

DELL™

OPTIPLEX 580

TECHNICAL GUIDEBOOK

INSIDE THE OPTIPLEX 580

OVERVIEW

Mini Tower Computer (MT) View	4-5
Desktop Computer (DT) View	6-7
Small Form Factor Computer (SFF) View	8-9

MARKETING SYSTEM CONFIGURATIONS

Operating System, Chipset	10
Processor	11-12
Advanced System Manageability Modes	12
Memory	13
Drives and Removable Storage	14
System Board Connectors	15
Graphics/Video Controller, External Ports/Connectors	16
Communications—Network Adapter (NIC), Modem	17
Audio and Speakers, Keyboard and Mouse	17
Security, Service and Support, Software	18

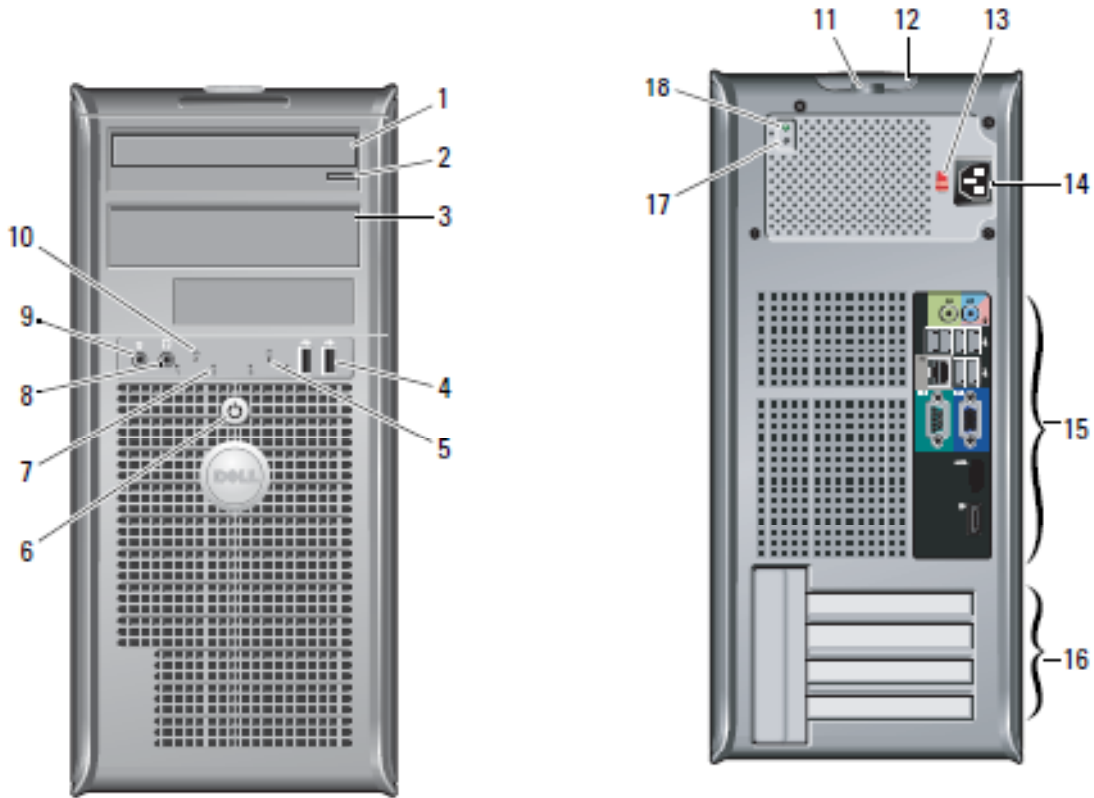
DETAILED ENGINEERING SPECIFICATIONS

System Dimensions (Physical)	19
System Board Connector Maximum Allowable Dimensions	19-20
System Level Environmental and Operating Conditions	21
Power	21-22
Audio	22
Communications	23-25

Graphics/Video Controller	25-30
Hard Drives	30-37
Optical Drive	37-40
BIOS Defaults	40-41
Chassis Enclosure and Ventilation Requirements	42-43
Acoustic Noise Emission Information	44-47

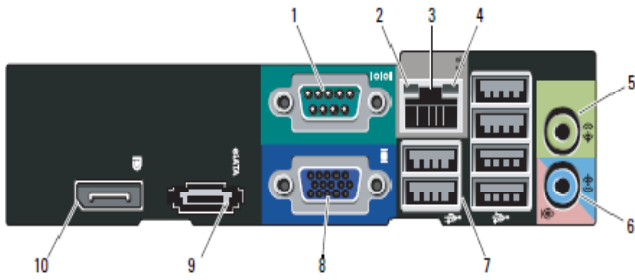
Mini Tower (MT) Computer View

Front and Back View



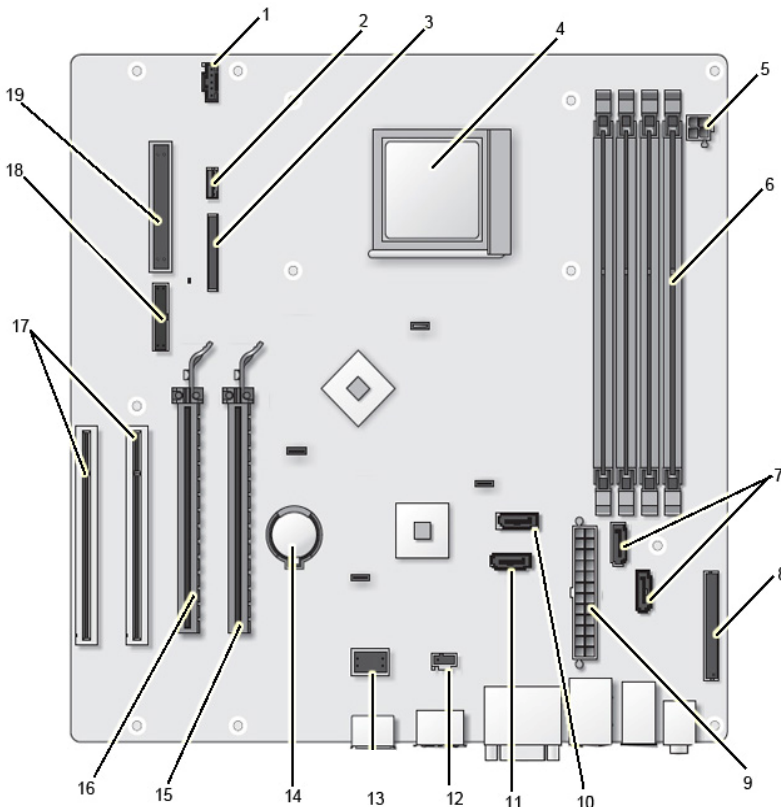
- 1 CD/DVD drive
- 2 CD/DVD drive eject button
- 3 CD/DVD drive panel
- 4 USB 2.0 connectors (2)
- 5 drive activity light
- 6 power button, power light
- 7 diagnostic lights (4)
- 8 headphone connector
- 9 microphone connector
- 10 network connectivity light
- 11 padlock ring
- 12 cover-release latch, security cable slot
- 13 voltage selector switch
- 14 power cable connector
- 15 back panel connectors
- 16 expansion card slots (4)
- 17 power supply diagnostic button
- 18 power supply diagnostic light

MT Back Panel Connectors



- 1 serial connector
- 2 link integrity light
- 3 network adapter connector
- 4 network activity light
- 5 line-out connector
- 6 line-in/microphone connector
- 7 USB 2.0 connectors (6)
- 8 VGA connector
- 9 eSata connector
- 10 DisplayPort connector

