

DELLTM

OPTIplexTM XE2

TECHNICAL GUIDEBOOK—EARLY EVALUATION
INSIDE THE OPTIplex XE2

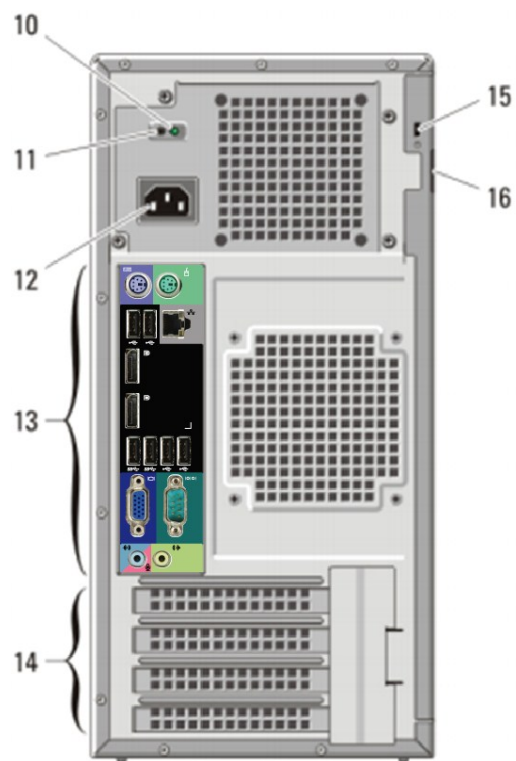
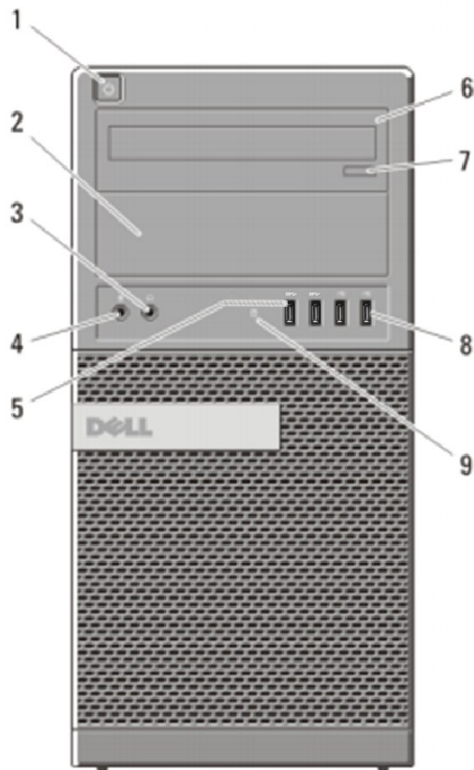
SPECIFIC FEATURES/MODELS/CONFIGS/OPTIONS DISCUSSED IN THIS DOCUMENT
MAY NOT BE AVAILABLE WW



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MINI TOWER COMPUTER (MT) VIEW



FRONT VIEW

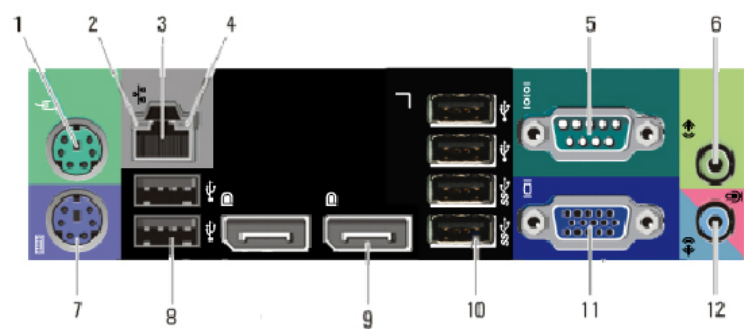
1	Power Button, Power Light	6	Optical Drive (optional)
2	Optical Drive Bay (optional)	7	Optical Drive Eject Button
3	Headphone Connector	8	USB 2.0 Connectors (2)
4	Microphone Connector	9	Drive Activity Light
5	USB 3.0 Connectors (2)		

BACK VIEW

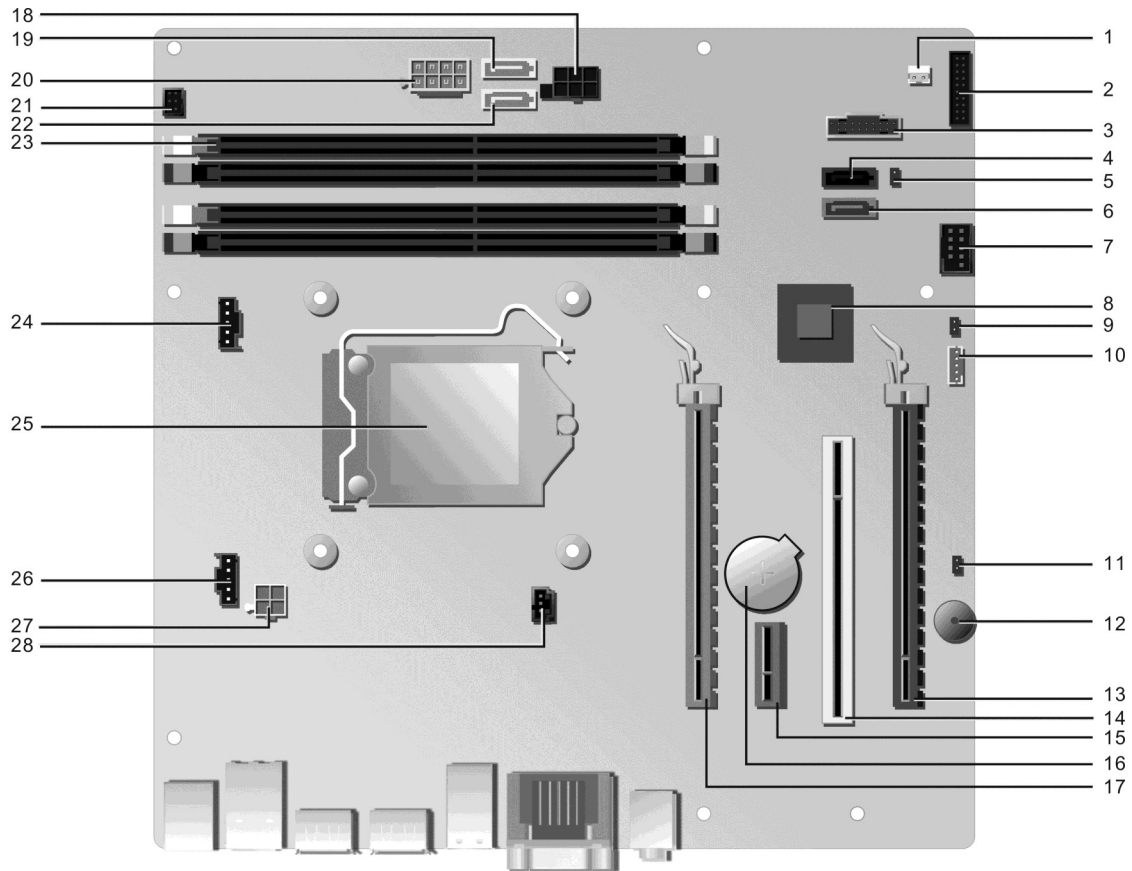
10	Power Supply Diagnostic Light	14	Expansion Card Slots (4)
11	Power Supply Diagnostic Button	15	Kensington / Noble Security Cable Slot
12	Power Connectors	16	Padlock Ring
13	Back Panel Connectors		

