



# Dell OptiPlex 7020

## Technical Guidebook

Inside the OptiPlex 7020

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

# Table of Contents

OptiPlex 7020 View.....	4
OptiPlex 7020 MiniTower Computer View and Back Panel Connectors.....	5
OptiPlex 7020 Mini Tower Motherboard Layout.....	5
OptiPlex 7020 Small Form Factor Computer View and Pack Panel Connectors.....	7
OptiPlex 7020 Small Form Factor Motherboard Layout.....	8
Marketing System Configurations .....	9
Operating System.....	9
Chipset .....	9
Processor .....	10
Memory.....	11
Drives and Removable Storage.....	12
System Board Connectors.....	13
Graphics / Video Controller.....	13
External Ports / Connectors .....	13
Communications – Realtek RTL8151GD.....	14
Communications – Wireless.....	14
Audio and Speakers.....	14
Keyboards and Mouse .....	14
Security.....	15
Software .....	15
Environmental.....	15
Service and Support.....	16
Detailed Engineering Specifications.....	17
System Dimensions (Physical).....	17
System Board Connector Maximum Add-in Card Allowable Dimensions .....	17
System Level Environmental and Operating Conditions.....	18
POWER.....	19
Audio.....	21
Communications – Integrated Realtek RTL8151GD.....	22
Communications – Wireless.....	23
Graphics / Video Controller.....	24
Hard Drives .....	26



Optical Drivers.....	30
Media Card Reader (MCR).....	32
BIOS Defaults .....	34
CHASSIS ENCLOSURE & VENTILATION REQUIREMENTS .....	36
ENCLOSURE VENTILATION.....	36
ENCLOSURE MINIMUM CLEARANCE.....	36
RECOMMENDED ENCLOSURE.....	36
OPEN DESK MINIMUM CLEARANCE.....	36
REGULATORY COMPLIANCE AND ENVIRONMENTAL.....	37
Acoustic Noise Emission Information.....	38
OptiPlex 7020 MT.....	38
Declared Sound Power (LWAd).....	38
A-Weighted Sound Pressure Level (dB).....	38
OptiPlex 7020 SFF.....	39
Declared Sound Power (LWAd).....	39
A-Weighted Sound Pressure Level (dB).....	39

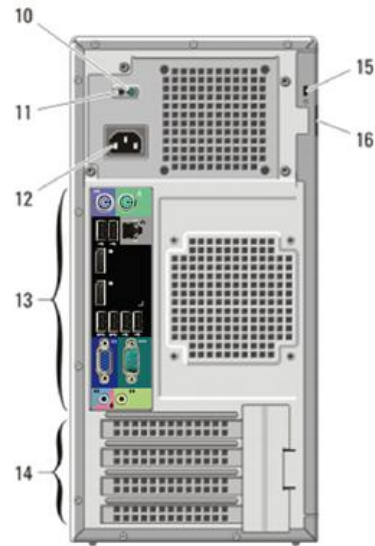
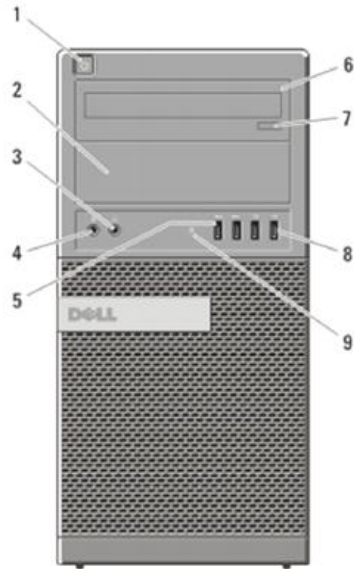


