Dell OptiPlex 3020

Technical Guidebook

Inside the OptiPlex 3020
SPECIFIC FEATURES/ MODELS/CONFIGURATIONS/OPTIONS DISCUSSED IN THIS DOCUMENT MAY NOT BE AVAILABLE IN ALL REGIONS

Dell - Internal Use - Confidential

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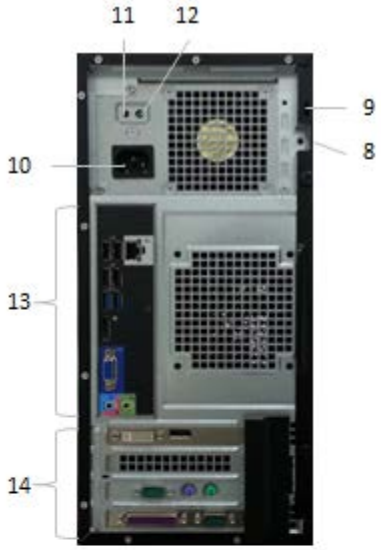
Overview

Mini Tower Computer (MT) View



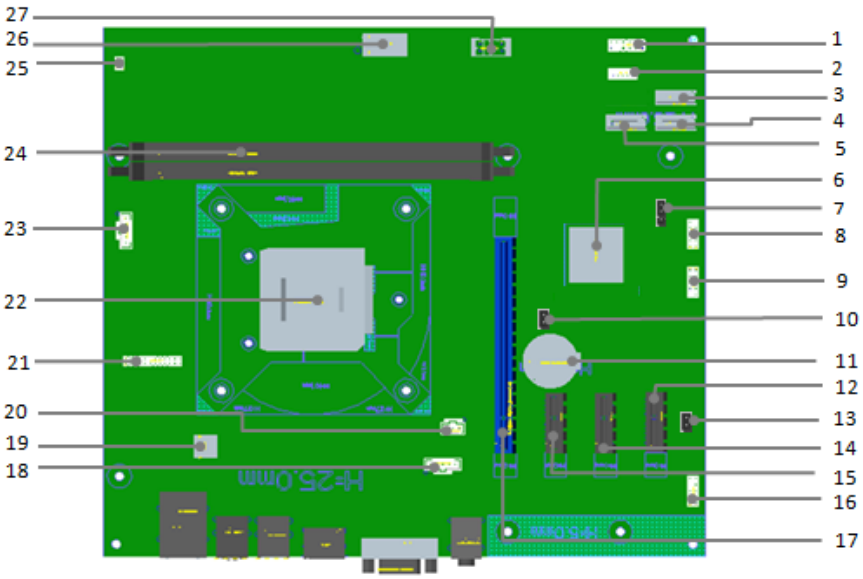
Front View			
1	Optical Drive	5	Headphone Connector
2	Optical Drive Eject Button	6	Microphone Connector
3	Power Button, Power Light	7	Drive Activity Light
4	USB 2.0 Connectors (2)		

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

Back Panel Connectors			
1	DisplayPort Connector	6	Network Connector
2	VGA Connector	7	Network Activity Light
3	USB 2.0 Connectors (4)	8	Line-out Connector
4	Line-in/Microphone Connector	9	USB 3.0 Connectors (2)
5	Link Integrity Light		

