 x 1 |
| Interface type and Maximum speed | Up to 6Gb/s (SATA 3.0)<br>Up to 3Gb/s (SATA 2.0) |
| Internal buffer size | 8 MB |
| Average Seek Time | 8.5 ms |
| Rotational Speed | 7200 rpm |
| Logical Blocks | 488,397,168 |
| Power Source | |
| Power Consumption (reference only) | Idle 5.0W, Active 10.0W(running IOmeter utility) |
| Spin Up Current (reference only) | 5V (1A) ,12V (2A) |
| Environmental Operating Conditions (Non-Condensing): | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| Environmental Non-Operating Conditions (Non-Condensing): | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES (CONT.)

| 2.5″ 500GB SATA 7200 RPM HDD | |
|---|---|
| **Capacity (bytes)** | 500,107,862,016 |
| **Dimensions** inches (W x D x H) | Approximately (3.93 x 2.75 x 0.374 inches) |
| **Interface type and Maximum speed** | Up to 3Gb/s |
| **Internal buffer size** | 16 MB |
| **Average Seek Time** | 12 ms (Read) |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 976,773,168 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 0.7W, Active 3.25W |
| Spin Up Current (reference only) | 5V (1A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES (CONT.)

| 2.5″ 500GB SATA 7200 RPM HYBRID HDD | |
|---|---|
| **Capacity (bytes)** | 500,107,862,016 |
| **Dimensions** inches (W x D x H) | Approximately (3.93 x 2.75 x 0.374 inches) |
| **Interface type and Maximum speed** | Up to 3Gb/s |
| **Internal buffer size** | 16 MB |
| **Average Seek Time** | 12 ms (Read) |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 976,773,168 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 0.8W, Active 3.25W |
| Spin Up Current (reference only) | 5V (1A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES (CONT.)

| 2.5″ 320GB WITH AND WITHOUT FIPS FULL DISK ENCRYPTION SATA HDD | |
|---|---|
| **Capacity (bytes)** | 320,072,933,376 |
| **Dimensions** inches (W x D x H) | 5.87 x 4 x 1 (includes sled) |
| **Interface type and Maximum speed** | Up to 3Gb/s |
| **Internal buffer size** | 16 MB |
| **Average Seek Time** | 8.5 ms |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 625,142,448 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 0.7W, Active 3.25W |
| Spin Up Current (reference only) | 5V (1A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 20% to 80% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES (CONT.)

| 2.5″ 250GB SATA 7200 RPM HDD | |
|---|---|
| **Capacity (bytes)** | 250,059,350,016 |
| **Dimensions** inches (W x D x H) | Approximately (3.93 x 2.75 x 0.374 inches) |
| **Interface type and Maximum speed** | Up to 3Gb/s |
| **Internal buffer size** | 16 MB |
| **Average Seek Time** | 12 ms (Read) |
| **Rotational Speed** | 7200 rpm |
| **Logical Blocks** | 488,397,168 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 0.7W, Active 3.25W |
| Spin Up Current (reference only) | 5V (1A) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | $5^0$C to $60^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $29^0$C |
| Altitude Range | -50 ft to 10000 ft |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | $-40^0$C to $65^0$C |
| Relative Humidity Range | 10% to 90% non-condensing |
| Maximum Wet Bulb Temperature | $38^0$C |
| Altitude Range | -50 ft to 35000 ft |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## HARD DRIVES (CONT.)

| 2.5″ 128GB[1] SATA SOLID STATE DRIVE | |
|---|---|
| Capacity (bytes) | 128,035,676,160 |
| Dimensions inches (W x D x H) | 3.94 x 2.75 x 0.374 |
| Interface type and Maximum speed | Up to 6Gb/s (SATA 3.0)<br>Up to 3Gb/s (SATA 2.0) |
| MTBF | 1M hours |
| Average Seek Time | n/a |
| Logical Blocks | 250,069,680 |
| **Power Source** | |
| Power Consumption (reference only) | Idle 1W, Active 1.25W |
| Spin Up Current (reference only) | 5V (1000mA) |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Temperature Range | 0°C to 70°C |
| Relative Humidity Range | 10 to 90% |
| Maximum Wet Bulb Temperature | 29°C |
| Altitude Range | -200 to 5,000 m |
| Op Shock (@0.5ms) | 1,500G |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Temperature Range | -55°C to 95°C |
| Relative Humidity Range | 5 to 95% |
| Maximum Wet Bulb Temperature | 38°C |
| Altitude Range | -200 to 10,600 m |

[1] For hard drives, GB means 1 billion bytes ; actual capacity varies with preloaded material and operating environment and will be less.