BACK PANEL CONNECTORS

1	Mouse Connector	7	Keyboard Connector
2	Link Integrity Light	8	USB2.0 Connectors (2)
3	Network Connector	9	DisplayPort Connector (2)
4	Network Activity Light	10	USB2.0 Connectors (2) USB3.0 Connectors (2)
5	Serial Connector	11	VGA Connector
6	Line-out Connector	12	Line-in/Microphone Connector



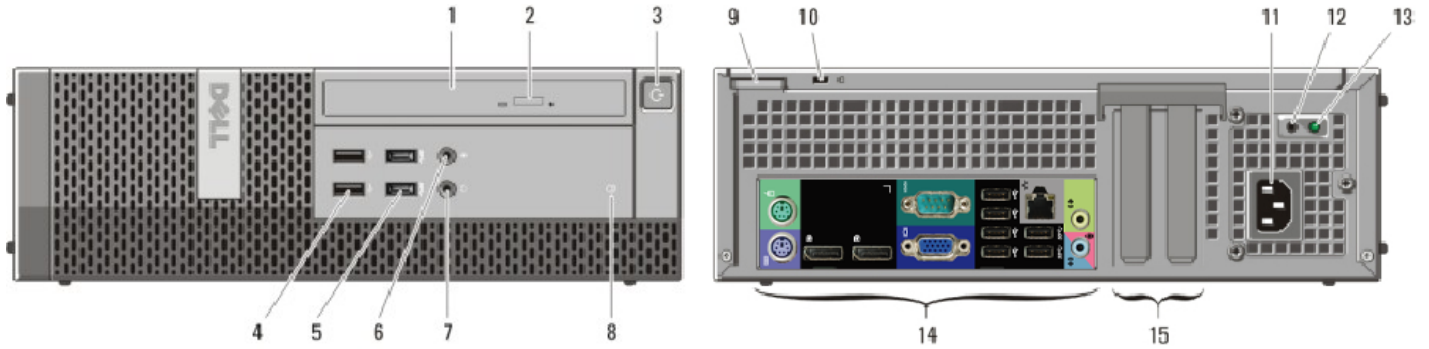
MOTHERBOARD LAYOUT



MT System Board Components

Number	Name	Number	Name
1	Thermal Sensor Connector (THRM_2)	15	PCI-e x1 Connector (SLOT2)
2	Front IO Connector (FRONTPANEL)	16	Battery Connector (BATTERY)
3	Front USB3.0 Connector (USB3_FRONT)	17	PCI-e x16 Connector (SLOT1)
4	SATA 1 Connector (SATA1) (Black color)	18	HDD_ODD_Power Cable Connector (HDD_ODD_POWER)
5	PSWD Jumper (PSWD)	19	SATA 3 Connector (SATA3) (White color)
6	SATA 0 Connector (SATA0) (Blue color)	20	P1 Power Connector (POWER)
7	Internal USB Connector (INT_USB)	21	Power Switch Connector (PWR_SW)
8	PCH chip (N/A)	22	SATA 2 Connector (SATA2) (White color)
9	RTCRST Jumper (RTCRST)	23	Memory Connectors (DIMM1, DIMM2, DIMM3, DIMM4)
10	Internal Speaker Connector (INT_SPKR)	24	CPU fan Connector (FAN_CPU)
11	SERVICE_MODE Jumper (SERVICE_MODE)	25	Processor Socket (N/A)
12	Buzzer (BEEP)	26	System Fan Connector (FAN_SYS)
13	PCI-e x16 (wire x4) Connector (SLOT4)	27	P2 Power Connector (12V_PWRCONN)
14	PCI Connector (SLOT3)	28	Intrusion Switch Connector (INTRUDER)