MT Motherboard Layout

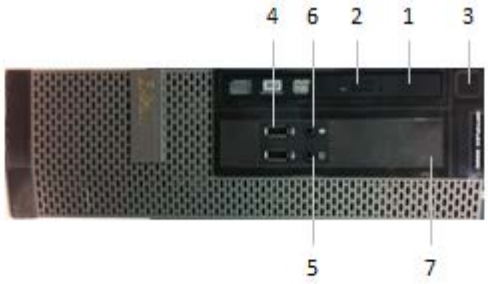
Motherboard layout

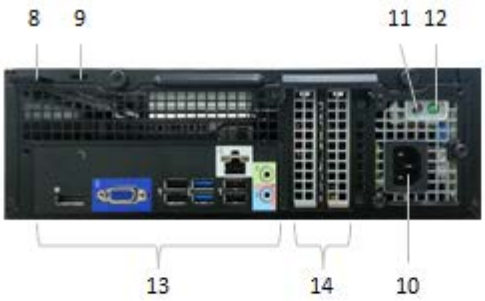


MT System board components

Number	Name	Number	Name
1	HDD LED and Chassis Detect Connector (FRONT_HDD_LED)	15	PCI-e x1 Connector (SLOT2)
2	Internal Speaker Connector (INT_SPKR)	16	Front Audio Connector (FRONT_AUDIO)
3	SATA 2 Connector (SATA2) (Black color)	17	PCI-e x16 Connector (SLOT1)
4	SATA 0 Connector (SATA0) (Blue color)	18	System Fan Connector (FAN_SYS)
5	SATA 1 Connector (SATA1) (White color)	19	CPU Power Connector (CPU_PWRCONN)
6	PCH chip	20	Intrusion Switch Connector (INTRUDER)
7	PSWD Jumper (PSWD)	21	PS2_Serial port Connector (KB_MS_SERIAL)
8	Front USB2.0 Connector (FRONTPANEL)	22	Processor Socket
9	Internal USB Connector (INT_USB)	23	CPU fan Connector (FAN_CPU)
10	RTCRST Jumper (RTCRST)	24	Memory Connectors (DIMM1, DIMM2)
11	Battery Connector (BATTERY)	25	Power Switch Connector (PWR_SW)
12	PCI-e x1 Connector (SLOT4)	26	ATX Power Conncetor (ATX_POWERCON)
13	SERVICE_MODE Jumper (SERVICE_MODE)	27	HDD_ODD_Power Cable Connector (HDD_ODD_PWR)
14	PCI-e x1 Connector (SLOT3)		

Small Form Factor Computer (SFF) View





Front View			
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9	Kensington / Noble Security Cable Slot	13	Back Panel Connectors
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11	Power Supply Diagnostic Button		

Back Panel Connectors			
1	DisplayPort Connector	6	Network Connector
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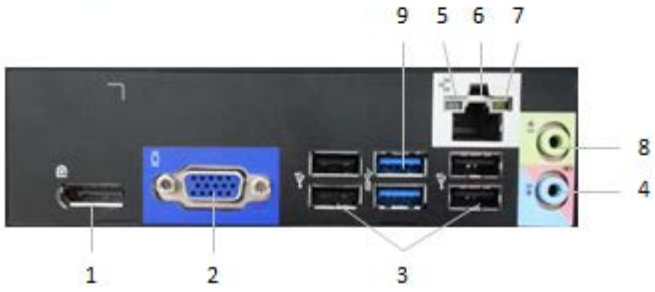
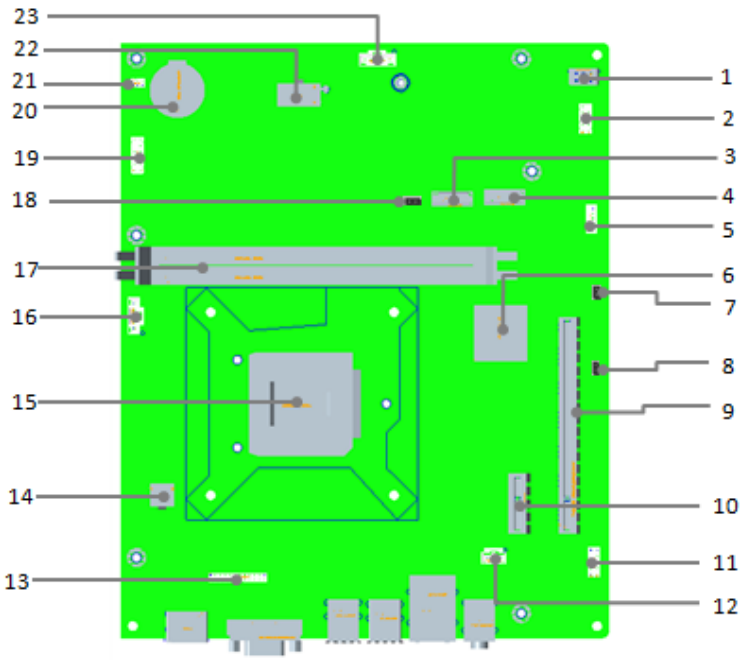