# Overview

## OptiPlex 7020



## MiniTower Computer View



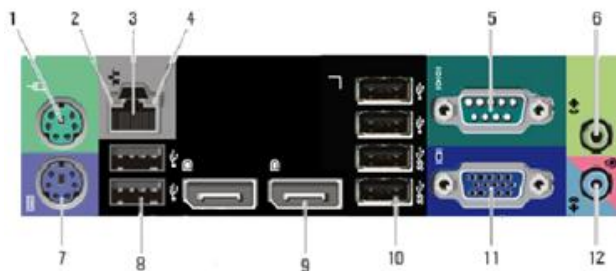
### FRONT VIEW

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		

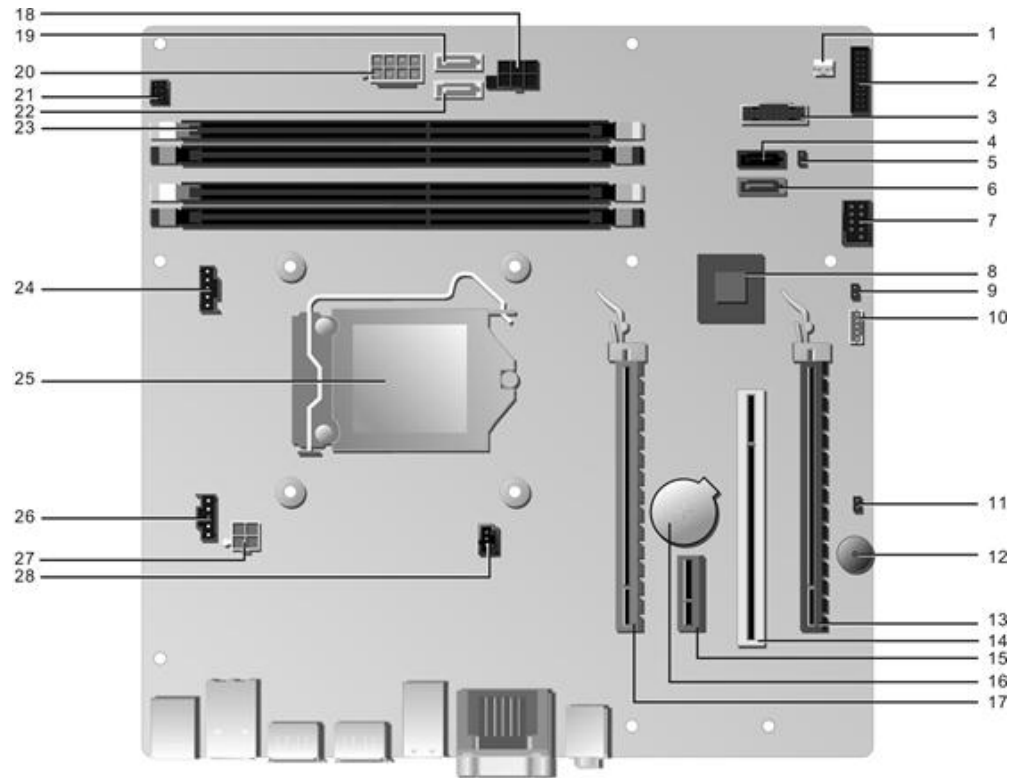
## Back Panel Connectors



### BACK PANEL CONNECTORS

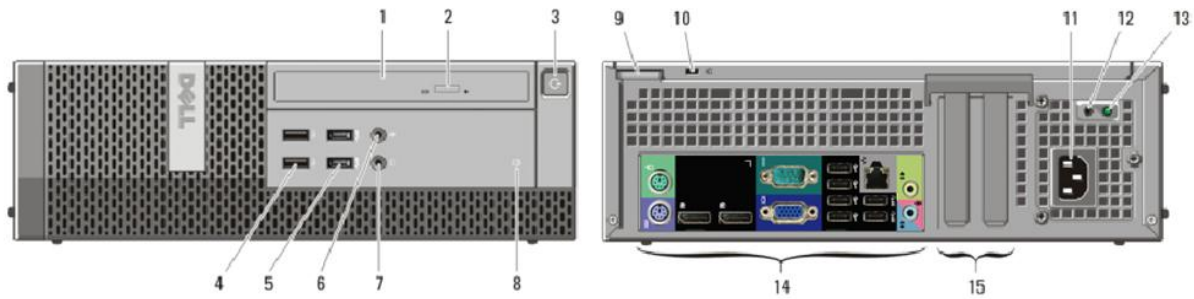
1	Mouse Connector	7	Keyboard Connector
2	Link Integrity Light	8	USB2.0 Connectors (2)
3	Network Connector	9	DisplayPort Connector(2)
4	Network Activity Light	10	USB2.0 Connectors (2) USB3.0 Connectors (2)
5	Serial Connector	11	VGA Connector
6	Line-out Connector	12	Line-in/Microphone Connector