## OPTICAL DRIVES

| DVD +/- RW[1] | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **External Dimensions** inches/centimeters (Without Bezel – W x H x D) | 148.2mm(6in)/42mm (2in)/ 190.5 (max) | 148.2mm(6in)/42mm (2in)/ 190.5 (max) | 128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in) | 128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in) |
| **Weight (max) pounds/ kilograms** | 800g | 800g | 170g | 170g |
| **Interface type and speed** | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s |
| **Disc Capacity** | Standard | Standard | Standard | Standard |
| **Internal buffer size** | supplier dependent | supplier dependent | supplier dependent | supplier dependent |
| **Access Times (typical)** | supplier dependent | supplier dependent | supplier dependent | supplier dependent |
| **Maximum Data Transfer Rates** | | | | |
| Writes | 16x DVD/48x CD | 16x DVD/48x CD | 8x DVD/ 24x CD | 8x DVD / 24x CD |
| Reads | 16x DVD/48x CD | 16x DVD/48x CD | 8x DVD/ 24x CD | 8x DVD/ 24x CD |
| **Power Source** | | | | |
| DC Power Requirements | 12V, 5V | 12V, 5V | 5V | 5V |
| DC Current | 1200mA (12V)/ 900mA (5V) | 1200mA (12V)/ 900mA (5V) | 1000mA | 1000mA |
| **Environmental Operating Conditions (Non-Condensing):** | | | | |
| Operating Temperature Range | 5C to 50C | 5C to 50C | 5C to 50C | 5C to 50C |
| Relative Humidity Range | 20% to 80% RH | 20% to 80% RH | 20% to 80% RH | 20% to 80% RH |
| Maximum Wet Bulb Temperature | 29C | 29C | 29C | 29C |
| Altitude Range | -200 to 3048 | -200 to 3048 | -200 to 3048 | -200 to 3048 |
| **Environmental Non-Operating Conditions (Non-Condensing):** | | | | |
| Operating Temperature Range | -40C to 65C | -40C to 65C | -40C to 65C | -40C to 65C |
| Relative Humidity Range | 5% to 95% RH | 5% to 95% RH | 5% to 95% RH | 5% to 95% RH |
| Maximum Wet Bulb Temperature | 38C | 38C | 38C | 38C |
| Altitude Range | -200 to 10600m | -200 to 10600m | -200 to 10600m | -200 to 10600m |

[1] Discs burned with this drive may not be compatible with some existing drives and players; using DVD+R media provides maximum compatibility.

| DVD-ROM | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **External Dimensions** inches/centimeters (Without Bezel – W x H x D) | 148.2mm(6in)/42mm (2in)/ 190.5 (max) | 148.2mm(6in)/42mm (2in)/ 190.5 (max) | 128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in) | 128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in) |
| **Weight (max) pounds/ kilograms** | 750g | 750g | 165g | 165g |
| **Interface type and speed** | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s | SATA 1.5Gbit/s |
| **Disc Capacity** | Standard | Standard | Standard | Standard |
| **Internal buffer size** | supplier dependent | supplier dependent | supplier dependent | supplier dependent |
| **Access Times (typical)** | supplier dependent | supplier dependent | supplier dependent | supplier dependent |
| **Maximum Data Transfer Rates** | | | | |
| Writes | N/A | N/A | N/A | N/A |
| Reads | 16x DVD/48x CD | 16x DVD/48x CD | 8x DVD/ 24x CD | 8x DVD/ 24x CD |