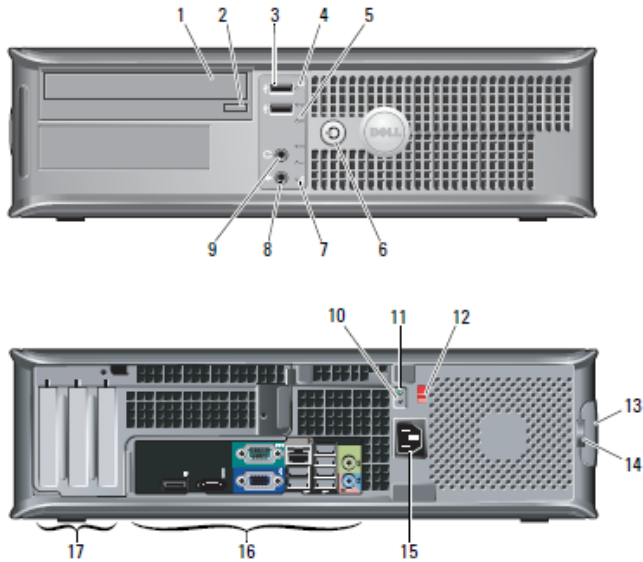
MT System Board



- 1 Fan connector (FAN_CPU)
- 2 Speaker connector (INT_SPKR)
- 3 N/A
- 4 Processor connector (CPU)
- 5 Processor power connector (12VPOWER)
- 6 Memory module connectors (4)
- 7 SATA connectors (SATA0, SATA1)
- 8 Front-panel connector (FRONTPANEL)
- 9 Power connector (POWER)
- 10 SATA connectors (SATA2)
- 11 SATA connectors (SATA3)
- 12 Intrusion switch connector (INTRUDER)
- 13 N/A
- 14 Battery socket (BATTERY)
- 15 PCI Express x16 connector (SLOT1)
- 16 PCI Express x4 connector (SLOT2)
- 17 PCI connector (SLOT3, SLOT4)
- 18 PS/2 or serial connector (SERIAL2)
- 19 Floppy drive connector (not offered)

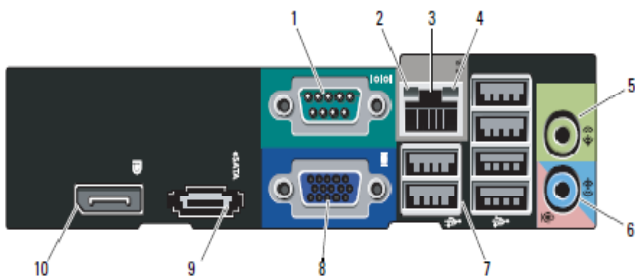
Desktop (DT) Computer View

Front and Back View



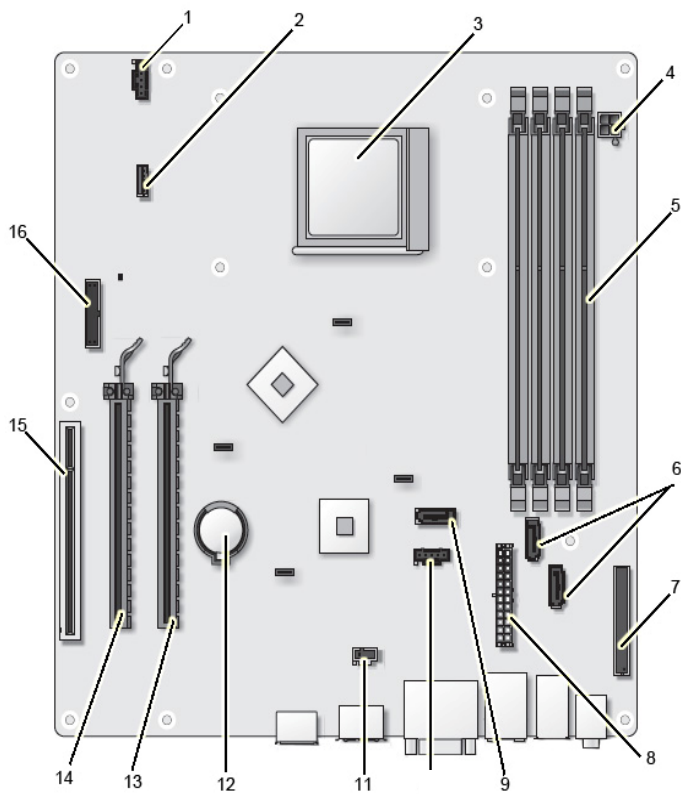
- 1 CD/DVD drive
- 2 CD/DVD drive eject button
- 3 USB 2.0 connectors (2)
- 4 drive activity light
- 5 diagnostic lights (4)
- 6 power button, power light
- 7 network connectivity light
- 8 microphone connector
- 9 headphone connector
- 10 power supply diagnostic button
- 11 power supply diagnostic light
- 12 voltage selector switch
- 13 cover-release latch, security cable slot
- 14 padlock ring
- 15 power cable connector
- 16 back panel connectors
- 17 expansion card slots (3)

DT Back Panel Connectors



- 1 serial connector
- 2 link integrity light
- 3 network adapter connector
- 4 network activity light
- 5 line-out connector
- 6 line-in/microphone connector
- 7 USB 2.0 connectors (6)
- 8 VGA connector
- 9 eSata connector
- 10 DisplayPort connector

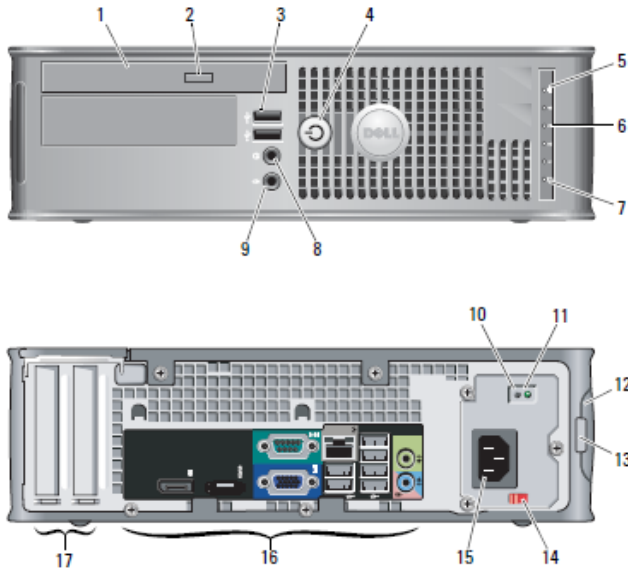
DT System Board



- 1 Fan connector (FAN_CPU)
- 2 Speaker connector (INT_SPKR)
- 3 Processor connector (CPU)
- 4 Processor power connector (12VPOWER)
- 5 Memory module connectors (4)
- 6 SATA connectors (SATA0, SATA1)
- 7 Front-panel connector (FRONTPANEL)
- 8 Power connector (POWER)
- 9 SATA connectors (SATA2)
- 10 N/A
- 11 Intrusion switch connector (INTRUDER)
- 12 Battery socket (BATTERY)
- 13 PCI Express x16 connector (SLOT1)
- 14 PCI Express x4 connector (SLOT2)
- 15 PCI connector (SLOT3)
- 16 PS/2 or serial connector (SERIAL2)

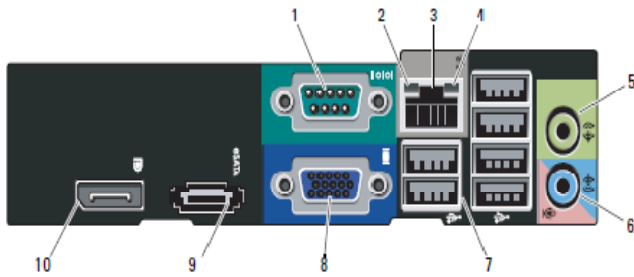
Small Form Factor (SFF) Computer View

Front and Back View



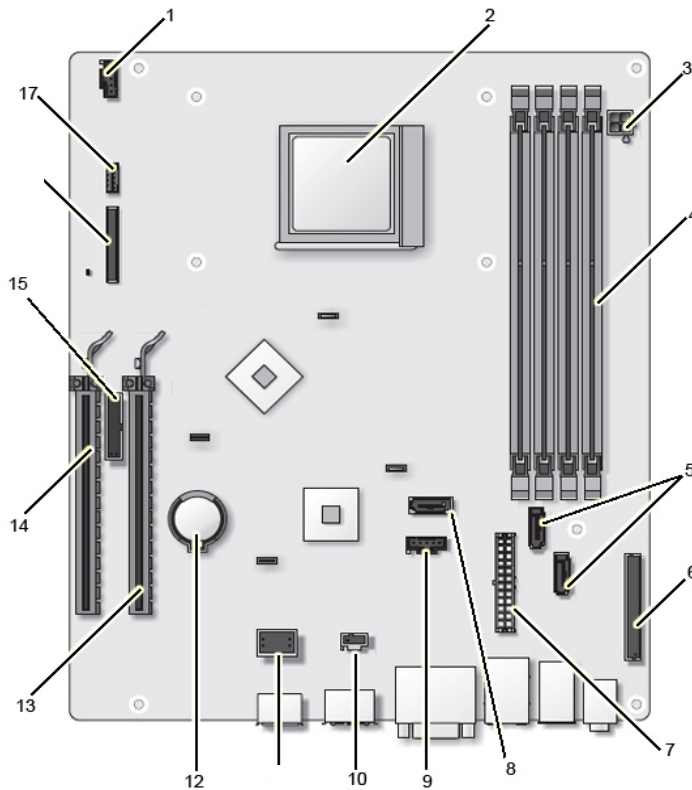
- 1 CD/DVD drive
- 2 CD/DVD drive eject button
- 3 USB 2.0 connectors (2)
- 4 drive activity light
- 5 diagnostic lights (4)
- 6 power button, power light
- 7 network connectivity light
- 8 microphone connector
- 9 headphone connector
- 10 power supply diagnostic button
- 11 power supply diagnostic light
- 12 voltage selector switch
- 13 cover-release latch, security cable slot
- 14 padlock ring
- 15 power cable connector
- 16 back panel connectors
- 17 expansion card slots (3)