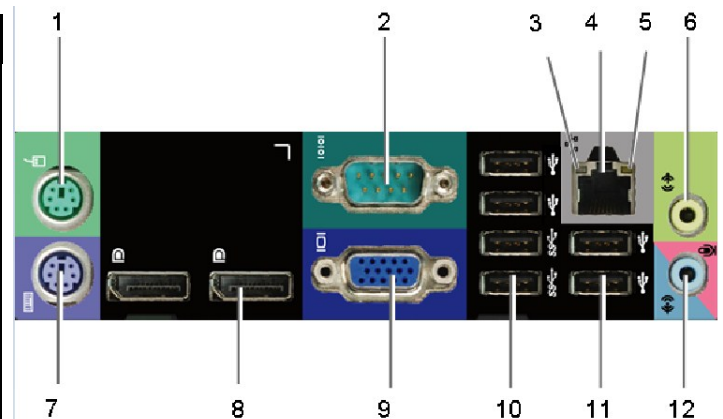
SMALL FORM FACTOR COMPUTER (SFF) VIEW



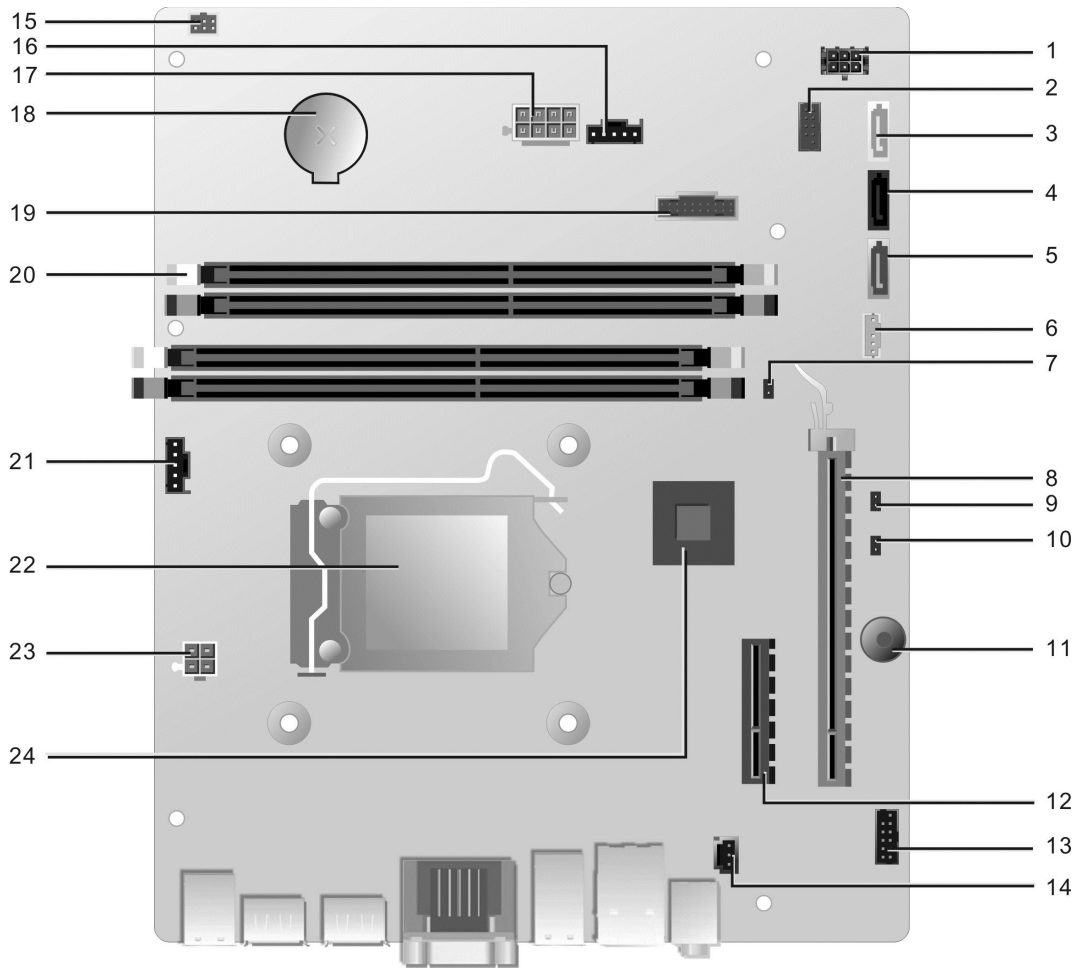
FRONT VIEW			
1	Optical Drive	5	USB 3.0 Connectors (2)
2	Optical Drive Eject Button	6	Microphone Connector
3	Power Button, Power Light	7	Headphone Connector
4	USB 2.0 Connectors (2)	8	Drive Activity Light

BACK VIEW			
9	Padlock Ring	13	Power Supply Diagnostic Light
10	Kensington / Noble Security Cable Slot	14	Back Panel Connectors
11	Power Connectors	15	Expansion Card Slots (2)
12	Power Supply Diagnostic Button		

BACK PANEL CONNECTORS			
1	Mouse Connector	7	Keyboard Connector
2	Serial Connector	8	DisplayPort Connector (2)
3	Link Integrity Light	9	VGA Connector
4	Network Connector	10	USB2.0 Connectors (2) USB3.0 Connectors (2)
5	Network Activity Light	11	USB2.0 Connectors (2)
6	Line-out Connector	12	Line-in/Microphone Connector



MOTHERBOARD LAYOUT



SFF System

Number	Name	Number	Name
1	HDD_ODD_Power Cable Connector (HDD_ODD_POWER)	13	Front Audio Connector (FRONT_AUDIO)
2	Front IO Connector (FRONTPANEL)	14	Intrusion Switch Connector (INTRUDER)
3	SATA 2 Connector (White color)	15	Power Switch Connector (PWR_SW)
4	SATA 1 Connector (Black color)	16	System Fan Connector (FAN_SYS)
5	SATA 0 Connector (Blue color)	17	P1 Power Connector (POWER)
6	Internal Speaker Connector (INT_SPKR)	18	Battery Connector (BATTERY)
7	RTCRST Jumper (RTCRST)	19	Front USB3.0 Connector (USB3_FRONT)
8	PCI-e x16 Connector (SLOT2)	20	Memory Connectors(DIMM1, DIMM2, DIMM3, DIMM4)
9	PSWD Jumper (PSWD)	21	CPU fan Connector (FAN_CPU)
10	SERVICE_MODE Jumper (SERVICE_MODE)	22	Processor Socket (N/A)
11	Buzzer (BEEP)	23	P2 Power Connector (12V_PWRCONN)
12	PCI-e x4 Connector (SLOT1)	24	PCH chip (N/A)

MARKETING SYSTEM CONFIGURATIONS

NOTE: Offerings may vary by country; not all configurations available in all regions. 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	SFF	USFF
Windows operating system	Microsoft® Windows 8 Professional (64 bit), Microsoft® Windows 8 (64bit) Microsoft® Windows 8 Single Language (64bit) Microsoft® Windows 7® Home Premium SP1 (32 and 64 bit), Microsoft® Windows 7® Home Premium w/MUI SP1 (32 and 64 bit), Microsoft® Windows 7® Professional w/MUI SP1 (32 and 64 bit), Microsoft® Windows 7® Professional SP1 (32 and 64 bit), Microsoft® Windows 7® Ultimate SP1 (32 and 64 bit),		
Other	Ubuntu 12.04 (64bit)		
OS Media Support (optional)	Optional		

CHIPSET

	MT	SFF	USFF
Chipset	Intel Q87 Express Chipset		
Non-volatile memory on chipset			
BIOS Configuration SPI (Serial Peripheral Interface)	64Mbit (8MB) & 32Mbit(4MB) located at SPI_FLASH on chipset		
TPM 1.2 Security Device (Trusted Platform Module) ¹	4KB 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: Processor numbers are not a measure of performance. Processor availability subject to change and may vary by region/country.