## Motherboard Layout MiniTower



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	RTCST Jumper (RTCST)	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 View

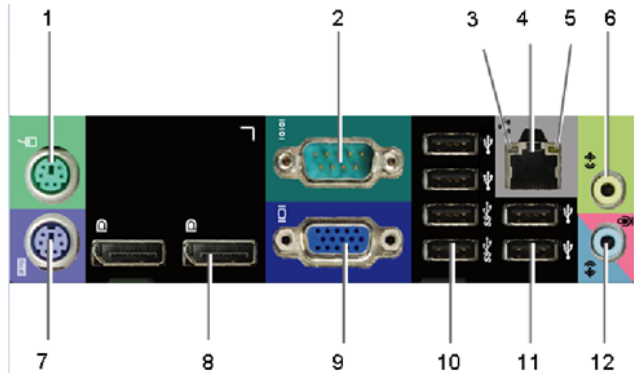


FRONT VIEW			
1	Optical Drive	5	USB 3.0 Connectors (2)
2	Optical Drive Eject Button	6	Microphone Connector
3	Power Button, Power Light	7	Headphone Connector
4	USB 2.0 Connectors (2)	8	Drive Activity Light

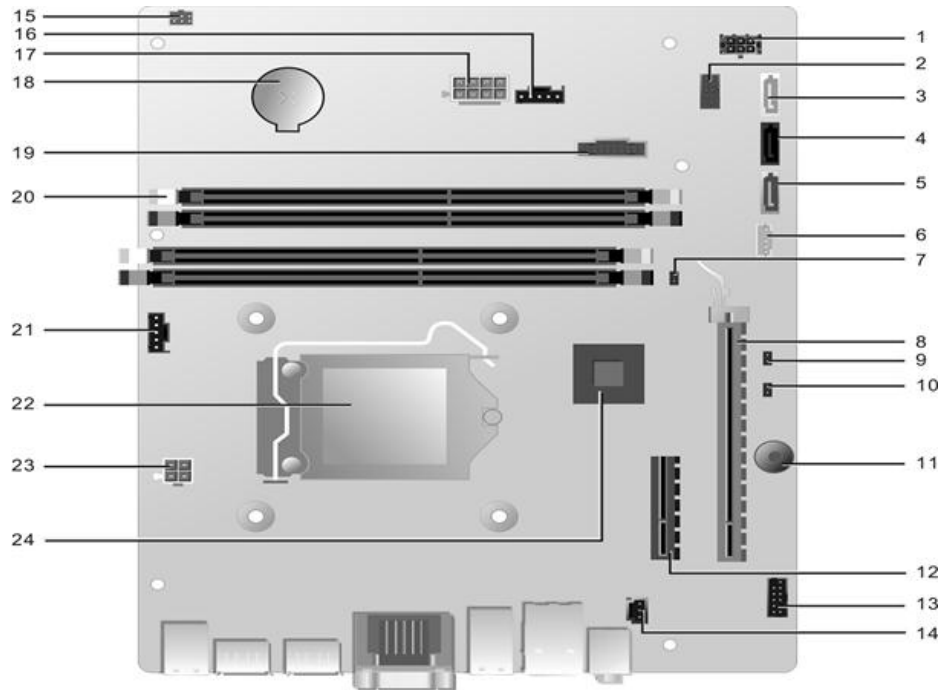
BACK VIEW			
9	Padlock Ring	13	Power Supply Diagnostic Light
10	Kensington / Noble Security Cable Slot	14	Back Panel Connectors
11	Power Connectors	15	Expansion Card Slots (2)
12	Power Supply Diagnostic Button		

### Back Panel Connectors

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 Small Form Factor



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)- SATA 3.0	15	Power Switch Connector (PWR_SW)
4	SATA 1 Connector (Black color)- SATA 3.0	16	System Fan Connector (FAN_SYS)
5	SATA 0 Connector (Blue color)- SATA 2.0	17	P1 Power Connector (POWER)
6	Internal Speaker Connector (INT_SPKR)	18	Battery Connector (BATTERY)
7	RTCST Jumper (RTCST)	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) Open-ended	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