## OPTICAL DRIVES (CONT.)

| DVD-ROM (CONT.) | MT | DT | SFF | USFF |
|---|---|---|---|---|
| **Power Source** | | | | |
| DC Power Requirements | 12V, 5V | 12V, 5V | 5V | 5V |
| DC Current | 1200mA (12V)/ 900mA (5V) | 1200mA (12V)/ 900mA (5V) | 800mA | 800mA |
| **Environmental Operating Conditions (Non-Condensing):** | | | | |
| Operating Temperature Range | 5C to 50C | 5C to 50C | 5C to 50C | 5C to 50C |
| Relative Humidity Range | 20% to 80% RH | 20% to 80% RH | 20% to 80% RH | 20% to 80% RH |
| Maximum Wet Bulb Temperature | 29C | 29C | 29C | 29C |
| Altitude Range | -200 to 3048m | -200 to 3048m | -200 to 3048m | -200 to 3048m |
| **Environmental Non-Operating Conditions (Non-Condensing):** | | | | |
| Operating Temperature Range | -40C to 65C | -40C to 65C | -40C to 65C | -40C to 65C |
| Relative Humidity Range | 5% to 95% RH | 5% to 95% RH | 5% to 95% RH | 5% to 95% RH |
| Maximum Wet Bulb Temperature | 38C | 38C | 38C | 38C |
| Altitude Range | -200 to 10600m | -200 to 10600m | -200 to 10600m | -200 to 10600m |

## SECURITY

| DELL DATA PROTECTION \| ENCRYPTION ENGINE | | MT | DT | SFF | USFF |
|---|---|---|---|---|---|
| Controller bus architecture | | PCI Express one lane (x1) | | | |
| Chip | | STM7007 | | | |
| Power consumption | Operational typical | 411mW | | | |
| | Idle typical | 40mW | | | |
| Connector | | PCI Express Gen 2.0 X1 | | | |
| Form factor | | Full height PEX | Half height PEX | Half height PEX | |
| OS Support | | Win XP, Win Vista and Win 7 | | | |

## MEDIA CARD READER (MCR)

NOTE: Dell 19 in 1 Media Card Reader (MCR) is supported via a F5 to F3 bay converter on the MT and DT and may require a slim line optical drive depending on selectable configuration.  MCR is not available on the SFF and USFF chassis.

| 19 IN 1 MEDIA CARD READER | MT/DT |
|---|---|
| **External Dimensions** inches/(centimeters) (With Bezel – W x H) | 3.99/(10.13cm)/1.0/(2.54cm) |
| **Weight (max) pounds/kilograms** | ~155g |
| **Interface type and speed** | USB 2.0, 480Mb/s |
| **Media Supported** ( maximum capacity supported will vary by Flash Media Types) | |
| Media Supported | CF I<br>CF II<br>Micro Drive (MD)<br>Secure Digital (SD)<br>SDHC<br>Mini Secure Digital (mini-SD)<br>Micro Secure Digital (Micro-SD)(with adapter)<br>Multi Media Card (MMC)<br>RS Multi Media Card (RS-MMC)<br>Multi Media Card plus (MMC plus)<br>RS Multi Media Card plus (RS-MMC plus)<br>Multi Media Card Micro(MMC Micro) (with adapter)<br>Memory Stick (MS)<br>Memory Stick Pro(MS Pro)<br>Memory Stick Pro Duo (MS Pro Duo)<br>Memory Stick Duo (MS-Duo)<br>Memory Stick Micro(MS Micro)(M2) (with adapter)<br>Smart Media (SM)<br>xD |
| Support Specification Versions: | Compact Flash type I/II Version 4.0<br>Smart Media (SM) Specification 2003<br>Multi Media Card (MMC) Specification 4.2<br>Secure Digital (SD) 2.0<br>Memory Stick Pro (MS-PRO) Specification 1.02<br>Memory Stick (MS) Specification 1.43<br>xD Specification 1.2 |
| **Power Source** | |
| Max Power Requirements | 12V, 5V |
| Supply Voltage Range | 4.75V ~ 5.25V |
| Power Consumption: | Standby less than 0.5mA @ 5.0VDC |
| **Environmental Operating Conditions (Non-Condensing):** | |
| Operating Temperature Range | 5C to 50C |
| Relative Humidity Range | 10% to 90% RH |
| **Environmental Non-Operating Conditions (Non-Condensing):** | |
| Operating Temperature Range | -40C to 65C |
| Relative Humidity Range | 5% to 95% RH |