SFF Back Panel Connectors





- 1 serial connector
- 2 link integrity light
- 3 network adapter connector
- 4 network activity light
- 5 line-out connector
- 6 line-in/microphone connector
- 7 USB 2.0 connectors (6)
- 8 VGA connector
- 9 eSata connector
- 10 DisplayPort connector

SFF System Board



- 1 Fan connector (FAN_CPU)
- 2 Processor connector (CPU)
- 3 Processor power connector (12VPOWER)
- 4 Memory module connectors (4)
- 5 SATA drive connectors (SATA0, SATA1)
- 6 Front-panel connector (FRONTPANEL)
- 7 Power connector (POWER)
- 8 SATA connectors (SATA2)
- 9 Fan connector (FAN_HDD)
- 10 Intrusion switch connector (INTRUDER)
- 11 N/A
- 12 Battery socket (BATTERY)
- 13 PCI Express x16 connector (SLOT1)
- 14 PCI Express x4 connector (SLOT2)
- 15 PS/2 or serial connector (SERIAL2)
- 16 N/A
- 17 Speaker connector (INT_SPKR)

Marketing System Configurations

 **NOTE:** Offerings may vary by region. 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

 **NOTE:** One of the following Operating Systems will be preinstalled.

	MT	DT	SFF
Windows 7® operating system	Windows 7® Home Basic (32 bit), Windows 7® Home Premium (32 bit), Windows 7® Professional (32 and 64 bit), Windows 7® Ultimate (32 bit)		
Windows Vista® operating system	Windows Vista® SP2 Home Basic (32 bit) Windows Vista® SP2 Business (32 and 64 bit), Windows Vista® SP2 Ultimate (32 bit), Windows Vista® SP2 Business downgrade via Windows 7® Professional Windows Vista® SP2 Ultimate downgrade via Windows 7® Ultimate		
Windows XP® operating system	Windows XP® Professional SP3 (32 bit) downgrade via Windows 7® Professional or Ultimate Windows XP® Professional SP3 (32 bit) downgrade via Windows Vista® Business or Ultimate		
Other	Ubuntu® Linux® (select countries) FreeDOS for (n-series),		
OS Media Support	X	X	X

Chipset

	MT	DT	SFF
Chipset	AMD 785G		
Non-volatile memory on chipset			
BIOS Configuration SPI (Serial Peripheral Interface)	8Mbit (1MB) located at SPI_1 on chipset		
TPM 1.2 Security Device (Trusted Platform Module) ¹	16KB located at TPM on chipset		
Non-TPM	Available in select countries		
NIC EEPROM	LOM configuration contained within SPI_1		

¹TPM not available in some regions

Processor

NOTE: Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and synchronized 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
AMD Phenom II Quad Core			
AMD Phenom II Quad Core B95/ 3.0GHz, 8M	X	X	X
AMD Phenom II Quad Core B93/ 2.8GHz, 8M	X	X	X
AMD Phenom II Triple Core			
AMD Phenom II Triple Core B75/ 3.0GHz, 7.5M	X	X	X
AMD Phenom II Triple Core B73/ 2.8GHz, 7.5M	X	X	X
AMD Phenom II Dual Core			
AMD Phenom II Dual Core B55/ 3.0GHz, 7M	X	X	X
AMD Phenom II Dual Core B53/ 2.8GHz, 7M	X	X	X
AMD Athlon Quad Core			
AMD Athlon II Quad Core 630/ 2.8GHz, 2M	X	X	X
AMD Athlon II Quad Core 620/ 2.6GHz, 2M	X	X	X
AMD Athlon Triple Core			
AMD Athlon II Triple Core 435/ 2.9GHz, 1.5M	X	X	X
AMD Athlon II Triple Core 425/ 2.7GHz, 1.5M	X	X	X
AMD Athlon Dual Core			
AMD Athlon II Dual Core B24/ 3.0GHz, 2M	X	X	X

	MT	DT	SFF
AMD Athlon II Dual Core B22/ 2.8GHz, 2M	X-GSP	X-GSP	X-GSP
AMD Athlon II Dual Core 250/ 3.0GHz, 2M	X	X	X
AMD Athlon II Dual Core 245/ 2.9GHz, 2M	X	X	X
AMD Athlon II Dual Core 240/ 2.8GHz, 2M	X	X	X
AMD Sempron Single Core			
AMD Sempron Single Core 140/ 2.7GHz, 1M	X	X	X

Advanced System Manageability Mode

 **NOTE:** Hardware management mode options allow you to select the right systems management feature support for your enterprise. Dell's innovative approach to scalable remote client management offers you a choice of built-in hardware management capabilities across platform offerings.

The latest generation of Broadcom TruManage technology provides the capability to manage your install base of systems regardless of the power state or hardware functionality of the system.

This functionality allows IT to address issues remotely rather than having to physically visit systems.

The OptiPlex™ 580 supports Broadcom® TruManage™ technology which supports the following features:
BIOS Management, asset reporting, remote troubleshooting and repair , power on f o r remote patching/updating.

*The functionality described above requires an appropriate software management console

	MT	DT	SFF
Broadcom TruManage Systems Management Ready	X	X	X

Memory

Your computer supports a maximum of 16 GB of memory when you use four 4-GB DIMMs; however, 32-bit operating systems, such as the 32-bit version of Microsoft® Windows® XP, can only use a maximum of 4 GB of address space. Moreover, certain components within the computer require address space in the 4GB range. Any address space reserved for these components cannot be used by computer memory; therefore, the amount of memory available to the operating system is less than 4GB.

 **NOTE:** The entire 16-GB memory range is available to 64-bit operating systems.

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.

	MT	DT	SFF
Type: DDR3 Synch DRAM Non-ECC Memory			
DIMM Slots	4	4	4
DIMM Capacities	Up to 16GB	Up to 16GB	Up to 16GB
Minimum Memory	1GB	1GB	1GB
Maximum Memory with 1066MHz speed memory	16GB ¹	16GB ¹	16GB ¹
Configurations:			
1066MHz Memory configurations			
16GB ¹ DDR3 Non-ECC SDRAM, 1066MHz, (4 DIMM)	X	X	X
8GB ¹ DDR3 Non-ECC SDRAM, 1066MHz, (4 DIMM)	X	X	X
8GB ¹ DDR3 Non-ECC SDRAM, 1066MHz, (2 DIMM)	X	X	X
4GB ¹ DDR3 Non-ECC SDRAM, 1066MHz, (4 DIMM)	X	X	X
4GB ¹ DDR3 Non-ECC SDRAM, 1066MHz, (2 DIMM)	X	X	X
4GB ¹ DDR3 Non-ECC SDRAM, 1066MHz, (1 DIMM)	X	X	X
3GB DDR3 Non-ECC SDRAM, 1066MHz, (3 DIMM)	X	X	X
2GB DDR3 Non-ECC SDRAM, 1066MHz, (2 DIMM)	X	X	X
2GB DDR3 Non-ECC SDRAM, 1066MHz, (1 DIMM)	X	X	X
1GB DDR3 Non-ECC SDRAM, 1066MHz, (1 DIMM)	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
Bays:			
3.5-inch bay (External)	1	1	1 (slimline)
5.25-inch bay (External)	2	1	1 (slimline)
Hard Drives Supported (Internal and External)	2 x 3.5" Or 2 x 2.5"	1 x 3.5" Or 2 x 2.5"	1 x 3.5" Or 2 x 2.5"
Optical Drives Supported (External)	2	1	1 (slimline)
Interface:			
SATA	4	3	3
3.5" Hard Drives:			
160GB ¹ SATA 10K 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
160GB ¹ SATA 7200 RPM HDD	X	X	X
2.5" Hard Drives			
128GB ¹ SATA Solid State HDD	X	X	X
64GB ¹ SATA Solid State HDD	X	X	X
320GB ¹ SATA 7200 RPM HDD	X	X	X
250GB ¹ SATA 7200 RPM HDD	X	X	X
160GB ¹ SATA 7200 RPM HDD	X	X	X
3.5" RAID 1 Data Protection: (includes two matching capacity/speed hard drives)			
160GB ¹ SATA 10K RPM HDD	X		
500GB ¹ SATA 7200 RPM HDD	X		
320GB ¹ SATA 7200 RPM HDD	X		
250GB ¹ SATA 7200 RPM HDD	X		
160GB ¹ SATA 7200 RPM HDD	X		
2.5" RAID 1 Data Protection: (includes two matching capacity/speed hard drives)			
320GB ¹ SATA 7200 RPM HDD	X	X	X
250GB ¹ SATA 7200 RPM HDD	X	X	X