SFF Motherboard Layout

Motherboard layout



SFF System board components

Number	Name	Number	Name
1	HDD_ODD_Power Cable Connector (HDD_ODD_PWR)	13	PS2_Serial port Connector (KB_MS_SERIAL)
2	Front USB2.0 Connector (FRONTPANEL)	14	CPU Power Connector (CPU_PWRCONN)
3	SATA 1 Connector (White color)	15	Processor Socket
4	SATA 0 Connector (Blue color)	16	CPU fan Connector (FAN_CPU)
5	Internal Speaker Connector (INT_SPKR)	17	Memory Connectors (DIMM1, DIMM2)
6	PCH chip	18	RTCRST Jumper (RTCRST)
7	PSWD Jumper (PSWD)	19	HDD LED and Chassis Detect Connector (FRONT_HDD_LED)
8	SERVICE_MODE Jumper (SERVICE_MODE)	20	Battery Connector (BATTERY)
9	PCI-e x16 Connector (SLOT1)	21	Power Switch Connector (PWR_SW)
10	PCI-e x1 Connector (SLOT2)	22	ATX Power Conncetor (ATX_POWERCON)
11	Front Audio Connector (FRONT_AUDIO)	23	System Fan Connector (FAN_SYS)
12	Intrusion Switch Connector (INTRUDER)		

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
Windows Operating System	Microsoft® Windows 8 Pro (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),	
Other	Ubuntu 12.04 (64bit)	
OS Media Support (optional)	Optional	

Chipset

	MT	SFF
Chipset	Intel H81 Chipset	
Non-volatile memory on chipset		
BIOS Configuration SPI (Serial Peripheral Interface	64Mbit (8MB) 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 EFuse	LOM configuration contained in LOM EFuse	

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	SFF
Intel Quad Core Processors		
Core™ I5-4570 Processor (Quad Core, 3.20GHz Turbo, 6MB, w/ HD Graphics 4600)	GSP	GSP
Intel Dual Core Processors		
Core™ i3-4130 Processor (Dual Core, 3.4GHz, 3MB w/ HD Graphics 4400)	GA	GA
Pentium® G3220 Processor (Dual Core, 3.0GHz, 3MB w/ HD Graphics)	X	X
Celeron® G1820 Processor (Dual Core, 2.7GHz, 2MB w/HD Graphics)	Post-RTS	Post-RTS

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	2	
DIMM Capacities	Up to 8GB	
Minimum Memory	2GB	
Maximum System Memory	16GB	
Memory Configurations		
8GB[1] DDR3, 1600MHz, (2 x 4GB)	X	X
4GB[1] DDR3, 1600MHz, (1 x 4GB)	X	X
2GB DDR3, 1600MHz, (1 x 2GB)	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	SFF
Bays		
Optical Drive Bay Supported	1 HH or 1 Slim Line	1 Slim Line
Hard Drive Bay Supported	2	1
Maximum Hard Drives Supported (3.5" / 2.5")	2x3.5" OR 2x2.5" OR 1x3.5" + 1x2.5"	1x3.5" or 1x2.5"
Interface		
SATA2.0	1	1
SATA3.0	2	1
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 Secure Encrypted Hybrid Drive	Post-RTS	Post-RTS
128GB1 SATA3 Solid State Drive	X	X
Optical Drive		
DVD+/-RW[2]	X	X
DVD-ROM[3]	X	X
Media Card Reader		
Dell 19 in 1 Media Card Reader	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 Dell 19 in 1 Media Card Reader (MCR) is supported via a F5 to F3 bay converter on the MT and requires a slim line optical drive.

System Board Connectors

NOTE: See Detailed Engineering Specifications for maximum card dimensions.