## BIOS DEFAULTS

| | | |
|---|---|---|
| **System Configuration** | Integrated NIC: | Enable |
| | USB Controller: | Enable or disable |
| | Serial Port: | COM1 |
| | SATA Operation: | AHCI |
| | USB Controller: | Enable or disable the integrated USB Controller for:<br>●Boot support<br>●Rear Dual USB Ports<br>●Front USB Ports<br>●Rear Quad USB Ports |
| | SMART Reporting: | Disable |
| | Diskette Drive: | Enable |
| | Miscellaneous Devices: | Enables or disables the Wi-Fi Radio |
| | Drives: | Enable (SATA-0, SATA-1, SATA-2, SATA-3) |
| **Video** | Primary Video: | Auto |
| **Performance** | Multiple Core Support: | All |
| | Intel® SpeedStep™: | Enable |
| | C States Control: | Disable |
| | Limit CPUID Value: | Enable |
| | HyperThread control: | Enable |
| **Virtualization Support** | Virtualization: | Enable |
| | VT for Direct I/O: | Disable |
| **Security** | Administrator Password: | Not set |
| | System Password: | Not set |
| | Password Changes: | Enable |
| | TPM Security: | Disable |
| | CPU XD Support: | Enable |
| | Computrace®: | Deactivate |
| | SATA-0 Password: | Not set |
| **Power Management** | AC Recovery: | Power Off |
| | Auto On Time: | Disable |
| | Deep Sleep Control: | Disable |
| | Fan Control Override: | Disable |
| | Wake on LAN: | Disable |
| **Maintenance** | Service Tag: | Set by the factory |
| | Asset Tag: | Optional User Entry |
| | SERR Message: | Enable |
| | Numlock LED: | Enable |
| | USB Emulation: | Enable |
| | Keyboard Errors: | Enable |
| | POST HotKeys: | Enable |
| | Fast Boot: | Thorough |

# CHASSIS ENCLOSURE & VENTILATION REQUIREMENTS

## ENCLOSURE VENTILATION
If your enclosure has doors, they need to be of a type that allows at least 30% airflow through the enclosure (front and back).

## ENCLOSURE MINIMUM CLEARANCE
Leave a 10.2 cm (4 in.) minimum clearance on all vented sides of the computer to permit the airflow  required for proper ventilation.

## RECOMMENDED ENCLOSURE
Do not install your computer in an enclosure that does not allow airflow. This restricts the airflow and impacts your computer's performance, possibly causing it to overheat.

## OPEN DESK MINIMUM CLEARANCE
If your computer is installed in a corner, on a desk, or under a desk, leave at least 5.1 cm (2 in.) clearance from the back of the computer to the wall to permit the airflow required for proper ventilation.

# REGULATORY COMPLIANCE AND ENVIRONMENTAL

Product related conformity assessment and regulatory authorizations including Product Safety, Electromagnetic Compatibility (EMC), Ergonomics, and Communication Devices relevant to this product may be viewed at www.dell.com/regulatory_compliance.  The Regulatory Datasheet for this product is located at http://www.dell.com/regulatory_compliance.

Details of Dell's environmental stewardship program to conserve product energy consumption, reduce or eliminate materials for disposal, prolong product life span and provide effective and convenient equipment recovery solutions may be viewed at www.dell.com/environment.   Product related conformity assessment, regulatory authorizations, and information encompassing Environmental, Energy Consumption, Noise Emissions, Product Materials Information, Packaging, Batteries, and Recycling relevant to this product may be viewed by clicking the Design for Environment link on the webpage.