	MT	DT	SFF
160GB ¹ SATA 7200 RPM HDD	X	X	X
3.5" RAID 0 Performance: (includes two matching capacity/speed hard drives)			
320GB ¹ SATA 10K RPM HDD	X		
1TB ¹ SATA 7200 RPM HDD	X		
500GB ¹ SATA 7200 RPM HDD	X		
320GB ¹ SATA 7200 RPM HDD	X		
2.5" RAID 0 Performance: (includes two matching capacity/speed hard drives)			
500GB ¹ SATA 7200 RPM HDD	X	X	X
320GB ¹ SATA 7200 RPM HDD	X	X	X
Optical Drive: (SFF requires a slimline optical drive)			
DVD+/-RW ²	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
DVD+/-RW ² with Blu-Ray-ROM	SATA 1.5Gbit/s	SATA 1.5Gbit/s	SATA 1.5Gbit/s

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.

System Board Connectors

 **NOTE: See Detailed Engineering Specifications for maximum card dimensions support.**

	MT	DT	SFF
PCI Slot(s): number of	2	1	0
PCIe x16 Slot: number of	1	1	1
PCIe x16 (wired as x4) Slot: number of	1	1	1
Flexbay	1	1	1
Serial ATA (SATA)	4	3	3


Graphics/Video Controller

 **NOTE:** MT supports full height card, DT supports low profile card or full height card with optional riser. SFF supports low profile card.

	MT	DT	SFF
Integrated ATI Radeon HD 4200 Graphics ¹	Integrated on system board with specific processors		
Enhanced Graphic/Video Options			
256MB AMD RADEON HD 3450 Graphics, dual DVI or VGA and TV Out	Optional full height or low profile card		
256MB NVIDIA 9300GE Graphics, dual DVI or VGA and TV Out	Optional full height or low profile card		
256MB AMD RADEON HD 3470 Graphics, dual DP	Optional full height or low profile card		
512MB AMD RADEON HD4550 Graphics, dual DP	Optional full height or low profile card		
512MB NVIDIA NVS420 Graphics, quad DP or DVI	NA	NA	Low Profile

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.


External Ports/Connectors

 **NOTE:** MT supports full height cards, DT supports low profile cards or full height cards with optional riser. SFF supports low profile cards.

See chassis diagrams section for port/connector locations

	MT	DT	SFF
USB 2.0 (includes two internal on MT, DT and SFF)	8	8	8
Serial	One rear		
PS/2	NA		
eSATA	One rear		
Parallel	NA		
Network Connector (RJ-45)	One rear		
Video: (enabled with specific processors)			
VGA	One rear		
Display Port	One rear		
Audio:			
Microphone-in	One minijack front		
Headphone	One minijack front		
Stereo line-in/micropone	One minijack rear		
Speakers line out	One minijack rear		

Communications - Network Adapter (NIC) –

 NOTE: MT supports full height card, DT supports low profile card or full height card with optional riser. SFF supports low profile card.

	MT	DT	SFF
Integrated Broadcom 5761 Ethernet LAN 10/100/1000 (Remote Wake Up, PXE support)	Integrated on system board		
Broadcom NetXtreme 10/100/1000 PCIe Gigabit Networking Card (5722)	Supports full height	Low-profile or full height card with optional riser	Supports low profile 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
Broadcom® 1505 PCIe WLAN card -802.11 draft-N WiFi (with Remote Wake Up support)	Optional full height or low profile card		

Audio and Speakers

	MT	DT	SFF
RealTek ALC269 High Definition Audio	Integrated on system board		
Dell AX210 USB Stereo Speakers	Optional		
Dell AX510/AX510PA Dell Flat Panel Display Soundbar	Optional		
Dell AY410 Sting 2.1 Multimedia Speaker System	Optional		

Keyboard and Mouse

	MT	DT	SFF
Dell USB Keyboard	Optional		
Dell USB QuietKey Keyboard	Optional		
Dell USB Multimedia Pro Keyboard	Optional		
Dell USB Entry Mouse	Optional		
Dell Laser Mouse	Optional		

Security

	MT	DT	SFF
Trusted Platform Module (TPM) 1.2 ¹	Integrated on system board		
Chassis Intrusion Switch	Standard		
Chassis lock slot	Standard		

¹TPM not available in some regions

Service and Support

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

	MT	DT	SFF
3 Year Limited Warranty ¹ (3-3-0)	Standard		
3 Year Next Business Day On-site ² Service (3-3-3)	Optional		
Dell 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.

Software

	MT	DT	SFF
Dell Client Manager	Available via Dell.com		
Dell Control Point	Standard		
Dell Backup & Recovery Manager	Optional		
Norton Internet Security 2010	90 Day Trial or Optional Subscription		
McAfee 10 Security Center	90 Day Trial or Optional Subscription		

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
Chassis Volume liters	32.62	15.08	8.00
Chassis Weight*1 pounds/kilograms	25.3 / 11.6	16.5 / 7.26	13 / 5.90
Chassis Dimensions: (HxWxD)			
Height inches/centimeters	15.8 / 40.8	4.4 / 11.4	3.5 / 9.26
Width inches/centimeters	7.4 / 18.7	15.4 / 39.9	11.8 / 31.4
Depth inches/centimeters	17.2 / 43.3	13.7 / 35.3	12.9 / 34
Shipping Weight*1 pounds/kilograms includes packaging materials	43.5 / 19.73	28.0 / 12.7	11.25/ 28.6
Packaging Parameters (HxWxD)2			
Height inches/centimeters	22.06/ 56.0	20.35/ 51.7	20.75/ 52.7
Width inches/centimeters	20.94/ 53.2	20.04/ 50.9	16.38/ 41.6
Depth inches/centimeters	14.56/ 37.0	11.96/ 30.4	11.25/ 28.6

1 Weights are approximates and may change based on system configuration and included accessories.

2 Dimensions are DAO specific. Each region has unique packing.

System Board Connector Maximum Allowable Dimensions

	MT	DT	SFF
PCI Slot(s) Dimensions: (HxL)	2	1	0
Height inches/centimeters	4.376/11.115	2.731/6.89	
Length inches/centimeters	6.6/16.765*	6.6/16.765	
PCIe x16 Slot Dimensions: (HxL)	1	1	1
Height inches/centimeters	4.376/11.115	2.731/6.89	

Length inches/centimeters	6.6/16.765*	6.6/16.765	
PCIe x16 (wired as x4) Slot Dimensions: (HxL)	1	1	1
Height inches/centimeters	4.376/11.115	2.731/6.89	
Length inches/centimeters	6.6/16.765*	6.6/16.765	

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

** 6.9/17.53 in/cm is longer than the standard Half-Length Card

System Level Environmental and Operating Conditions

	MT	DT	SFF
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	5 to 350 Hz at 0.0002 G2/Hz		
Non-Operating	5 to 500 Hz at 0.001 to 0.01 G2/Hz		
Maximum Shock			
Operating	40 G +/- 5% with pulse duration of 2 msec +/- 10% (equivalent to 20 in/sec [51 cm/sec])		
Non-Operating	105 G +/- 5% with pulse duration of 2 msec +/- 10% (equivalent to 50 in/sec [127 cm/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