	MT	SFF
PCIex16 Gen 2	1FH	1HH
PCIex1	3FH	1HH
Total expansion	4 slots	2 slots

1 PCI Slots (Support Standard Rev 2.3)

Graphics / Video Controller

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

	MT	SFF
Intel HD Graphics	X	X
Discrete Graphics Card Options		
1GB AMD Radeon HD8490	Optional Card	
1GB AMD Radeon HD8570	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 / 1	2 / 4 / 0
USB 3.0 (Front / Rear / Internal)	0 / 2 / 0	0 / 2 / 0
Network Connector (RJ-45)	1	1
Serial	Via optional add-on bracket or PCIe card	
PS/2	Via optional add-on bracket	
Parallel	Via optional PCIe card	
Video		
VGA	1	1
DisplayPort 1.2	1	1
Audio		
Front panel Mic-in, Headphones out	X	X
Rear panel Mic-in/Line-in, Line-out	X	X

Communications – Integrated Realtek RTL8151GD

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

	MT	SFF
Realtek RTL8151GD[1] Ethernet LAN 10/100/1000 (Remote Wake Up, PXE 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
Internal Business Speakers	Optional	
Dell AX210CR USB Stereo speakers	Optional	
Dell AX510/AX510PA Flat Panel Soundbar Speakers	Optional	

Keyboards and Mouse

	MT	SFF
Dell Entry Keyboard[1]	Optional	
Dell Multimedia Pro Keyboard[1]	Optional	
Dell SmartCard Keyboard[1]	Optional	
Dell USB Optical Mouse[1]	Optional	
Dell Laser Mouse[1]	Optional	

1 These offerings are not Halogen Free

Security

	MT	SFF
Trusted Platform Module (TPM) 1.2[1]	Integrated on system board	
Chassis Intrusion Switch	Standard	
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 on Dell.com	
Dell Data Protection | Security Tools (DDP|ST)	Standard	
Dell Data Protection | Encryption (DDPE)	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
Multi-pack support	Optional, US only	
80 PLUS Energy Efficient Power Supply	Optional	

Service and Support

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

	MT	SFF
1 Year Warranty[1] Next Business Day On-site[2] (1-1-1)	Standard in some regions	
3 Year Warranty[1] Next Business Day On-site[2] (3-3-3)	Standard in some regions	
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)	16.98 / 7.7	11.03 / 5
Chassis Dimensions (H x W x D)		
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)	Need Dell Packaging Team to Update	
Packaging Parameters (H x W x D)		
Height (inches / centimeters)		
Width (inches / centimeters)		
Depth (inches / centimeters)		

System Board Connector Maximum Add-in Card Allowable Dimensions

	MT	SFF
PCIex16 Slot (Black) (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	50W
PCIex1 Slot (Black) (Voltage supported 3.3V/12V)	3	1
Height (inches / centimeters)	4.376 / 11.115	2.731 /6.89
Length (inches / centimeters)	4.5 / 11.44	4.5 / 11.44
Maximum Wattage	10W	10W

System Level Environmental and Operating Conditions

	MT	SFF
Temperature		
Operating		
Non-Operating (Storage)		
Relative Humidity		
Maximum Vibration		
Operating		
Non-Operating		
Maximum Shock		
Operating		
Non-Operating		
Maximum Altitude		
Operating		
Non-Operating		

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.

	MT		SFF		
Power Supply	APFC	EPA	Power Supply	APFC	EPA
Wattage	290W	290W	Wattage	255W	255W
AC input voltage range	90-264	90-264	AC input voltage range	90-264	90-264
AC input current (low ac range / high ac range)	5.4/2.7	5.4/2.7	AC input current (low ac range / high ac range)	4.6/2.3	4.6/2.3
AC input frequency	47-63	47-63	AC input frequency	47-63	47-63
AC holdup time (80% load)	16mS	16mS	AC holdup time (80% load)	16mS	16mS
Average efficiency (ENERGYSTAR 5.2 compliant)	N/A	87%-90%-87%	Average efficiency (ENERGYSTAR 5.2 compliant)	N/A	87%-90%-87%
Typical Efficiency (APFC)	65%	NA	Typical Efficiency (APFC)	65%	NA
DC Parameters					
+12.0v output	12VA/14A 12VB/16A	12VA/14A 12VB/16A	+12.0v output	12VA/14A 12VB/13A	12VA/14A 12VB/13A
-12.0v output	N/A	N/A	-12.0v output	N/A	N/A
+12.0v auxiliary output	12VSB/1.67A	12VSB/1.67A	+12.0v auxiliary output	12VSB/1.67A	12VSB/1.67A
Max total power	290W	290W	Max total power	255W	255W
Max combined 12.0v power (note: only if more than one 12v rail)	290W	290W	Max combined 12.0v power (note: only if more than one 12v rail)	255W	255W
BTUs/h (based on PSU max wattage)	989 BTU	989 BTU	BTUs/h (based on PSU max wattage)	870 BTU	870 BTU
Power Supply Fan	80*25	80*25	Power Supply Fan	60*25	60*25
Compliance					
ErP Lot6 Tier 2	Y	Y	Erp Lot6 Tier 2	Y	Y