| | Reduce energy consumption, save money | Notes |
|---|---|---|
| | **Energy efficient design:** Allowing you compute more, and consume less. The OptiPlex 790 is 5.0 Energy Star® rated (containing a 80 PLUS® Gold certified power supply) which means  it uses energy-efficient power supplies, operates efficiently in multiple modes (Off, Sleep and Idle), and has advanced power-management features enabled. This level of efficiency helps you save money and energy associated with the use of your product. | All E-Star Selected configs |
| | Compare energy consumption with energy savings calculator:  www.dell.com/energy | All configs |
| | **Take control of your energy consumption:** Includes Energy Smart Power Management Settings which allows you to configure your computer to ensure the greatest energy saving in Inactive mode. | All Energy Smart Selected |
| | **Reduce, Re-use, Recycle** | |
| | **Recycle responsibly and invest in peace of mind:** Protect your company's  sensitive data and recycle responsibly with the Dell Asset Recovery & Recycling Service. Find out how: http://content.dell.com/us/en/enterprise/services-asset-recovery-services.aspx?redirect=2 | All configs |
| | **Protect developing countries from e-waste exports:** Because responsible recycling matters to you, it matters to us. In 2009, Dell was the first in the industry to ban the export of nonworking electronics or electronic waste (e-waste) to developing countries. Learn more: http://content.dell.com/us/en/corp/d/corp-comm/e-waste.aspx | All configs |
| | **Eco-responsible packaging** | |
| | Molded paper pulp packaging cushions (where available):  Making it easier to choose products with eco-responsible packaging, this product is cradled in our innovative molded paper pulp packaging. We know that responsible sourcing is important to you, so our pulp is made with 100% news print or recycled cardboard that is sourced near manufacturing operations to the reduce carbon footprint of shipping. | SFF configs only - regional disclaimer: only available in US, Canada and Malaysia |
| | Recycled milk jug packaging cushions (where available): Making it easier to choose products with eco-responsible packaging, this product is cradled in our innovative recylced milk jug HDPE packaging. We know that responsible sourcing is important to you, so our cushions are made with 100% recycled material that is sourced near manufacturing operations to the reduce carbon footprint of shipping. | MT and DT configs only - regional disclaimer: only available in US, Canada  and Malaysia |
| | **Recycled packaging:** Helping you to avoid sending unnecessary waste to landfills, this products ships with expanded polyethylene cushion packaging material which has a high percentage of recycled content (20% in APJ, 25% in EMEA and 65% in Americas). Using recycled materials encourages waste reduction and the conservation of resources. | USFF and regional configs not shipping HDPE or Molded Paper cushions |
| | **Shipped in recycled materials:** To help you reduce waste and reuse potentially useful materials, this product's box packaging is made with at least 25% recycled post consumer cardboard | All configs |
| | **Reduce packaging waste:** Dell is implementing a plan to simplify and revolutionize computer packaging that will result in the elimination of approximately 20 million pounds of packaging materials from 2008 through 2012.  Find out more: http://content.dell.com/us/en/corp/d/corp-comm/earth-products-packaging.aspx. This product is also offered in a multipack configuration upon request. | All configs. Multipack is available in the US |
| | **Environmentally Preferable Ingredients** | |
| | **Finding better ingredients:** Making it easy for you to reduce your environmental impact, all OptiPlex 790 enclosure plastics are built with a minimum of 10% Post Consumer Recycled Content. It also has reduced levels of environmentally sensitive materials such as mercury and arsenic | |
| | **Meets or exceeds world-wide environmental standards:** WW EU RoHS (Lead free), China RoHS and REACH compliant. | All configs |
| **Eco- Participation** | EPEAT US/Canada/France , Energy Star, TCO, Blue Angel<br>Learn more about Eco-Labels at http://content.dell.com/us/en/corp/d/corp-comm/dell-green-product-certifications.aspx | |

# ACOUSTIC NOISE EMISSION INFORMATION

**OPTIPLEX 790 MT**

| Component | Typical Configuration | High-end Configuration |
|---|---|---|
| CPU | Intel I3,3.3GHZ,2c SNB 65W | Intel I5,3.1GHZ , 4c SNB 95W |
| Memory | 2G DDR3 1333MHz | 2G DDR3 1333MHz(x2) |
| HDD (#, capacity) | 250G 7200RPM SATA2 | 500G 7200RPM SATA2(x2) |
| RMSD | 16X DVD+/-RW SATA HH | 16X DVD+/-RW SATA HH |
| Graphics Adapter | Intel® HD Graphics Family | AMD Radeon HD6350 |

The Declared Noise Emission in accordance with ISO 9296 for the Dell OptiPlex 780 MT is as follows:
(all values $L_{WAd}$ expressed in bels; 1 bel=10 decibels, re $10^{-12}$ Watts)

| Operating Mode | Typical Configuration Declared Sound Power ($L_{WAd}$) | High-end Configuration Declared Sound Power ($L_{WAd}$) |
|---|---|---|
| **Idle** | 3.7 | 3.9 |
| **HDD Operating** | 3.9 | 3.9 |
| **90% CPU** | 3.8 | 4.0 |
| **ODD Operating** | 5.1 | 5.1 |

The Declared A-weighted Sound Pressure Level in decibels (re $2\times10^{-5}$ Pa), at Operator, Bystander, and Desk Side Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows[1]:

| Operating Mode | Typical Configuration Declared Sound Pressure (LpA) | | | | High-end Configuration Declared Sound Pressure (LpA) | | | |
|---|---|---|---|---|---|---|---|---|
| | Table-Top | | Floor-Standing | | Table-Top | | Floor- Standing | |
| | Operator Position (LpA) | Bystander Position (LpA) | Operator Position (LpA) | Bystander Position (LpA) | Operator Position (LpA) | Bystander Position (LpA) | Operator Position (LpA) | Bystander Position (LpA) |
| **Idle** | 26.5 | 24.2 | 21.0 | 21.2 | 26.8 | 24.3 | 20.9 | 21.4 |
| **HDD Operating** | 26.7 | 24.9 | 21.1 | 20.9 | 26.8 | 23.9 | 21.8 | 21.4 |
| **90% CPU** | 26.7 | 24.8 | 21.6 | 21.3 | 30.0 | 26.3 | 22.4 | 22.0 |
| **ODD Operating** | 39.7 | 35.8 | 36.6 | 36.1 | 40.7 | 36.0 | 35.4 | 33.5 |