	7020 MT and SFF
Windows operating system	Microsoft® Windows 8.1 Professional (64 bit) to Windows 7 Downgrade Microsoft® Windows 8.1 Professional (64 bit) Microsoft® Windows 8.1 (64bit) Microsoft® Windows 8.1 Single Language (64bit) 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

	7020 MT and SFF
Chipset	Intel Q87 Express Chipset
Non-volatile memory on chipset	
BIOS Configuration SPI (Serial Peripheral Interface)	64Mbit (8MB) & 32Mbit (4MB)
TPM 1.2 Security Device (Trusted Platform Module) <sup>1</sup>	4KB located at TPM 1.2 on Chipset
Non-TPM	Available in select countries
NIC EEPROM	LOM configuration contained within SPI_FLASH- no dedicated LOM EEPROM



## Processor

NOTE: Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and 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.

	7020
Intel® Core™ i7-4790 QC/8MB/8T/3.6GHz, 84W	X
Intel® Core™ i5-4690 QC/6MB/4T/3.5GHz, 84W	X
Intel® Core™ i5-4590 QC/6MB/4T/3.3GHz, 84W	X
Intel® Core™ i3-4150 DC/3MB/4T/3.5GHz, 54W	X
Pentium® G3240 DC/3MB/2T/3.1GHz, 54W	x



## Memory

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

	7020 MT and SFF
Type: DDR3 Synch DRAM Non-ECC Memory	
DIMM Slots	4
DIMM Capacities	Up to 8GB
Minimum Memory	2GB
Maximum System Memory	16GB <sup>1</sup>
16GB DDR3, 1600MHz, (4x4 GB and 2x8 GB)	X
8GB DDR3, 1600MHz, (2 x 4GB)	X
4GB DDR3, 1600MHz, (1 x 4GB)	X

<sup>1</sup>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 16-bit enabled processor and 64-bit operating system.



## Drives and Removable Storage

	7020 MT	7020 SFF
<b>Bays:</b>		
Optical Drives Supported (maximum)	2	1 (slim-line)
Hard Drive Bay Supported (Internal)	2	1
<b>Interface:</b>		
SATA 2.0 for ODD	2	1
SATA 3.0 for HDD	2	2
<b>2.5" Hard Drives:</b>		
500GB <sup>1</sup> SATA3 Secure Encrypted Hybrid Drive	X	X
128GB <sup>1</sup> SATA3 Solid State Drive	X	X
256GB <sup>1</sup> SATA3 Solid State Drive	X	X
500GB <sup>1</sup> SATA3 Solid State Hybrid Drive w/8GB Flash	X	X
320GB <sup>1</sup> SATA2 16MB	X	x
<b>3.5" Hard Drives:</b>		
500GB SATA3 Hard Disk Drive	X	X
1TB SATA3 Hard Disk Drive	X	X
<b>Optical Drives</b>		
DVD-/+RW <sup>2</sup> – 12.7mm		X
DVD-ROM <sup>3</sup> – 12.7mm		X
DVD ROM-HH	X	
DVD-/+RW HH	X	
<b>Media Card Reader:</b>		
Dell 19-in-1 Media Card Reader	X	

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

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

<sup>3</sup> DVD-ROM drives may have write-capable hardware that has been disabled via firmware modifications.



## System Board Connectors

	7020 MT	7020 SFF
PCI Slot(s) <sup>1</sup>	1	
PCIe x16 Slot(s) <sup>2</sup>	1	1
PCIe x1 6(wired as x4)Slot(s)	1	1
PCIe x1 Slot(s)	1	
Serial ATA (SATA) 4	4	3

## Graphics / Video Controller

	7020 MT and SFF
Onboard Graphics:	
Intel HD Graphics 4600 (with Core i5/i7 CPU-GPU combo)	Integrated on CPU
Discreet Graphics:	
2 GB AMD Radeon™ R7 250	Optional
1 GB AMD Radeon™ R5 240	Optional