0.5watt requirement			0.5watt requirement		
80Plus Certified	N	Y	Climate Savers / 80Plus Compliant	N	Y
FEMP Standby Power Compliant	Y	Y	FEMP Standby Power Compliant	Y	Y

3.0v CMOS battery (Type and estimated battery life)				
Brand	Type	Voltage	Composition	Life
JHIH HONG	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.5V End-Voltage. 20°C±2°C: 940Hrs or longer; 910Hrs or longer after 12 months
PANASONIC	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.5V End-Voltage. 20℃±2℃.1183Hrs. or Longer.1133Hrs.or Longer after 12 months.
MITSUBISHI	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage. 20℃±2℃ 940Hrs. or Longer.910Hrs.or Longer after 12 months.

Audio

Integrated Realtek ALC3220 High Definition Audio	MT	SFF
High Definition Stereo Support	X	X
Number of channels	2	2
Number of Bits / Audio resolution	16, 24-bit resolution	16, 24-bit resolution
Sampling rate (recording / playback)	Support 44.1K/48K/96K/192 kHz sample rates Support 44.1K/48K/96K/192 kHz sample rates	Support 44.1K/48K/96K/192 kHz sample rates Support 44.1K/48K/96K/192 kHz sample rates
Signal to Noise Ratio	98 dB DAC outputs, 92 dB for ADC inputs	98 dB DAC outputs, 92 dB for ADC inputs
Analog Audio	X	X
Dolby Digital	N/A	N/A
THX	N/A	N/A
Digital out (S/PDIF)	N/A	N/A
Audio Jack Impedance		
Microphone	40K ohm~60K ohm	40K ohm~60K ohm
Line-in	40K ohm~60K ohm	40K ohm~60K ohm
Line-out	100~150 ohm	100~150 ohm
Headphone	1~4 ohm	1~4 ohm
Internal Speaker Power Rating	2Watt (peak) 8 Ohm / 1Watt (average) 8 Ohm	2Watt (peak) 8 Ohm / 1Watt (average) 8 Ohm

Communications – Integrated Realtek RTL8151GD

INTEGRATED Realtek RTL8151GD GIGABIT[1] ETHERNET LAN 10/100/1000	MT	SFF
External Connector Type	RJ45	RJ45
Data Rates Supported	10/100/1000 Mbps[1]	10/100/1000 Mbps[1]
Controller Details		
Controller Bus Architecture	PCI Express Base Specification Revision 1.1	PCI Express Base Specification Revision 1.1
Integrated Memory	Yes	Yes
Data Transfer Mode (example: Bus-Master DMA)	Yes	Yes
Power Consumption (full operation per data rate connection speed)	828.76mW (Max.)	828.76mW (Max.)
Power Consumption (standby operation)	49.37mW (Max.)	49.37mW (Max.)
IEEE Standards Compliance	802.3	802.3
Hardware Certifications	N/A	N/A
Boot ROM Support	N/A	N/A
Network Transfer Mode		
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)	10 Mb (full/half-duplex) 100 Mb (full/half-duplex) 1000 Mb (full-duplex)
Environmental		
Operating Temperature	0° C to 70° C	0° C to 70° C
Operating Humidity	IC level 40~60% RH PCB level 0~90% RH	IC level 40~60% RH PCB level 0~90% RH
Operating System Driver Support	Windows 7 32/64, Windows 8 32/64	Windows 7 32/64, Windows 8 32/64
Manageability	WOL, PXE 2.1	WOL, PXE 2.1
Management Capabilities Alerting	N/A	N/A