	MT		DT		SFF	
	APFC	EPA	APFC	EPA	APFC	EPA
Power Supply Wattage	305W	255W	255W	255W	235W	235W
AC input Voltage Range	90 – 264Vac	90 – 264Vac	90 – 264Vac	90 – 264Vac	90 – 264Vac	90 – 264Vac
AC input current (low ac range/high AC range)	5.6/2.8 Arms	3.6/1.8 Arms	5.0/2.5 Arms	4.0/2.0 Arms	4.5/2.25 Arms	3.5/1.75 Arms
AC input Frequency	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz
AC holdup time (80% load)	16 ms	16 ms	16 ms	16 ms	16 ms	16 ms
Average Efficiency (Energy Star Compliant)		85 – 88 – 85% @ 20 – 50 – 100% load		85 – 88 – 85% @ 20 – 50 – 100% load		85 – 88 – 85% @ 20 – 50 – 100% load
Minimum Efficiency (Active PFC)	65%		65%		65%	
DC parameters						
+3.3v output	8.0 A	8.0 A	5.0 A	5.0 A	5.0 A	5.0 A
+5.0v output	16.0 A	15.0 A	15.0 A	15.0 A	16.0 A	16.0 A
+12.0v output	15.0 A & 10.0 A	13.0 A & 7.0 A	18.0 A	18.0 A	17.0 A	17.0 A
+5.0v auxiliary output	4.0 A	4.0 A	4.0 A	4.0 A	4.0 A	4.0 A
-12.0v output	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A
Max total power	305 W	255 W	255 W	255 W	235 W	235 W
Max combined +3.3v / +5.0v power	80 W	80 W	91.5 W	91.5 W	88 W	88 W
Max combined 12.0v power (note: only if more than one 12v rail)	240W	220W	N/A	N/A	N/A	N/A
BTUs/h (based on PSU max wattage)	1603 BTU	1000 BTU	1341 BTU	1000 BTU	1235 BTU	921 BTU
Power Supply Fan	80 x 25mm	80 x 25mm	92 x 25mm	92 x 25mm	80 x 15mm or 80 x 20mm	80 x 15mm or 80 x 20mm
Compliance:						


Energy Star Compliant	No	Yes	No	Yes	No	Yes
Blue Angel Compliant	Yes	Yes	Yes	Yes	Yes	Yes
Climate Savers / 80Plus Compliant	No	Yes	No	Yes	No	Yes
FEMP Standby Power Compliant	Yes	Yes	Yes	Yes	Yes	Yes
TCO Compliant	Yes	Yes	Yes	Yes	Yes	Yes
3.3v CMOS battery (type and estimated battery life)	3-V CR2032 lithium coin cell. Est. 5 year life					

Audio

Integrated RealTek ALC269 High Definition Audio

	MT	DT	SFF
High Definition Stereo support	X	X	X
Number of channels	2		
Number of Bits / Audio resolution	16, 20, and 24-bit resolution		
Sampling rate (recording/playback)	Variable Any multiple or sub-multiple of 48kHz or 44.1kHz		
Signal to Noise Ratio	98dB audio outputs, -98dB audio inputs		
Analog Audio	X	X	X
Dolby Digital			
THX			
Digital out (S/PDIF)			
Audio Jack Impedance			
Microphone	150 k Ω		
Line-In	150 k Ω		
Line-Out	190 Ω		
Headphone	.5 Ω		
Internal Speaker Power Rating	2W		


Communications - Integrated LAN

 NOTE: MT supports full height card, DT supports low profile card or full height card with optional riser. SFF supports low profile card.

Integrated Broadcom 5761 Ethernet LAN 10/100/1000	MT	DT	SFF
External Connector Type	RJ45		
Data Rates supported	10/100/1000 Mbps		
Controller Details			
Controller bus architecture (example PCIe 1.0a x1)	Intel Gigabit LAN Connect Interface (GLCI) and LAN Connect Interface (LCI)		
Integrated memory	N/A		
Data transfer mode (example Bus-Master DMA)	N/A		
Power consumption (full operation per data rate connection speed)	781mW (Max.)		
Power consumption (standby operation) with WOL enabled	200mW (Max, 100Mb) 66mW (Max, 10Mb)		
Power consumption (standby operation) with WOL disabled in BIOS	0mW (Max)		
Power consumption (standby operation) with WOL disabled with driver	47mW (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)		
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 32-Bit, Windows Vista 32-bit, Windows Vista 64-bit, Win7 32-bit, Win7 64Bit.		
Manageability (examples WOL, PXE..)	WOL, PXE 2.1		
Management Capabilities Alerting (examples ASF 2.0 AMT...)	DASH 1.1/ ASF 2.0		

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 – Networking Card

 NOTE: MT supports full height card, DT supports low profile card or full height card with optional riser. SFF supports low profile card.

Broadcom 5722 NetXtreme 10/100/1000 PCIe Gigabit¹ Networking Card	MT	DT	SFF
Connector Type	RJ45		
Data Rates supported	10/100/1000 Mbps Half/Full duplex		
Controller Details			
Controller bus architecture (example PCIe 1.0a x1)	PCIe 1.0a x1		
Integrated memory	40KB		
Data transfer mode (example Bus-Master DMA)	Bus-Master DMA		
Power consumption (full operation per data rate connection speed)	1.41W (427mA @ +3.3V)		
Power consumption (standby operation)	Less than 300mW		
IEEE standards compliance (example 802.1P)	802.3z, 802.3x, Dynamic 802.3ad, 802.3 p, 802.1Q		
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 - 20Mbps, half-duplex – 10Mbps)* 100BASE-T (full-duplex – 200Mbps, half-duplex - 100Mbps)* 1000BASE-T (full-duplex - 2000Mbps, half-duplex – 1000Mbps)* * Depends on the system environment.		
Environmental			
Operating temperature	0° C to 55° C (32° F to 131° F)		
Operating humidity	5% ~ 85% (non-condensing)		
Operating System Driver Support	Windows XP 32-bit, Windows Vista 32-bit, Windows Vista 64-bit, Win7 32-bit, Win7 64Bit.		
Manageability (examples WOL, PXE..)	WOL, PXE2.1, ACPI, CIM, SNMP		
Management Capabilities Alerting (examples ASF 2.0 AMT...)	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: MT supports full height card, DT supports low profile card or full height card with optional riser. SFF supports low profile card.

Broadcom® 1505 PCIe WLAN card (802.11 N)	MT	DT	SFF
External Connector Type	?		
Controller Details			
Controller bus architecture	PCIe 1.1 x1		
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		
Security	802.1x, WEP, WPA/WPA2, TKIP, CCX v1, CCX v2, CCX v3, CCX v4, and CCX v5 128-bit OCB mode AES, 802.11i		
Operating temperature	0 - 70°C		
Operating humidity	85% maximum non-condensing		
Operating System Driver Support	Windows XP 32-bit, Windows Vista 32-bit, Windows Vista 64-bit, Win7 32-bit, Win7 64Bit.		

Graphics/Video Controller

 NOTE: MT supports full height card, DT supports low profile card or full height card with optional riser. SFF supports low profile card.

Integrated ATI Radeon HD 4200 Graphics	MT	DT	SFF
Bus Type	Integrated		
GPU core clock	350 MHz Integrated 24 bit RAMDAC		
Frame Buffer Memory (onboard and shared) Size and Speed	XP: Up to 1GB shared system memory with 2GB system memory Vista and Win7: Up to 1.4GB shared system memory with 4GB or more system memory		
Overlay Planes	Yes		

Maximum Color Depth	32 bit
Maximum Vertical Refresh Rate	85 Hz
Multiple Display Support	Yes
Operating Systems Graphics/ Video API Support	OpenGL 2.0/DirectX 10.1
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Up to 2560x11600 @ 60Hz (DP) Up to 1920x1200 @ 60Hz (DVI & VGA) Up to 1600x1200 @ 85Hz (VGA only)
External connectors	VGA, DisplayPort
Environmental Operating Conditions (Non-Condensing):	
Operating Temperature Range	0° C to 70° C (32° F to 158° F)
Relative Humidity Range	20% to 80% (non-condensing)
<u>Display Port</u>	
Bus Type	AUX 1, 2, 4 lanes
Maximum supported resolution	Up to 2560x1600 @ 60Hz
Maximum power consumption	N/A
External connectors	Display Port
Dongle Supported	Display Port to DVI Display Port to VGA

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 The Display Port controller does not support multi-monitor display in DOS, but it does in the OS after the driver is loaded.