[1] All tests are conducted according to ISO 7779 and declared according to ISO 9296 except 90% CPU.  For this mode, the system CPU was stressed at 90% utilization with no other peripheral device actively seeking.  This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.
[2] Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2

## ACOUSTIC NOISE EMISSION INFORMATION

**OPTIPLEX 790 DT**

| Component | Typical Configuration | High-end Configuration |
|---|---|---|
| CPU | Intel I3,3.3GHZ,2c SNB 65W | Intel I5,3.1GHZ ,4c SNB 95W |
| Memory | 2G DDR3 1333MHz | 2G DDR3 1333MHz(x2) |
| HDD (#, capacity) | 250G 7200RPM SATA2 | 500G 7200RPM SATA2 |
| RMSD | 16X DVD+/-RW SATA HH | 16X DVD+/-RW SATA HH |
| Graphics Adapter | Intel® HD Graphics Family | AMD Radeon HD6350 |

The Declared Noise Emission in accordance with ISO 9296 for the Dell OptiPlex 780 DT is as follows:
(all values $L_{WAd}$ expressed in bels; 1 bel=10 decibels, re $10^{-12}$ Watts)

| Operating Mode | Typical Configuration Declared Sound Power ($L_{WAd}$) | High-end Configuration Declared Sound Power ($L_{WAd}$) |
|---|---|---|
| **Idle** | 3.7 | 3.7 |
| **HDD Operating** | 3.6 | 3.8 |
| **90% CPU** | 4.1 | 4.4 |
| **ODD Operating** | 5.1 | 5.1 |

The Declared A-weighted Sound Pressure Level in decibels (re $2 \times 10^{-5}$ Pa), at Operator, Bystander, and Desk Side Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows[1]:

| Operating Mode | Typical Configuration Declared Sound Pressure (LpA) | | | | High-end Configuration Declared Sound Pressure (LpA) | | | |
|---|---|---|---|---|---|---|---|---|
| | **Table-Top** | | **Floor-Standing** | | **Table-Top** | | **Floor- Standing** | |
| | **Operator Position (LpA)** | **Bystander Position (LpA)** | **Operator Position (LpA)** | **Bystander Position (LpA)** | **Operator Position (LpA)** | **Bystander Position (LpA)** | **Operator Position (LpA)** | **Bystand-er Posi-tion (LpA)** |
| **Idle** | 24.6 | 20.7 | 20.5 | 19.5 | 24.9 | 22.5 | 21.0 | 20.9 |
| **HDD Operating** | 24.9 | 21.2 | 20.7 | 19.8 | 24.2 | 21.8 | 21.0 | 20.9 |
| **90% CPU** | 29.4 | 24.1 | 20.8 | 21.3 | 33.4 | 30.7 | 27.1 | 26.2 |
| **ODD Operating** | 42.2 | 36.8 | 35.1 | 34.7 | 41.2 | 37.2 | 35.5 | 33.5 |

[1] All tests are conducted according to ISO 7779 and declared according to ISO 9296 except 90% CPU.  For this mode, the system CPU was stressed at 90% utilization with no other peripheral device actively seeking.  This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.
[2] Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2

# ACOUSTIC NOISE EMISSION INFORMATION

**OPTIPLEX 790 SFF**

| Component | Typical Configuration | High-end Configuration |
|---|---|---|
| CPU | Intel I3,3.3GHZ,2c SNB,65W | Intel I5,3.1GHZ ,4c SNB 95W |
| Memory | 2G DDR3 1333MHz | 2G DDR3 1333MHz(x2) |
| HDD (#, capacity) | 250G 7200RPM SATA2 | 500G 7200RPM SATA2 |
| RMSD | 16X DVD+/-RW SATA HH | 16X DVD+/-RW SATA HH |
| Graphics Adapter | Intel® HD Graphics Family | AMD Radeon HD6350 |