## External Ports / Connectors

	7020 MT	7020 SFF
USB 2.0 (Side/Rear/Internal)	2/4/2	2/4/0
USB 3.0 (Side/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	
Display Port	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 – Integrated Intel® 1217

**Note:** MT supports full height (FH) cards and SFF supports low profile (LP) cards

	7020 MT and 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

## Communications – Wireless

**Note:** MT supports full height (FH) cards and SFF supports low profile (LP) cards

	7020 MT and SFF
Dell Wireless 1540 PCIe WLAN card (802.11a/b/n)	Optional card

## Audio and Speakers

	7020 MT and SFF
Realtek ALC3220 High Definition Audio Codec	Integrated
Dell AX210CR USB Stereo speakers	Optional
Dell AX510/AX510PA Flat Panel Soundbar Speakers	Optional

## Keyboards and Mouse

	7020 MT and SFF
Dell Entry Keyboard	Optional
Dell Wireless Keyboard	
Dell Multimedia Pro Keyboard	
Dell SmartCard Keyboard	
Dell USB Optical Mouse	
Dell Wireless	
Dell Laser Mouse	



## Security

	7020 MT and SFF
Trusted Platform Module (TPM) 1.2 <sup>1</sup>	Integrated on system board
Dell Smartcard Keyboard	Optional
Chassis lock slot and loop support	Standard

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

## Software

	7020 MT and SFF
Dell Client Manager	Available on Dell.com
Dell Data Protection   Security Tools (DDP ST)	Standard
Dell Data Protection   Encryption (DDP E)	Optional
Dell Data Protection   Protected Workspace (DDP PW)	Optional

## Environmental

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

	7020 MT and SFF
Recyclable packaging	N/A
BFR/PVC—free chassis	No
MultiPack packaging	Yes (DAO only)
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](http://www.dell.com/service/service_plans)

	7020 MT and SFF
3 Year Warranty <sup>1</sup> Next Business Day On-site <sup>2</sup> (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](http://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.

	7020 MT	7020 SFF
Chassis Volume (liters)	26.27	8.38
Chassis Weight (pounds / kilograms)	18.52/ 8.4	11.68/ 5.3
<b>Chassis Dimensions (H x W x D)</b>		
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	14.3/ 6.49
<b>Packaging Parameters (H x W x D)</b>		
Height (inches / centimeters)	21.32/ 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

	7020 MT	7020 SFF
<b>PCI Slot</b> (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	
<b>PCIex16 Slot (BLUE)</b> (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



<b>PCIex16 wired as x4 Slot (BLACK)</b> (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
<b>PCIe x1 Slot</b> (Voltage supported 3.3V/12V)	1	
Height (inches/centimeters)	4.376 / 11.115	
Length (inches/centimeters)	4.5 / 11.44	
Maximum Wattage	10W	

## System Level Environmental and Operating Conditions

	7020 MT	7020 SFF
<b>Temperature</b>		
Operating	5° to 35° C (41° to 95° F)	
Non-Operating (Storage)	-40° to 65° C (-40° to 149° F)	
Relative Humidity	20% to 80% (non-condensing)	
<b>Maximum Vibration</b>		
Operating	0.26Grms random at 5 to 350 Hz	
Non-Operating	2.2 Grms random at 5 to 500 Hz	
<b>Maximum Shock</b>		
Operating	Bottom half-sine pulse with a change in velocity of 50.8 cm/sec (20 inches/sec)	
Non-Operating	105G half-sine pulse with a change in velocity of 133cm/sec (52.5inches/sec)	
<b>Maximum Altitude</b>		
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 Universal Power Supplies (UPS) based on Sine Wave output for APFC PSUs.