<u>256MB AMD Radeon™ HD 3450 Graphics dual DVI or VGA and TV Out</u>	MT	DT	SFF
Bus Type (example integrated or PCIe x16)	PCIEx16		
GPU core clock	600Mhz		
Frame Buffer Memory (onboard and shared) Size and Speed	500Mhz		
Maximum power consumption	22W		
Overlay Planes	Yes		
Maximum Color Depth	32-bit		
Maximum Vertical Refresh Rate	85Hz		
Multiple Display Support	Yes		
Operating Systems Graphics/ Video API Support	D3D and OpenGL		
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Max : 1920x1440/32bpp @ 75Hz		

<u>256MB AMD Radeon™ HD 3450 Graphics dual DVI or VGA and TV Out</u>	MT	DT	SFF
	Min : 640x480/8bpp @ 60Hz		
External connectors	DMS-591 and S-video		
Dimensions of full height card inches/centimeters (L x H)	167.64mm x 120mm	167.64mm x 120mm	
Dimensions of low profile card inches/centimeters (L x H)		167.64mm x 85mm	
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	10°-50° C		
Relative Humidity Range	5-90% RH		
Altitude Range	0-20,000 ft.		

¹DMS-59 to VGA or DMS-59 to DVI adaptors required.

<u>256MB nVidia 9300GE Graphics, dual DVI or VGA and TV Out</u>	MT	DT	SFF
Bus Type (example integrated or PCIe x16)	PCIEx16		
GPU core clock	540Mhz		
Frame Buffer Memory (onboard and shared) Size and Speed	500Mhz		
Maximum power consumption	25W		
Overlay Planes	No		
Maximum Color Depth	32-bit		
Maximum Vertical Refresh Rate	120Hz for 1024x768 and lower		
Multiple Display Support	Yes		
Operating Systems Graphics/ Video API Support	DirectX 10.0 and OpenGL 3.1		
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Analog 1920x1200x32bpp @ 60Hz Digital - 1600x1200@60Hz w/o reduced blanking, or 1920x1200@60Hz w/reduced blanking		
External connectors	DMS-59 ¹ and S-video		
Dimensions of full height card inches/centimeters (L x H)	167.64mm x 120mm	167.64mm x 120mm	
Dimensions of low profile card inches/centimeters (L x H)		167.64mm x 85mm	
Environmental Operating Conditions (Non-Condensing):			

<u>256MB nVidia 9300GE Graphics, dual DVI or VGA and TV Out</u>	MT	DT	SFF
Operating Temperature Range	-10°-55° C		
Relative Humidity Range	5-90% RH		
Altitude Range	0-20,000 ft.		

¹DMS-59 to VGA or DMS-59 to DVI adaptors required.

<u>256MB AMD Radeon™ HD 3470 Graphics, dual DP</u>	MT	DT	SFF
Bus Type (example integrated or PCIe x16)	PCIEx16		
GPU core clock	750Mhz		
Frame Buffer Memory (onboard and shared) Size and Speed	500Mhz		
Maximum power consumption	18W		
Overlay Planes	Yes		
Maximum Color Depth	32-bit		
Maximum Vertical Refresh Rate	85Hz		
Multiple Display Support	Yes		
Operating Systems Graphics/ Video API Support	D3D and OpenGL		
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Max : 1920x1440/32bpp @ 75Hz Min : 640x480/8bpp @ 60Hz		
External connectors	2 Display Port		
Dimensions of full height card inches/centimeters (L x H)	167.64mm x 120mm	167.64mm x 120mm	
Dimensions of low profile card inches/centimeters (L x H)		167.64mm x 85mm	
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	10°-50° C		
Relative Humidity Range	5-90% RH		
Altitude Range	0-20,000 ft.		

<u>512MB AMD Radeon™ HD 4550 Graphics, dual DP</u>	MT	DT	SFF
Bus Type (example integrated or PCIe x16)	PCIEx16		
GPU core clock	750Mhz		
Frame Buffer Memory (onboard and shared) Size and Speed	800Mhz		
Maximum power consumption	25W		

512MB AMD Radeon™ HD 4550 Graphics, dual DP	MT	DT	SFF
Overlay Planes	Yes		
Maximum Color Depth	32-bit		
Maximum Vertical Refresh Rate	85Hz		
Multiple Display Support	Yes		
Operating Systems Graphics/ Video API Support	D3D and OpenGL		
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Max : 1920x1440/32bpp @ 75Hz Min : 640x480/8bpp @ 60Hz		
External connectors	2 Display Port(1)		
Dimensions of full height card inches/centimeters (L x H)	167.64mm x 120mm	167.64mm x 120mm	
Dimensions of low profile card inches/centimeters (L x H)		167.64mm x 85mm	
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	10°-50° C		
Relative Humidity Range	5-90% RH		
Altitude Range	0-20,000 ft.		

(1) Dongles Supported: DP-VGA (RN699), DP-DVI (23NVR), DP-DL DVI (XT625), DP-HDMI(TK041)

512MB nVidia NVS 420 Graphics, quad DP or DVI	SFF	
Bus Type (example integrated or PCIe x16)	PCIEx16	
GPU core clock	540Mhz	
Frame Buffer Memory (onboard and shared) Size and Speed	700Mhz	
Maximum power consumption	40W	
Overlay Planes	No	
Maximum Color Depth	32-bit	
Maximum Vertical Refresh Rate	240Hz for 1024x768 and below	
Multiple Display Support	Yes	
Operating Systems Graphics/ Video API Support	DirectX 10.0 and OpenGL 3.0	
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	DP - 2560x1600@60Hz DVI - 1600x1200@60Hz w/o reduced blanking, or 1920x1200@60Hz w/reduced blanking	
External connectors	VHDCI (1)	
Dimensions of full height card inches/centimeters (L x H)	167.64mm x 120mm	167.64mm x 120mm

512MB nVidia NVS 420 Graphics, quad DP or DVI	SFF	
Dimensions of low profile card inches/centimeters (L x H)		167.64mm x 85mm
Environmental Operating Conditions (Non-Condensing):		
Operating Temperature Range	-10°-55° C	
Relative Humidity Range	5-90% RH	
Altitude Range	0-20,000 ft.	

(1) Dongles supported: VHDCI-DP (J772M), VHDCI-DVI-D (F908M), DP-VGA (RN699)

Hard Drives¹

3.5" 160GB SATA 7200 RPM HDD	
Capacity (bytes)	160,041,885,696
Dimensions inches (W x D x H)	5.87 x 4 x 1
Interface type and Maximum speed	Up to 3Gb/s
Internal buffer size	8 MB
Average Seek Time	8.5 ms
Rotational Speed	7200 rpm
Logical Blocks	312,581,808
Power Source	
DC Power (Max)	Idle 7.0W, Active 10.0W
DC Current	5V (.8A) and 12V (1.8A)
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

3.5" 250GB SATA 7200 RPM HDD

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 3Gb/s
Internal buffer size	8 MB
Average Seek Time	8.5 ms
Rotational Speed	7200 rpm
Logical Blocks	488,397,168
Power Source	
DC Power (Max)	Idle 7.0W, Active 10.0W
DC Current	5V (.8A) and 12V (1.8A)
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

3.5" 320GB SATA 7200 RPM HDD

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 3Gb/s
Internal buffer size	16 MB
Average Seek Time	8.5 ms
Rotational Speed	7200 rpm
Logical Blocks	625,142,448

Power Source	
DC Power (Max)	Idle 7.0W, Active 10.0W
DC Current	5V (.8A) and 12V (1.8A)
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

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 3Gb/s
Internal buffer size	16 MB
Average Seek Time	8.5 ms
Rotational Speed	7200 rpm
Logical Blocks	976,773,168
Power Source	
DC Power (Max)	Idle 7.0W, Active 10.0W
DC Current	5V (.8A) and 12V (1.8A)
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