	MT	SFF
Intel® Quad Core Processors		
Intel® Core™ i7 4770S / 3.1GHz, 8M, VT-x, VT-d, AES-NI, TXT (vPro™), 65W	X	X
Intel® Core™ i5 4570S / 2.9GHz, 6M, VT-x, VT-d, AES-NI, TXT (vPro™), 65W	X	X
Intel® Dual Core Processors		
Intel® Core™ i3-4330, DC/4M/4T/3.50GHz, 54W	X	X
Intel® Pentium Processors		
Pentium® G3420, 3.20GHz, 3M, DC/2T, 54W	X	X

HARDWARE MONITORING SOFTWARE

	MT	SFF
Watchdog Timer		
Watchdog Timer	Optional	Optional

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 memory range is available to 64-bit operating systems.

	MT	SFF
Type: DDR3 Synch DRAM Non-ECC Memory	1600 MHz	
DIMM Slots	4	4
DIMM Capacities	Up to 8GB	Up to 8GB
Minimum Memory	2GB	2GB
Maximum System Memory	32GB ¹	32GB ¹
Memory configurations		
32GB ¹ DDR3, 1600MHz, (4 x 8GB) (Test Only)	X	X
16GB ¹ DDR3, 1600MHz, (2 x 8GB)	X	X
8GB ¹ DDR3, 1600MHz, (2 x 4GB)	X	X
4GB ¹ DDR3, 1600MHz, (2 x 2GB)	X	X
4GB ¹ DDR3, 1600MHz, (1 x 4GB)	X	X
2GB ¹ DDR3, 1600MHz, (1 x 2GB)	X	X

¹The 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	SFF
Bays:		
5.25-inch Optical Bay Supported (External)	2	1
Optical Drives Supported (maximum)	2	1 (slim-line)
Hard Drive Bay Supported (Internal)	2	1
Hard Drives Supported 3.5"/2.5" (maximum)	2/2	1/2
Interface:		
SATA 2.0	2	1
SATA 3.0	2	2
3.5" Hard Drives:		
1TB ¹ SATA3 7200 RPM HDD	X	X
500GB ¹ SATA3 7200 RPM HDD	X	X
2.5" Hard Drives:		
500GB ¹ SATA3 Solid State Hybrid Drive w/8GB Flash	X	X
500GB ¹ SATA3 Solid State Hybrid Drive w/32GB Flash	X	X
500GB ¹ SATA3 Secure Encrypted Drive	X	X
320GB ¹ SATA2 7200 RPM HDD	X	X
128GB ¹ SATA3 Solid State Drive	X	X
RAID 1 Data Protection: (includes two matching capacity/speed hard drives)		
1TB ¹ SATA 7200 RPM HDD (3.5")	X	
500GB ¹ SATA3 7200 RPM HDD (3.5")	X	
500GB ¹ SATA3 Solid State Hybrid Drive w/8GB Flash (2.5")	X	X
500GB ¹ SATA3 Solid State Hybrid Drive w/32GB Flash (2.5")	X	X
500GB ¹ SATA3 Secure Encrypted Drive (2.5")	X	X
320GB ¹ SATA2 7200 RPM HDD (2.5")	X	X
128GB ¹ SATA3 Solid State Drive (2.5")	X	X

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.

⁴ miniPCIe (Support Standard Rev 2.0)

⁵ Serial ATA (2 ports Support Standard Rev 3.0, the rest of ports Support Standard Rev 2.0)

DRIVES AND REMOVABLE STORAGE

	MT	SFF
RAID 0 Performance: (includes two matching capacity/speed hard drives)		
1TB ¹ SATA 7200 RPM HDD (3.5")	X	
500GB ¹ SATA3 7200 RPM HDD (3.5")	X	
500GB ¹ SATA3 Solid State Hybrid Drive w/8GB Flash (2.5")	X	X
500GB ¹ SATA3 Solid State Hybrid Drive w/32GB Flash (2.5")	X	X
500GB ¹ SATA3 Secure Encrypted Drive (2.5")	X	X
320GB ¹ SATA2 7200 RPM HDD (2.5")	X	X
128GB ¹ SATA3 Solid State Drive (2.5")	X	X
Optical Drive: (SFF/USFF require slim-line optical drive)		
DVD+/-RW ²	X	X
DVD-ROM ³	X	X

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.

⁴ miniPCIe (Support Standard Rev 2.0)

⁵ Serial ATA (2 ports Support Standard Rev 3.0, the rest of ports Support Standard Rev 2.0)

SYSTEM BOARD CONNECTORS

NOTE: See Detailed Engineering Specifications for maximum card dimensions.

	MT	SFF
PCI Slot(s) ¹	1	
PCIe x16 Slot(s) ²	1	1
PCIe x16 (wired x4)Slot(s) ³	1	1
PCIe x1 Slot(s) ³	1	
Serial ATA (SATA) ⁴	4	3

¹ PCI Slots (Support Standard Rev 2.3)

² PCIe x16 Slots (Support Standard Rev 3.0)

³ PCIe x16 (wired x 4), PCIe x1 Slots, miniPCIe (Support Standard Rev 2.0)

⁴ Serial ATA (2 ports Support Standard Rev 3.0, the rest of ports Support Standard Rev 2.0)

GRAPHICS/VIDEO CONTROLLER

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

	MT	SFF
Intel HD Graphics 4600 [with Core i5/i7 CPU-GPU combo]	Integrated on CPU	
Enhanced Graphic/Video Options		
1GB AMD Radeon HD8490	Optional card	

EXTERNAL PORTS/CONNECTORS

NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards. See chassis diagrams section for port/connector locations

	MT	SFF
USB 2.0 (Front/Rear/Internal)	2/4/2	2/4/0
USB 3.0 (Front/Rear/Internal)	2/2/0	2/2/0
Serial	1 Rear	
Network Connector (RJ-45)	1 Rear	
PS/2	2 Rear	
Video:		
VGA	1 Rear	
DisplayPort	2 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 (FH) cards and SFF supports low profile (LP) cards.

	MT	SFF
Intel® 1217 LM Gigabit1 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 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

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

	MT	SFF
Dell Wireless 1540 PCIe WLAN card (802.11a/b/g/n)	Optional card	

AUDIO AND SPEAKERS

	MT	SFF
Realtek ALC3220 High Definition Audio Codec	Integrated on system board	
Dell AX210 USB Stereo speakers	Optional	
Dell AX510/AX510PA Flat Panel Soundbar Speakers	Optional	

KEYBOARD AND MOUSE

	MT	SFF
Dell USB Entry Keyboard with optional palmrest	Optional	
Dell Multimedia Pro Keyboard	Optional	
Dell Smartcard Keyboard	Optional	
Dell USB Optical Mouse	Optional	
Dell Laser Mouse	Optional	

SECURITY

	MT	SFF
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	

¹TPM is not available in all countries. Depending on your country regulations, no-TPM system boards may be available.