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 NetXtreme 10/100/1000 PCIe Gigabit1 Networking Card	MT	SFF
External Connector Type	RJ45	
Data Rates Supported	10/100/1000 Mbps Half/Full duplex	
Controller Details		
Controller Bus Architecture	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)	2.84W (860mA @ +3.3V)
Power Consumption (standby operation)	Less than 300mW	
IEEE Standards Compliance	802.3, 802.2, 802.3x, 802.1p	
Hardware Certifications	FCC B, VCCI B, CE	
Boot ROM Support	No	
Network Transfer Mode		
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.	
Environmental		
Operating Temperature	0° C to 55° C (32° F - 131° F)	
Operating Humidity	5% ~ 95% (non-condensing)	
Operating System Driver Support	Windows 7 32/64, Windows 8 32/64, Linux	
Manageability	WOL, PXE2.1, ACPI	
Management Capabilities Alerting	N/A	

[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 WLAN Card (802.11n)	MT	SFF
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	
802.11a Data Rates Supported	11, 5.5, 2, 1 Mbps	
802.11b 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	-10–85°C	
Operating Humidity	Max Operating Humidity 95 %	
Operating System Driver Support	Windows 8 32/64, Windows 7 32/64, Windows XP 32/64, Vista 32/64	

Communications – Serial / PS/2 Add-in Bracket

Serial / PS/2 Add-in Bracket	MT	SFF
Connector Type	RS232 and PS2	
Controller Details		
Interface type	24 pins header connect to MB directly	
IO Ports	1 Serial, 2 PS2	
Full height PS2/Serial add in dongle	Optional	
Half height PS2/Serial add in dongle		Optional
Environmental		
Operating Temperature	0° C to 70° C (32° F to 158° F)	
Operating Humidity	20% to 80% (non-condensing)	
Storage Temperature	-20 to 85° C (-4 to 185° F)	

Communications – Serial / Parallel Port PCIe Add-in Card

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
Controller Bus Architecture	PCI Express Spec 2.0, Single-Lane (x1)
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Microsoft Embedded XP Embedded/POS Ready 2009/ Embedded System 2009 Linux 2.4.x/2.6.x/3.x DOS
Full height Serial/Parallel add in dongle	Optional
Environmental	
Operating Temperature	0 to 60°C (32 to 140°F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85°C (-4 to 185°F)

Communications – Serial Port PCIe Add-in Card

Serial Port PCIe Add-in Card	MT	SFF
Connector Type	Expands four RS-232 serial ports	
Data Rates Supported	50bps ~115.2Kbps	
Controller Details		
Controller	SUN2410	
Controller Bus Architecture	PCI Express Spec 2.0, Single-Lane (x1)	
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Microsoft Embedded XP Embedded/POS Ready 2009/ Embedded System 2009 Linux 2.4.x/2.6.x/3.x DOS	
Full height Serial add in dongle	Optional	
Half height Serial add in dongle		Optional
Environmental		
Operating Temperature	0 to 60° C (32 to 140° F)	
Operating Humidity	5 to 95% RH	
Storage Temperature	-20 to 85° C (-4 to 185° F)	

Communications – Serial Port PCIe Add-in Card

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	PCI Express Spec 2.0, Single-Lane (x1)
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Microsoft Embedded XP Embedded/POS Ready 2009/ Embedded System 2009 Linux 2.4.x/2.6.x/3.x DOS
Half height Serial port in dongle	Optional
Environmental	
Operating Temperature	0 to 60° C (32 to 140° F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85° C (-4 to 185° F)

Communications – Parallel Port PCIe Add-in Card

Parallel Port PCIe Add-in Card	SFF
Connector Type	IEEE1284
Data Rates Supported	Maximum 1.8MBps
Controller Details	
Controller	SUNIX SUN2212
Controller Bus Architecture	PCI Express Spec 2.0, Single-Lane (x1)
Driver Support	Microsoft Client XP/Vista/7/8 (X86/X64) Microsoft Server 2000/2003/2008/2008 R2 (X86/X64) Microsoft Embedded XP Embedded/POS Ready 2009/ Embedded System 2009 Linux 2.4.x/2.6.x/3.x DOS
Half height Serial port in dongle	Optional
Environmental	
Operating Temperature	0 to 60° C (32 to 140° F)
Operating Humidity	5 to 95% RH
Storage Temperature	-20 to 85° C (-4 to 185° F)