3.5" 160GB SATA 10000 RPM HDD

Capacity (bytes)	160,041,885,696
Dimensions inches (W x D x H)	5.787 x 4 x 1 (includes sled)
Interface type and Maximum speed	Up to 3Gb/s
Internal buffer size	16 MB
Average Seek Time	4.2 ms (average read)
Rotational Speed	10000 rpm
Logical Blocks	312,581,808
Power Source	
DC Power (Max)	Idle 7.0W, Active 10.0W
DC Current	5V (.275A) and 12V (.585A)
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	-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40 ⁰ C to 70 ⁰ C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	38 ⁰ C
Altitude Range	-1000 ft to 40000 ft

2.5" 160GB SATA 7200 RPM HDD

Capacity (bytes)	160,144,285,696
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	312,581,808
Power Source	
DC Power (Max)	Idle 1.0W, Active 3.25W
DC Current	5V (.8A)
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

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	
DC Power (Max)	Idle 1.0W, Active 3.25W
DC Current	5V (.8A)
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
<u>2.5" 320GB SATA 7200 RPM HDD</u>	
Capacity (bytes)	320,072,933,376
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	625,142,448
Power Source	
DC Power (Max)	Idle 1.0W, Active 3.25W
DC Current	5V (.8A)
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

2.5" 64GB SATA Solid State HDD

Capacity (bytes)	64,023,257,088
Dimensions inches (W x D x H)	2.106 x 3.059 x 0.134
Interface type and Maximum speed	SATA 3.0 Gbps
Internal buffer size	128 MB
Average Seek Time	NA
Rotational Speed	NA
Logical Blocks	125,045,424
Power Source	
DC Power (Max)	Idle 0.125W, Active 0.135W *Based on MobileMark 2007 scenario
DC Current	5.0V (0.35A)
Environmental Operating Conditions (Non-Condensing):	
Temperature Range	0 to 70 C
Relative Humidity Range	10 to 90 %
Maximum Wet Bulb Temperature	29 C
Altitude Range	-200 to 5000 m
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-55 to 95 C
Relative Humidity Range	5 to 95 %
Maximum Wet Bulb Temperature	38 C
Altitude Range	-200 to 10,600 m

2.5" 128GB Solid State SATA HDD

Capacity (bytes)	128,035,676,160
Dimensions inches (W x D x H)	2.106 x 3.059 x 0.134
Interface type and Maximum speed	SATA 3.0 Gbps
Internal buffer size	128 MB
Average Seek Time	N/A
Rotational Speed	N/A
Logical Blocks	250,069,680

Power Source	
DC Power (Max)	Idle 0.112W, Active 0.125W * Based on MobileMark 2007 scenario
DC Current	3.3V (0.6A)
Environmental Operating Conditions (Non-Condensing):	
Temperature Range	0 to 70 C
Relative Humidity Range	10 to 90 %
Maximum Wet Bulb Temperature	29 C
Altitude Range	-200 to 5000 m
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-55 to 95 C
Relative Humidity Range	0 C to 55 C / 90~98% RH
Maximum Wet Bulb Temperature	38 C
Altitude Range	-200 to 10,600 m

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

Optical Drives

DVD +/- RW¹	MT	DT	SFF
External Dimensions inches/centimeters (With Bezel – W x H x D)	149mm(6in)/42mm (2in)/ 190.5 (max)	149mm(6in)/42mm (2in)/ 190.5 (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)
Weight (max) pounds/kilograms	730g	730g	170g
Interface type and speed	SATA 1.5Gbit/s	SATA 1.5Gbit/s	SATA 1.5Gbit/s
Disc Capacity	Standard	Standard	Standard
Internal buffer size	2MB	2MB	1MB
Access Times (typical)	(1/3 stroke) 130ms	(1/3 stroke) 130ms	(1/3 stroke) 150ms
Maximum Data Transfer Rates			
Writes	16x DVD/48x CD	16x DVD/48x CD	8x DVD/ 24x CD
Reads	16x DVD/48x CD	16x DVD/48x CD	8x DVD/ 24x CD
Power Source			
DC Power Requirements	12V, 5V	12V, 5V	5V
DC Current	1200mA (12V)/ 900mA (5V)	1200mA (12V)/ 900mA (5V)	1000mA

DVD +/- RW¹	MT	DT	SFF
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	5C to 50C	5C to 50C	5C to 50C
Relative Humidity Range	20% to 80% RH	20% to 80% RH	20% to 80% RH
Maximum Wet Bulb Temperature	29C	29C	29C
Altitude Range	-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
Relative Humidity Range	5% to 95% RH	5% to 95% RH	5% to 95% RH
Maximum Wet Bulb Temperature	38C	38C	38C
Altitude Range	-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
External Dimensions inches/centimeters (With Bezel – W x H x D)	149mm(6in)/42mm (2in)/ 190.5 (max)	149mm(6in)/42mm (2in)/ 190.5 (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)
Weight (max) pounds/kilograms	730g	730g	165g
Interface type and speed	SATA 1.5Gbit/s	SATA 1.5Gbit/s	SATA 1.5Gbit/s
Disc Capacity	Standard	Standard	Standard
Internal buffer size	2MB	2MB	1MB
Access Times (typical)	(1/3 stroke) 130ms	(1/3 stroke) 130ms	(1/3 stroke) 150ms
Maximum Data Transfer Rates			
Writes	N/A	N/A	N/A
Reads	16x DVD/48x CD	16x DVD/48x CD	8x DVD/ 24x CD
Power Source			
DC Power Requirements	12V, 5V	12V, 5V	5V
DC Current	1200mA (12V)/ 900mA (5V)	1200mA (12V)/ 900mA (5V)	800mA
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	5C to 50C	5C to 50C	5C to 50C
Relative Humidity Range	20% to 80% RH	20% to 80% RH	20% to 80% RH
Maximum Wet Bulb Temperature	29C	29C	29C

DVD-ROM	MT	DT	SFF
Altitude Range	-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
Relative Humidity Range	5% to 95% RH	5% to 95% RH	5% to 95% RH
Maximum Wet Bulb Temperature	38C	38C	38C
Altitude Range	-200 to 10600m	-200 to 10600m	-200 to 10600m

¹ DVD-ROM drives may have write-capable hardware that has been disabled via firmware modifications.

DVD+/-RW with Blu-Ray-ROM	MT	DT	SFF
External Dimensions inches/centimeters (With Bezel – W x H x D)	149mm(6in)/42mm (2in)/ 190.5 (max)	149mm(6in)/42mm (2in)/ 190.5 (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)
Weight (max) pounds/kilograms	830g	7830g	190g
Interface type and speed	SATA 1.5Gbit/s	SATA 1.5Gbit/s	SATA 1.5Gbit/s
Disc Capacity	Standard	Standard	Standard
Internal buffer size	4MB	4MB	2MB
Access Times (typical)	(1/3 stroke) 160ms	(1/3 stroke) 160ms	(1/3 stroke) 180ms
Maximum Data Transfer Rates			
Writes	16x DVD/ 40x CD	16x DVD/ 40x CD	8x DVD / 24x CD
Reads	6x BD/16x DVD/40x CD	6x BD/16x DVD/40x CD	4x BD/8x DVD/ 24x CD
Power Source			
DC Power Requirements	12V, 5V	12V, 5V	5V
DC Current	1200mA (12V)/ 900mA (5V)	1200mA (12V)/ 900mA (5V)	900mA
Environmental Operating Conditions (Non-Condensing):			
Operating Temperature Range	5C to 50C	5C to 50C	5C to 50C
Relative Humidity Range	20% to 80% RH	20% to 80% RH	20% to 80% RH
Maximum Wet Bulb Temperature	29C	29C	29C
Altitude Range	-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
Relative Humidity Range	5% to 95% RH	5% to 95% RH	5% to 95% RH

DVD+/-RW with Blu-Ray-ROM	MT	DT	SFF
Maximum Wet Bulb Temperature	38C	38C	38C
Altitude Range	-200 to 10600m	-200 to 10600m	-200 to 10600m

More details for optical drives can be found at:

<http://support.dell.com/support/systemsinfo/documentation.aspx?c=us&l=en&s=gen&~cat=7>

BIOS Defaults

Boot	Fast Boot	On
	Numlock Key	On
	Wait For 'F1' If Error	Enabled
	POST Hotkeys	Setup & Boot Menu
	Keyboard Error Report	Enabled
	1st Boot Device	Diskette Drive
	2nd Boot Device	Hard Drive
	3rd Boot Device	Optical Drive
	4th Boot Device	Integrated NIC
Power	AC Recovery	Off
	Auto Power On	Off
	Remote Wake Up	On
	Low Power Mode	On
	Suspend Mode	S3 (STR)
Security	Password Lock	Lock
	Chassis Intrusion	On
	No Execute	On
	TPM Security	Off
CPU Information	C1E Function	Enable
	Cool & Quiet	Enabled
	Virtualization	Enabled