SOFTWARE

	MT	SFF
Dell Client Manager	Available via Dell.com	
Dell Data Protection Security Tools (DDP ST)	Standard	
Dell Data Protection Encryption (DDP E)	Optional	

ENVIRONMENTAL

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

	MT	SFF
Sustainable packaging	X	X
MultiPack packaging	Optional, US only	
Energy Efficient Power Supply	Standard	

SERVICE AND SUPPORT

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

	MT	SFF
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.

	MT	SFF
Chassis Volume (liters)	26.27	8.38
Chassis Weight (pounds/kilograms)	18.52 / 8.4	13.2 / 6.0
Chassis Dimensions: (HxWxD)		
Height (inches/centimeters)	14.17 / 36	11.42 / 29
Width (inches/centimeters)	6.89 / 17.5	3.65 / 9.26
Depth (inches/centimeters)	16.42 / 41.7	12.28/31.2
Shipping Weight (pounds/kilograms - includes packaging materials)	22.41 / 10.17	15.82/7.19
Packaging Parameters (HxWxD)		
Height (inches/centimeters)	21.31/54.13	19.25/48.90
Width (inches/centimeters)	18.75/47.63	15.81/40.16
Depth (inches/centimeters)	14.09 / 35.79	10.19/25.88

SYSTEM BOARD CONNECTOR MAXIMUM ADD-IN CARD ALLOWABLE DIMENSIONS

	MT	SFF
PCI Slot (Voltage supported 3.3V/5V/12V/-12V)	1	
Height (inches/centimeters)	4.376 / 11.115	
Length (inches/centimeters)	6.6 / 16.765	
Maximum Wattage	25W	
PCIex16 Slot (BLUE) (Voltage supported 3.3V/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	75W	35W
PCIex16 wired as x4 Slot (BLACK) (Voltage supported 3.3/12V)	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
PCIe x1 Slot (Voltage supported 3.3V/12V)	1	
Height (inches/centimeters)	4.376 / 11.115	
Length (inches/centimeters)	4.5 / 11.44	
Maximum Wattage	10W	
Mini PCIe x1 Slot		

SYSTEM LEVEL ENVIRONMENTAL AND OPERATING CONDITIONS

	MT	SFF
Temperature		
Operating	5° to 45° C (45° to 105° 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 manufac-

	MT	SFF
Power Supply	EPA	EPA
Wattage	365W High Efficiency	315W High Efficiency
AC input Voltage Range	90 – 264Vac	90 – 264Vac
AC input current (low ac range/high AC range)	5.0A / 2.5A	4.4A / 2.2A
AC input Frequency	47HZ/63HZ	47HZ/63HZ
AC holdup time (80% load)	16 mini sec	16 mini sec
Average Efficiency (Energy Star 5.0 Compliant)	87 – 90 – 87% @ 20 – 50 – 100% load	87 – 90 – 87% @ 20 – 50 – 100% load
Typical Efficiency (Active PFC)		
DC parameters		
+3.3v output	NA	NA
+5.0v output	NA	NA
+12.0v output	12VA/14A; 12VB/18A;12VC/11A	12VA/14A; 12VB/13A;12VC/11
+12.0v auxiliary output	1.67A	1.67A
-12.0v output	NA	NA
Max total power	365W	315W
Max combined +3.3v / +5.0v power	NA	NA
Max combined 12.0v power (note: only if more than one 12v rail)	NA	NA
BTUs/h (based on PSU max wattage)	1245 BTU	1075 BTU
Power Supply Fan	80*25mm	60*25mm
Compliance:		
Erp Lot6 Tier 2 0.5watt requirement	Yes	Yes
Blue Angel Compliant	Yes	Yes
Climate Savers / 80Plus Compliant	Yes	Yes
FEMP Standby Power Compliant	Yes	Yes
CECP Compliant	Yes	Yes
China Altitude/Humidity Compliance	Up to 5000 Meters	Up to 5000 Meters

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-2302L/ BE	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.5V End-Voltage. 20 \pm 2 \times .1183Hrs. or Longer.1133Hrs.or Longer after 12 months.
MITSUBISHI	CR2302	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage. 20 \pm 2 \times .1000Hrs. or Longer.970Hrs.or Longer after 12 months. 0 \pm 2 \times . 910Hrs. or Longer.890Hrs.or Longer after 12 months.

AUDIO

INTEGRATED REALTEK ALC3220 HIGH DEFINITION AUDIO		MT	SFF
High Definition Stereo support		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
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	INTEGRATED INTEL® I217	2Watt (peak) / 1Watt (average)	

INTEGRATED INTEL® I217 GIGABIT1 ETHERNET LAN 10/100/1000		MT	SFF
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)		535mW (Max.)	
Power consumption (standby operation)		176mW (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 – INTEGRATED INTEL® I217

INTEGRATED INTEL® I217 GIGABIT1 ETHERNET LAN 10/100/1000 (CONT.)	MT	SFF
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 7 (32/64), Windows 8 (32/64)	
Manageability (examples WOL, PXE)	WOL, PXE 2.1	
Management Capabilities Alerting	Intel® Standard Manageability, Intel Core 2 Duo/Quad Processor with vPro Technology	

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 – NETWORK ADAPTER (BROADCOM NETWORKING CARD)

Broadcom NetXtreme 10/100/1000 PCIe Gigabit ¹ Networking Card	MT	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 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)		
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 – NETWORK ADAPTER (BROADCOM NETWORKING CARD)

BROADCOM NETXTREME 10/100/1000	MT	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 (32/64), Windows 8 (32/64) 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

DELL WIRELESS 1540 PCIE MINI PCIE WLAN CARD (802.11N)	MT	SFF
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, 11, 9, 6, 5.5, 2, 1 Mbps	
802.11n Data Rates supported	270, 240, 180, 135, 130, 121.5, 120, 117, 108, 104, 90, 81, 78, 65, 60, 58.5, 54, 52, 40.5, 39, 30, 27, 26, 19.5, 13.5, 13, 6.5 Mbps	
Encryption	WEP 64-bit and 128-bit, TKIP, AES-CCMP 128-bit	
Operating temperature	0–70°C	
Operating humidity	Max Operating Humidity 85 %	
Operating System Driver Support	Windows 7 32/64, Windows XP 32/64, Vista 32/64	