Graphics / Video Controller

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

Onboard Graphics

Onboard Graphics	MT	SFF
Bus Type	Integrated	
GPU core clock	Depends on CPU type (Intel® HD Graphics@1100Mhz /HD Graphics 4600 @ 1150MHz)	
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	32bit	
Maximum Vertical Refresh Rate	75Hz	
Multiple Display Support	Yes	
Operating System Graphics / API Support	OpenGL 4.0/DirectX 11.1/OpenCL 1.2	
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	DDPB	
Maximum Supported Resolution	Up to 3840x2160 @ 60Hz	
Maximum Power Consumption	N/A	
External Connectors	DisplayPort	

1GB AMD RADEON HD8490

1GB AMD RADEON HD8490	MT	SFF
Bus Type	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-bits	
Maximum Vertical Refresh Rate	60Hz (2560x1600)	
Multiple Display Support	Yes	
Operating System Graphics / API Support	D3D / OpenGL4.1 / OpenCLv1.1 / DirectX11	
Supported Resolutions and Max	Dual-Link DVI: 2560 x 1600, 60Hz	

Refresh Rates (Hz) (Note: Analog and/or digital)	DisplayPort: 2560 x 1600, 60Hz VGA: 1920 x 1440, 60Hz	
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.	

1GB AMD RADEON HD8570

1GB AMD RADEON HD8570	MT	SFF
Bus Type	PCIE x16	
GPU core clock	780Mhz	
Frame Buffer Memory (onboard and shared) Size and Speed	1GB/900Mhz	
Maximum Power Consumption	50W	
Overlay Planes	Yes	
Maximum Color Depth	24-bits	
Maximum Vertical Refresh Rate	60Hz (4096x2160)	
Multiple Display Support	Yes	
Operating System Graphics / API Support	D3D / OpenGL4.1 / OpenCLv1.1 / DirectX11	
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Single-Link DVI: 1920 x 1200, 60Hz DisplayPort1.2: 4096 x 2160, 60Hz(Single Stream) VGA: 1920 x 1440, 60Hz	
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 Drives

3.5" 1TB SATA3 7200 RPM HDD

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°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	

3.5" 500GB SATA3 7200 RPM HDD

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 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°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

2.5" 500GB SATA3 5400 RPM HYBRID HDD W/8GB FLASH

2.5" 500GB SATA3 5400 RPM HYBRID HDD W/8GB FLASH	MT	SFF
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 (SATA 3.0)	
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	33°C	
Altitude Range	-1000 ft to 40000 ft	

2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE

2.5" 500GB SATA 5400 RPM SECURE ENCRYPTED DRIVE	MT	SFF
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°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

2.5" 128GB SOLID STATE DRIVE

2.5" 128GB SOLID STATE DRIVE	MT	SFF
Capacity (bytes)	128,035,676,160	
Dimensions inches (W x D x H)	3.94 x 2.75 x 0.374	
Interface type and Maximum speed	Up to 6Gb/s (SATA 3.0)	
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 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

Optical Drives

DVD-ROM

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

DVD-RW

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

Media Card Reader (MCR)