The Declared Noise Emission in accordance with ISO 9296 for the Dell OptiPlex 780 SFF is as follows:
 (all values $L_{WAd}$ expressed in bels; 1 bel=10 decibels, re $10^{-12}$ Watts)

| Operating Mode | Typical Configuration Declared Sound Power ($L_{WAd}$) | High-end Configuration Declared Sound Power ($L_{WAd}$) |
|---|---|---|
| **Idle** | 3.6 | 3.9 |
| **HDD Operating** | 3.6 | 4.0 |
| **90% CPU** | 3.9 | 4.3 |
| **ODD Operating** | 4.6 | 4.6 |

The Declared A-weighted Sound Pressure Level in decibels (re $2\times10^{-5}$ Pa), at Operator, Bystander, and Desk Side Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows[1]:

| Operating Mode | Typical Configuration Declared Sound Pressure (LpA) | | | | High-end Configuration Declared Sound Pressure (LpA) | | | |
|---|---|---|---|---|---|---|---|---|
| | Table-Top | | Floor-Standing | | Table-Top | | Floor- Standing | |
| | Operator Position (LpA) | Bystander Position (LpA) | Operator Position (LpA) | Bystander Position (LpA) | Operator Position (LpA) | Bystander Position (LpA) | Operator Position (LpA) | Bystander Position (LpA) |
| **Idle** | 25.3 | 21.6 | 19.6 | 18.6 | 29.4 | 25.8 | 22.1 | 21.4 |
| **HDD Operating** | 24.7 | 20.5 | 20.6 | 19.9 | 29.3 | 25.4 | 22.7 | 20.6 |
| **90% CPU** | 28.9 | 24.2 | 21.0 | 21.0 | 32.9 | 28.1 | 27.5 | 26.5 |
| **ODD Operating** | 36.9 | 30.6 | 29.5 | 27.7 | 38.0 | 32.4 | 33.2 | 29.6 |

[1] All tests are conducted according to ISO 7779 and declared according to ISO 9296 except 90% CPU. For this mode, the system CPU was stressed at 90% utilization with no other peripheral device actively seeking. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.
[2] Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2

# ACOUSTIC NOISE EMISSION INFORMATION

**OPTIPLEX 790 USFF**

| Component | Typical Configuration |
|---|---|
| CPU | Intel I3,3.3GHZ,2c SNB 65W |
| Memory | 1G DDR3 1333MHz |
| HDD (#, capacity) | 250G 7200RPM SATA2 |
| RMSD | 8X 12.7 SATA DVDRW |
| Graphics Adapter | Intel® HD Graphics Family |

The Declared Noise Emission in accordance with ISO 9296 for the Dell Optiplex 780 USFF is as follows:
(all values $L_{WAd}$ expressed in bels; 1 bel=10 decibels, re $10^{-12}$ Watts)

| Operating Mode | Typical Configuration Declared Sound Power ($L_{WAd}$) |
|---|---|
| **Idle** | 3.7 |
| **HDD Operating** | 3.7 |
| **90% CPU** | 4.3 |
| **ODD Operating** | 4.7 |

The Declared A-weighted Sound Pressure Level in decibels (re $2 \times 10^{-5}$ Pa), at Operator, Bystander, and Desk Side Positions are measured in accordance with ISO 7779 7.6.1, 7.6.2, and C.15.2 and declared in accordance with ISO 9296 for this product is as follows[1]:

| Operating Mode | Typical Configuration Declared Sound Pressure (LpA) | | | |
|---|---|---|---|---|
| | **Table-Top** | | **Floor-Standing** | |
| | **Operator Position (LpA)** | **Bystander Position (LpA)** | **Operator Position (LpA)** | **Bystander Position (LpA)** |
| **Idle** | 29.8 | 27.5 | 22.3 | 21.6 |
| **HDD Operating** | 30.8 | 29.2 | 21.9 | 21.5 |
| **90% CPU** | 36.3 | 34.9 | 26.4 | 25.0 |
| **ODD Operating** | 39.3 | 34.7 | 31.6 | 29.3 |

[1] All tests are conducted according to ISO 7779 and declared according to ISO 9296 except 90% CPU. For this mode, the system CPU was stressed at 90% utilization with no other peripheral device actively seeking. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques defined for the other reported operating modes.
[2] Declared Sound Power rounded to nearest tenth of a bel per ISO 9296 section 4.4.2