COMMUNICATIONS – SERIAL / PARALLEL PORT PCIE ADD-IN CARD**NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards.**

SERIAL / PARALLEL PORT PCIE ADD-IN CARD	MT	
Connector Type	RS-232 and IEEE1284	
Data Rates supported	50bps ~115.2Kbps (Serial) &Maximum 1.8MBp(Parallel)	
Controller Details		
Controller	SUNIX SUN2212(16C950 UART Compatible)	
Controller bus architecture (example PCIe 1.0a x1)	PCI Express Spec2.0, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008R2(X86/X64) Linux 2.4.x/2.6.x/3.x 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 SFF supports low profile (LP) cards.**

SERIAL PORT PCIE ADD-IN CARD	SFF	
Connector Type	RS-232	
Data Rates supported	50bps ~115.2Kbps	
Controller Details		
Controller	SUNIX SUN2212(16C950 UART Compatible)	
Controller bus architecture (example PCIe 1.0a x1)	PCI Express Spec2.0, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008R2 (X86/ X64) Microsoft Embedded XP Embedded/POS Ready 2009/ Embedded System Linux 2.4.x/2.6.x/3.x 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)	

COMMUNICATIONS – POWERED SERIAL PORT PCIE ADD-IN CARD

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

2 PORT POWERED SERIAL PORT PCIE ADD-IN CARD	SFF	
Connector Type	RS-232	
Data Rates supported	50bps ~115.2Kbps	
Controller Details		
Controller	SUNIX SUN2212	
Controller bus architecture (example PCIe 1.0a x1)	PCI Express Spec2.0, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (32bit/64bit) Microsoft Server 2000 / 2003 / 2008 / 2008R2 / 2012 (32bit/64bit) Microsoft Embedded POS Ready / Embedded System Linux 2.4.x / 2.6.x /3.x 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°C to 70°C (-4°F to 158°F)	

COMMUNICATIONS – POWERED USB PORT PCIE ADD-IN CARD

3 PORT 12V POWERED USB PCIE ADD-IN CARD	SFF	
Connector Type	3-port 12VDC Powered USB ports	
Data Rates supported	High-Speed (HS), Full-Speed(FS) and Low-Speed(LS) Data Transfer rate of 1.5, 12, and 480Mbps	
Controller Details		
Controller bus architecture (example PCIe 1.0a x1)	PCI Express Spec1.1, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (32bit/64bit) Microsoft Server 2000 / 2003 / 2008 / 2008R2 / 2012 (32bit/64bit) Microsoft Embedded POS Ready / Embedded System Linux 2.4.x / 2.6.x /3.x	
Half height Powered USB Port		Optional
Environment		
Operation Temperature	0 to 60°C (32 to 140°F)	
Operation Humidity	5 to 95% RH	
Storage Temperature	-20°C to 70°C (-4°F to 158°F)	

COMMUNICATIONS – POWERED SERIAL PORT PCIE ADD-IN CARD

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

4 PORT POWERED SERIAL PORT PCIE ADD-IN CARD	MT	
Connector Type	RS-232	
Data Rates supported	50bps ~115.2Kbps	
Controller Details		
Controller	SUNIX SUN2410	
Controller bus architecture (example PCIe 1.0a x1)	PCI Express Spec2.0, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (32bit/64bit) Microsoft Server 2000 / 2003 / 2008 / 2008R2 / 2012 (32bit/64bit) Microsoft Embedded POS Ready / Embedded System Linux 2.4.x / 2.6.x /3.x DOS	
Full 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°C to 70°C (-4°F to 158°F)	

COMMUNICATIONS – POWERED USB PORT PCIE ADD-IN CARD

2PORT 12V/1PORT 24V POWERED USB PORT PCIE ADD-IN CARD	MT	SFF
Connector Type	1-port 24VDC & 2-port 12VDC Powered USB ports	
Data Rates supported	High-Speed (HS), Full-Speed(FS) and Low-Speed(LS) Data Transfer rate of 1.5, 12, and 480Mbps	
Controller Details		
Controller bus architecture (example PCIe 1.0a x1)	PCI Express Spec1.1, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (32bit/64bit) Microsoft Server 2000 / 2003 / 2008 / 2008R2 / 2012 (32bit/64bit) Microsoft Embedded POS Ready / Embedded System Linux 2.4.x / 2.6.x /3.x	
Full height Powered USB Port	Optional	
Half height Powered USB Port		Optional
Environment		
Operation Temperature	0 to 60°C (32 to 140°F)	
Operation Humidity	5 to 95% RH	
Storage Temperature	-20°C to 70°C (-4°F to 158°F)	

GRAPHICS/VIDEO CONTROLLER**NOTE: MT supports full height (FH) cards and SFF supports low profile (LP) cards.**

Onboard Graphics.

Intel HD Graphics 4600 [with iCore Dual/Quad core CPU-GPU combo]

	MT	SFF
Bus Type	Integrated	
GPU core clock	Gen6 Core Intel® HD Graphics / HD Graphics 4600 @ 1250MHz	
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 4.0/DirectX 11.1	
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Up to 3840x2160 @ 60Hz (DP) Up to 2560x1600 @ 60Hz (HDMI) Up to 4096x2304 @ 24Hz (HDMI) Up to 1920x1200 @ 60Hz (DVI&VGA)	
External Connectors	VGA, DisplayPort	
DisplayPort		
Bus Type	DDPC	
Maximum supported resolution	Up to 3840x2160 @ 60Hz	
Maximum power consumption	N/A	
External connectors	DisplayPort	

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

1GB AMD RADEON HD8490	MT	SFF
Bus Type (example integrated or PCIe x16)	PCIEx16	
GPU core clock	875MHz	
Frame Buffer Memory (onboard and shared) Size and Speed	1GB / 900MHz	
Maximum power consumption	< 35W	
Overlay Planes	Yes	
Maximum Color Depth	32-bit	
Maximum Vertical Refresh Rate	60Hz (2560x1600)	
Multiple Display Support	Yes	
Operating Systems Graphics/ Video API Support	D3D / OpenGL4.1 / OpenCLv1.1 / DirectX11	
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Dual-Link DVI: 2560 x 1600, 60Hz DisplayPort: 2560 x 1600, 60Hz VGA: 1920 x 1440, 90Hz	
External connectors	DisplayPort, DVI-I	
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.	