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

19 in 1 Media Card Reader	MT
External Dimensions inches/(centimeters) (With Bezel – W x H)	3.99/(10.13cm)/1.0/(2.54cm)
Weight (max) pounds/kilograms	~151g
Interface type and speed	USB 2.0, 480Mb/s
Media Supported (maximum capacity supported will vary by Flash Media Types)	
Media Supported	CF I CF II Micro Drive (MD) Secure Digital (SD) SDHC / SDXC Mini Secure Digital (mini-SD) Micro Secure Digital (Micro-SD) (with adapter) Multi Media Card (MMC) RS Multi Media Card (RS-MMC) Multi Media Card plus (MMC plus) RS Multi Media Card plus (RS-MMC plus) Multi Media Card Micro (MMC Micro) (with adapter) Memory Stick (MS) Memory Stick Pro (MS Pro) Memory Stick Pro Duo (MS Pro Duo) Memory Stick Duo (MS-Duo) Memory Stick Micro (MS Micro)(M2) (with adapter) Smart Media (SM) xD
Support Specification Versions:	Compact Flash type I/II Version 4.0 Smart Media (SM) Specification 2003 Multi Media Card (MMC) Specification 4.2 Secure Digital (SD) 2.0 Memory Stick Pro (MS-PRO) Specification 1.02 Memory Stick (MS) Specification 1.43 xD Specification 1.2
Power Source	
Max Power Requirements	2.5W
Supply Voltage Range	4.75V ~ 5.25V
Power Consumption:	Standby less than 0.5mA @ 5.0VDC

Environmental Operating Conditions (Non-Condensing):	
Operating Temperature Range	5C to 50C
Relative Humidity Range	10% to 90% RH
Environmental Non-Operating Conditions (Non-Condensing):	
Operating Temperature Range	-40C to 65C
Relative Humidity Range	5% to 95% RH

BIOS Defaults

System Configuration	Integrated NIC:	Enable w/PXE
	Serial Port:	Disable
	SATA Operation:	AHCI
	Drives:	Enable (SATA-0, SATA-1, SATA-2,)
	SMART Reporting:	Disable
	USB Configuration:	Enable (Boot Support, Front USB Ports, Rear Dual USB Ports, Rear Quad USB Ports)
	Miscellaneous Devices:	
Video	Multi-display:	Disable
	Primary Display	Auto
Performance	Multiple Core Support:	All
	Intel® SpeedStep™:	Enable
	C States Control:	Enable
	Limit CPUID Value:	Disable
	Intel TurboBoost	Enable
	HyperThread control:	Enable
Virtualization Support	Virtualization:	Enable
Security	Strong Password:	Disable
	Password Configuration:	4~32
	Password Bypass	Disable
	Password Changes:	Enable
	TPM Security:	Disable
	Computrace®:	Deactivate
	CPU XD Support:	Enable

	Admin Setup Lockout	Disable
Power Management	AC Recovery:	Power Off
	Auto On Time:	Disable
	Deep Sleep Control:	Enable in S4 & S5
	Fan Control Override:	Disable
	Wake on LAN/WLAN:	Disable
	Block sleep	Disable
Maintenance	Service Tag:	Set by the factory
	Asset Tag:	Optional User Entry
	SERR Message:	Enable
POST Behavior	Numlock LED:	Enable
	Keyboard Errors:	Enable

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 AND ENVIRONMENTAL COMPLIANCE

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 3020 MT

Component	Test Configuration
CPU	Intel i5-4570 3.2GHz
Memory	8G DD3,1600 x 2pcs
HDD (#, capacity)	WD 1T 3.5inch x2
RMSD	19 in 1 card reader
Graphics Adapter	HD 8570

Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 3020 MT is as follows: (all values LWAd expressed in bels; 1 bel=10 decibels, re 10-12 Watts)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.8
HDD Operating	4.0
CPU Stressed	3.8
ODD Operating	4.2

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10-5 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 follows[1]:

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	27.5	n/a	n/a	n/a
HDD Operating	n/a	n/a	n/a	n/a
CPU Stressed	29.2	n/a	n/a	n/a
ODD Operating	n/a	n/a	n/a	n/a

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 3020 SFF

Component	Test Configuration
CPU	Intel i5-4570 3.2GHz
Memory	8G DD3,1600 x 2pcs
HDD (#, capacity)	Seagate 1T 3.5 inch x1
RMSD	19 in 1 card reader
Graphics Adapter	HD 8570

Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 3020 SFF is as follows: (all values LWAd expressed in bels; 1 bel=10 decibels, re 10-12 Watts)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.6
HDD Operating	3.7
CPU Stressed	4.8
ODD Operating	3.6

A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10-5 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 follows[1]:

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	25.2	n/a	n/a	n/a
HDD Operating	n/a	n/a	n/a	n/a
CPU Stressed	31.9	n/a	n/a	n/a
ODD Operating	n/a	n/a	n/a	n/a

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