Onboard Devices	GFX/Display Port	X16
	Integrated NIC	On
	Integrated Audio	On
	Video Memory Size	Auto
	Serial Port #1	3F8/IRQ4
	LPT Port Mode	PS/2
	LPT Port Address	378h
	USB Controller	On
	Front Dual USB	On
	Rear Dual USB	On
	Rear Quad USB	On
	SATA Configuration	SATA Operation
HDD Acoustic Mode		Bypass
SATA-0		Not Detected
SATA-1		Not Detected
SATA-2		Not Detected
SATA-3		Not Detected
External SATA		Not Detected
System Management	DASH/ASF Configuration	Disabled
	Text Console Redirection	Disabled
Computrace Configuration	Computrace Operation	Deactivate

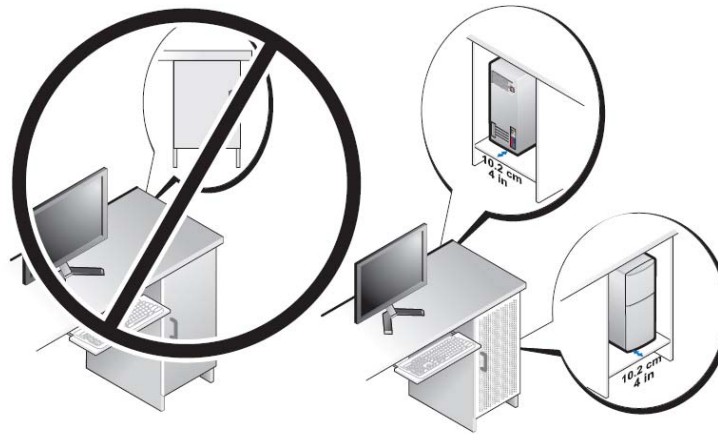
Chassis Enclosure & Ventilation Requirements

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.

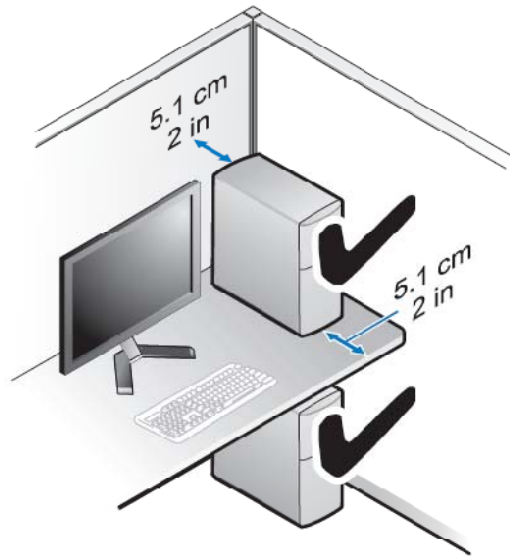


Recommended Enclosure

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, Communication Devices relevant to this product, along with additional product related conformity assessment, and information encompassing Environmental, Energy Consumption, Noise Emissions, Product Materials Information, Packaging, Batteries, and Recycling relevant to this product may be viewed in the Regulatory and Environmental Datasheet for this product is located at:

http://www.dell.com/content/topics/global.aspx/about_dell/values/regulatory_compliance/dec_conform?c=us&l=en&s=corp&~ck=anavml

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/earth by clicking the Design for Environment link on the webpage.

Acoustic Noise Emission Information

Optiplex 580 MT

Component	Typical Configuration
CPU	Phenom II X2 B24 65W
Memory	1 GB DDRIII 1333 MHz
HDD (#, capacity)	160 GB 7200 RPM SATA
RMSD	DVD ROM
Graphics Adapter	AMD Radeon HD3470 256MB

The Declared Noise Emission in accordance with ISO 9296 for the Dell Optiplex 580 MT is as follows¹:
 (all values L_{WAd} expressed in bels²; 1 bel=10 decibels, re 10^{-12} Watts; all values L_{pA} expressed in decibels³, re 2×10^{-5} Pa)

Sound Power

Operating Mode	Typical Configuration Declared Sound Power (L_{WAd})
Idle	3.6
HDD Operating	3.6
ODD Operating	5.1
90% CPU	3.6

Sound Pressure at Operator Position

Operating Mode	Typical Configuration Sound Pressure at Operator Position (L_{pA})	
	Desktop	Desk side
Idle	27.0	21.0
HDD Operating	27.1	21.2
ODD Operating	42.4	36.8
90% CPU	26.7	21.2

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 the nearest tenth of a bel per ISO 9296 section 4.4.2

³ Declared Sound Pressure rounded to the nearest whole decibel per ISO 9296 section 4.4.4

Sound Pressure at Bystander Position

Operating Mode	Typical Configuration Sound Pressure at Bystander Position (L_{pA})	
	Desktop	Desk side
Idle	22.0	19.7
HDD Operating	22.0	20.0
ODD Operating	37.4	35.8
90% CPU	21.7	19.7

Optiplex 580 DT

Component	Typical Configuration
CPU	Athlon II X2 B22 65W
Memory	1 GB DDRIII 1333 MHz
HDD (#, capacity)	160 GB 7200 RPM SATA
RMSD	DVD ROM
Graphics Adapter	AMD Radeon HD3470 256MB

The Declared Noise Emission in accordance with ISO 9296 for the Dell Optiplex 580 DT is as follows³:
(all values L_{WAd} expressed in bels⁴; 1 bel=10 decibels, re 10^{-12} Watts; all values L_{pA} expressed in decibels³, re 2×10^{-5} Pa)

Sound Power

Operating Mode	Typical Configuration Declared Sound Power (L_{WAd})
Idle	3.8
HDD Operating	3.8
ODD Operating	5.2
90% CPU	3.8

³ All tests are conducted according to IS 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.

⁴ Declared Sound Power rounded to the nearest tenth of a bel per ISO 9296 section 4.4.2

³ Declared Sound Pressure rounded to the nearest whole decibel per ISO 9296 section 4.4.4

Sound Pressure at Operator Position

Operating Mode	Typical Configuration Sound Pressure at Operator Position (L_{pA})	
	Desktop	Desk side
Idle	27.9	22.4
HDD Operating	28.3	21.6
ODD Operating	42.0	37.0
90% CPU	28.5	21.8

Sound Pressure at Bystander Position

Operating Mode	Typical Configuration Sound Pressure at Bystander Position (L_{pA})	
	Desktop	Desk side
Idle	23.8	21.7
HDD Operating	24.0	20.7
ODD Operating	36.7	34.0
90% CPU	23.9	20.7

Optiplex 580 SFF

Component	Typical Configuration
CPU	Athlon II X2 B22 65W
Memory	1 GB DDRIII 1333 MHz
HDD (#, capacity)	160 GB 7200 RPM SATA
RMSD	Slim DVD +/-RW
Graphics Adapter	AMD Radeon HD3470 256MB

The Declared Noise Emission in accordance with ISO 9296 for the Dell Optiplex 580 SFF is as follows⁵:
(all values L_{WAQ} expressed in bels⁶; 1 bel=10 decibels, re 10^{-12} Watts; all values L_{pA} expressed in decibels³, re 2×10^{-5} Pa)

⁵ 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.

⁶ Declared Sound Power rounded to the nearest tenth of a bel per ISO 9296 section 4.4.2

³ Declared Sound Pressure rounded to the nearest whole decibel per ISO 9296 section 4.4.4

Sound Power

Operating Mode	Typical Configuration Declared Sound Power (L_{WAd})
Idle	3.8
HDD Operating	3.7
ODD Operating	4.9
90% CPU	4.0

Sound Pressure at Operator Position

Operating Mode	Typical Configuration Sound Pressure at Operator Position (L_{pA})
Idle	28.0
HDD Operating	28.1
ODD Operating	39.4
90% CPU	28.6

Sound Pressure at Bystander Position

Operating Mode	Typical Configuration Sound Pressure at Bystander Position (L_{pA})
Idle	23.7
HDD Operating	24.0
ODD Operating	33.8
90% CPU	24.1