HARD DRIVES¹

3.5" 1TB SATA3 7200 RPM HDD	MT	SFF
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)	
Internal buffer size	64 MB	
Average Seek Time	13ms	
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	10% to 90% non-condensing	
Maximum Dew Point Temperature	Operating: 26 ⁰ C Non-Operating: 33 ⁰ C	
Altitude Range	-1000 ft to 10000 ft	
Environmental Non-Operating Conditions (Non-Condensing):		
Temperature Range	-40 ⁰ C to 65 ⁰ C	
Relative Humidity Range	5% to 95% non-condensing	
Maximum Wet Bulb Temperature	33 ⁰ C	
Altitude Range	-1000 ft to 40000 ft	

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

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

HARD DRIVES¹ (CONT.)

3.5" 500GB SATA3 10K RPM HDD	MT	SFF
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)	
Internal buffer size	16 MB	
Average Seek Time	9ms	
Rotational Speed	10000 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	10% to 90% non-condensing	
Maximum Dew Point Temperature	Operating: 26 ⁰ C Non-Operating: 33 ⁰ C	
Altitude Range	-1000 ft to 10000 ft	
Environmental Non-Operating Conditions (Non-Condensing):		
Temperature Range	-40 ⁰ C to 65 ⁰ C	
Relative Humidity Range	5% to 95% non-condensing	
Maximum Wet Bulb Temperature	33 ⁰ C	
Altitude Range	-1000 ft to 40000 ft	

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

HARD DRIVES¹ (CONT.)

3.5" 500GB SATA3 7200 RPM HDD	MT	SFF
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)	
Internal buffer size	64 MB	
Average Seek Time	13ms	
Rotational Speed	7200 rpm	
Logical Blocks	976,773,168	
Power Source		
Power Consumption (reference only)	Idle 5W, Active 10.0W(running IOMeter utility)	
Spin Up Current (reference only)	5V (1A) ,12V (2A)	
Environmental Operating Conditions (Non-Condensing):		
Temperature Range	5°C to 60°C	
Relative Humidity Range	10% to 90% non condensing	
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C	
Altitude Range	-1000 ft to 10000 ft	
Environmental Non-Operating Conditions (Non-Condensing):		
Temperature Range	-40°C to 65°C	
Relative Humidity Range	5% to 95% non-condensing	
Maximum Wet Bulb Temperature	33°C	
Altitude Range	-1000 ft to 40000 ft	

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

HARD DRIVES¹ (CONT.)

2.5" 500GB SATA3 5400 RPM HYBRID HDD W/32GB FLASH	
Capacity (bytes)	500,107,862,016
Cache	Dynamic
Dimensions inches (W x D x H)	Approximately (2.75 x 3.95 x 0.268 inches)
Interface type and Maximum speed	Up to 6Gb/s
Internal buffer size	64 MB
Average Seek Time	12 ms (Read)
Rotational Speed	5400 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°C to 60°C
Relative Humidity Range	9% to 95% non-condensing
Maximum Wet Bulb Temperature	37°C
Altitude Range	-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40°C to 65°C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	40°C
Altitude Range	-1000 ft to 40000 ft

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HARD DRIVES¹ (CONT.)

2.5" 500GB SATA3 5400 RPM HYBRID HDD W/8GB FLASH	
Capacity (bytes)	500,107,862,016
Cache	Dynamic
Dimensions inches (W x D x H)	Approximately (2.75 x 3.951 x 0.268 inches)
Interface type and Maximum speed	Up to 6Gb/s
Internal buffer size	64MB
Average Seek Time	12 ms
Rotational Speed	5400 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°C to 60°C
Relative Humidity Range	10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C
Altitude Range	-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40°C to 65°C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	40°C
Altitude Range	-1000 ft to 40000 ft

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

HARD DRIVES¹ (CONT.)**2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE**

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	15 ms (Read)
Rotational Speed	5400 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	10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C
Altitude Range	-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40 ⁰ C to 65 ⁰ C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	33 ⁰ C
Altitude Range	-1000 ft to 40000 ft

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

HARD DRIVES¹ (CONT.)

2.5" 320GB SATA2/SATA3 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) Up to 3Gb/s (SATA 2.0)
Internal buffer size	16 MB
Average Seek Time	13 ms
Rotational Speed	7200 rpm
Logical Blocks	625,142,448
Power Source	
Power Consumption (reference only)	Idle 0.7W, Active 3.25W(running IOmeter utility)
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 Dew Point Temperature	Operating: 26 ⁰ C Non-Operating: 33 ⁰ C
Altitude Range	-1000 ft to 10000 ft
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40 ⁰ C to 65 ⁰ C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	33 ⁰ C
Altitude Range	-1000 ft to 40000 ft

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

HARD DRIVES¹ (CONT.)**2.5" 128GB¹ SATA SOLID STATE DRIVE**

Capacity (GB)	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)
MTBF	>1.5M hours
Logical Blocks	250,069,680
Power Source	
Power Consumption (reference only)	Idle 0.5W, Active 2.5W
Spin Up Current (reference only)	5V (1000mA)
Environmental Operating Conditions (Non-Condensing):	
Temperature Range	5°C to 60°C
Relative Humidity Range	10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 26°C Non-Operating: 33° C
Altitude Range	-1000 to 10000 ft
Op Shock (@0.5ms)	1,500G
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-40°C to 65°C
Relative Humidity Range	5 to 95%
Maximum Wet Bulb Temperature	33°C
Altitude Range	-1000 to 40000 ft

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-ROM	MT	SFF
External Dimensions inches/centimeters (Without Bezel – W x H x D)	148.4mm(6in)/42mm (2in)/171mm (6.73in) (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)
Weight (max) pounds/kilograms	700g	165g
Interface type and speed	SATA 1.5Gbit/s	SATA 1.5Gbit/s
Disc Capacity	Standard	Standard
Internal buffer size	supplier dependent	supplier dependent
Access Times (typical)	supplier dependent	supplier dependent
Maximum Data Transfer Rates		
Writes	N/A	N/A
Reads	16x DVD/48x CD	8x DVD/ 24x CD
Power Source		
DC Power Requirements	12V, 5V	5V
DC Current	800mA (12V)/ 1000mA (5V)	1000mA ¹
Environmental Operating Conditions (Non-Condensing):		
Operating Temperature Range	5C to 50C	5C to 50C
Relative Humidity Range	20% to 80% RH	20% to 80% RH
Maximum Wet Bulb Temperature	29C	29C
Altitude Range	-200 to 3048m	-200 to 3048m
Environmental Non-Operating Conditions (Non-Condensing):		
Operating Temperature Range	-40C to 65C	-40C to 65C
Relative Humidity Range	5% to 95% RH	5% to 95% RH
Maximum Wet Bulb Temperature	38C	38C
Altitude Range	-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.

OPTICAL DRIVES (CONT.)

DVD +/- RW ¹	MT	SFF
External Dimensions inches/centimeters (Without Bezel – W x H x D)	148.4mm(6in)/42mm (2in)/171mm (6.73in) (max)	128.0 mm (5.04)/ 12.7mm (0.5 in)/ 126.1mm (4.97in)
Weight (max) pounds/kilograms	700g	170g
Interface type and speed	SATA 1.5Gbit/s	SATA 1.5Gbit/s
Disc Capacity	Standard	Standard
Internal buffer size	supplier dependent	supplier dependent
Access Times (typical)	supplier dependent	supplier dependent
Maximum Data Transfer Rates		
Writes	16x DVD/48x CD	8x DVD/ 24x CD
Reads	16x DVD/48x CD	8x DVD/ 24x CD
Power Source		
DC Power Requirements	12V, 5V	5V
DC Current	800mA (12V)/ 1000mA (5V)	1000mA ²
Environmental Operating Conditions (Non-Condensing):		
Operating Temperature Range	5C to 50C	5C to 50C
Relative Humidity Range	20% to 80% RH	20% to 80% RH
Maximum Wet Bulb Temperature	29C	29C
Altitude Range	-200 to 3048m	-200 to 3048m
Environmental Non-Operating Conditions (Non-Condensing):		
Operating Temperature Range	-40C to 65C	-40C to 65C
Relative Humidity Range	5% to 95% RH	5% to 95% RH
Maximum Wet Bulb Temperature	38C	38C
Altitude Range	-200 to 10600m	-200 to 10600m

BIOS DEFAULTS

General	Boot Sequence	Boot List Option = UEFI
	Advanced Boot Options	Enable (Legacy Option ROMs, UEFI Network Stack)
System Configuration	Integrated NIC:	Enable w/PXE
	Serial Port:	COM1
	SATA Operation:	RAID On
	Drives:	Enable (SATA-0, SATA-1, SATA-2, SATA-3)
	SMART Reporting:	Disable
	USB Configuration:	Enable (Boot Support, Front USB Ports, Rear Dual USB Ports, Rear Quad USB Ports)
	Audio	Enable
	Miscellaneous Devices:	Enable (Express Card, PCI Slot)
Video	Multi-display:	Disable
Performance	Multiple Core Support:	All
	Intel® SpeedStep™:	Enable
	C States Control:	Enable
	Limit CPUID Value:	Disable
	Intel TurboBoost	Enable
	HyperThread control:	Enable
	Rapid Start Technology	Automatic, depending on system configuration
Virtualization Support	Virtualization:	Enable
	VT for Direct I/O:	Disable
	Trusted Direct I/O	Disable
Security	Strong Password:	Disable
	Password Configuration:	4~32
	Password Bypass	Disable
	Password Changes:	Enable
	TPM Security:	Disable
	Computrace®:	Deactivate
	Chassis Intrusion	On—Silent
	CPU XD Support:	Enable
	OROM Keyboard Access	Enable
	Admin Setup Lockout	Disable
	HDD Protection Support	Disable

BIOS DEFAULTS

Secure Boot	Secure Boot Enable	Disable
	Expert Key Management	Disable Custom Mode
Power Management	AC Recovery:	Power Off
	Auto On Time:	Disable
	Deep Sleep Control:	Disable
	Fan Control Override:	Disable
	Wake on LAN/WLAN:	Disable
	USB Wake Support	Disable
	Block sleep	Disable
	Intel® Smart Connect Technology:	Disabled, and dependent upon supported hardware configuration
Maintenance	Service Tag:	Set by the factory
	Asset Tag:	Optional User Entry
	SERR Message:	Enable
	Enable Watchdog Timer (optional)	Disable
POST Behavior	Numlock LED:	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.

ACOUSTIC NOISE EMISSION INFORMATION**OPTIPLEX XE2 MT**

Component	Test Configuration
CPU	Intel Haswell 4c 86W 2.60GHz
Memory	8G DDR3 1600MHz*4
HDD (#, capacity)	1T 7200RPM SATA3, 3.5" *2
RMSD	DVD+/-RW,16X,SATA,HH *2
Graphics Adapter	AMD OUGA10

Declared Sound Power (L_{WAd})

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex XE2 MT is as follows:
(all values L_{WAd} expressed in bels; 1 bel=10 decibels, re 10^{-12} Watts)

Operating Mode	Declared Sound Power(L_{WAd})
Idle	4.0
HDD Operating	4.0
CPU Stressed	4.8
ODD Operating	5.2

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2×10^{-5} Pa), at Operator and Bystander 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 follows¹:

Operating Mode	Declared Sound Pressure (LpA)			
	Tabletop System		Floor Standing System	
	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	27.0	23.3	23.6	22.7
HDD Operating	27.5	23.6	22.7	22.0
CPU Stressed	35.6	32.3	23.8	23.2
ODD Operating	43.2	38.0	38.3	41.4

¹ All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. 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 XE2 SFF**

Component	Test Configuration
CPU	Intel Haswell 4c 86W 2.60GHz
Memory	8G DDR3 1600MHz*4
HDD (#, capacity)	1T 7200RPM SATA3, 3.5"
RMSD	DVD+/-RW,8X,SATA, 12.7
Graphics Adapter	AMD OUGA10

Declared Sound Power (L_{WAd})

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex XE2 SFF is as follows:
(all values L_{WAd} expressed in bels; 1 bel=10 decibels, re 10^{-12} Watts)

Operating Mode	Declared Sound Power(L_{WAd})
Idle	3.4
HDD Operating	3.4
CPU Stressed	4.4
ODD Operating	4.5

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2×10^{-5} Pa), at Operator and Bystander 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 follows¹:

Operating Mode	Declared Sound Pressure (LpA)			
	Tabletop System		Floor Standing System	
	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	25.1	19.2	17.6	18.2
HDD Operating	25.4	19.5	18.9	19.5
CPU Stressed	39.0	32.7	29.7	30.0
ODD Operating	39.2	32.8	29.7	28.0

¹ All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. 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