	7020 MT			7020 SFF		
Power Supply	APFC	EPA Gold	EPA Bronze	APFC	EPA Gold	EPA Bronze
<b>Wattage</b>	290W	290W High Efficiency	290W	255W	255W High Efficiency	255W
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)	5.4A / 2.7A	5.4A / 2.7A	5.4A / 2.7A	4.6A / 2.3A	4.6A / 2.3A	4.6A / 2.3A
AC input Frequency	47HZ/63HZ	47HZ/63HZ	47HZ/63HZ	47HZ/63HZ	47HZ/63HZ	47HZ/63HZ
AC holdup time (80% load)	16 mini sec	16 mini sec	16 mini sec	16 mini sec	16 mini sec	16 mini sec
Average Efficiency (Energy Star 5.2 Compliant)		87 – 90 – 87% @ 20 – 50 – 100% load	82 – 85 – 82% @ 20 – 50 – 100% load		87 – 90 – 87% @ 20 – 50 – 100% load	82 – 85 – 82% @ 20 – 50 – 100% load
Typical Efficiency (Active PFC)	65%			65%		
<b>DC parameters</b>						
+12.0v output	12VA/14A; 12VB/16A	12VA/14A; 12VB/16A	12VA/14A; 12VB/16A	12VA/14A; 12VB/13A	12VA/14A; 12VB/13A	12VA/14A; 12VB/13A
-12.0v output	N/A	N/A	N/A	N/A	N/A	N/A
+12.0v auxiliary	1.67A	1.67A	1.67A	1.67A	1.67A	1.67A



Max total power	290W	290W	290W	255W	255W	255W
Max combined 12.0v power (note: only if more than one 12v rail)	290W	290W	290W	255W	255W	255W
BTUs/h (based on PSU max wattage)	989 BTU	989 BTU	989 BTU	870 BTU	870 BTU	870 BTU
Power Supply Fan	80*25mm	80*25mm	80*25mm	60*25mm	60*25mm	60*25mm
<b>Compliance</b>						
Erp Lot6 Tier 2 0.5watt requirement	Yes	Yes	Yes	Yes	Yes	Yes
Climate Savers / 80Plus Compliant	No	Yes	Yes	No	Yes	Yes
FEMP Standby Power Compliant	Yes	Yes	Yes	Yes	Yes	Yes

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°C±2°C.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°C±2°C.1000Hrs. or Longer .970Hrs.or Longer after 12 months. 0°C±2°C. 910Hrs. or Longer .890Hrs.or Longer after 12 months.



## Audio

Integrated Realtek ALC3220 High Definition Audio	7020 MT and SFF
High Definition Stereo Support	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	98dB DAC outputs, 90 dB for ADC inputs
Analog Audio	X
Audio Jack Impedance	
Microphone	40 ohm ~ 60k ohm
Line-in	40 ohm ~ 60k ohm
Line-out	100 ~ 150 ohm
Headphone	1 ~ 4 ohm
Internal Speaker Power Rating	2Watt (peak) / 1 Watt (average)



## Communications – Integrated Intel® 1217

Intel® 1217 LM Gigabit1 Ethernet LAN 10/100/1000	7020 MT and SFF
External Connector Type	RJ45
Data Rates Supported	10/100/1000 Mbps
<b>Controller Details</b>	
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 (Maximum)
Power Consumption (standby operation)	176mW (Maximum)
IEEE Standards Compliance	802.3
Hardware Certifications	N/A
Boot ROM Support	EEPROM (located in SPI)
<b>Network Transfer Mode</b>	
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) 100Mb (fully/half-duplex) 1000Mb (full/ half-duplex)
<b>Environmental</b>	
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	WOL, PXE 2.1
Management Capabilities Alerting	Intel® Standard Manageability, Intel Core 2 Duo/Quad Processor



## Communications – Wireless

Dell Wireless 1540 PCIe WLAN card (802.11n)	7020 MT and SFF
Connector Type	Custom WLAN Antenna Connector
<b>Controller Details</b>	
Controller Bus Architecture	Electrically compatible with the PCI Express Base Specification v1.1 (x1 lane)
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	WAP, WAP2, AES, TKIP
Operating Temperature	-10–85°C
Operating Humidity	0%~95 %
Operating System Driver Support	Windows 8 32/64, Windows 7 32/64, Windows XP 32/64, Vista 32/64



# Graphics / Video Controller

## Onboard Graphics

Onboard Graphics	Intel HD Graphics 4600 (with Core i5/i7 Quad core CPU-GPU combo)
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 System Graphics / 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, Display Port
VGA	
Bus Type	DDPC
Maximum Supported Resolution	Up to 3840x2160 @ 60Hz
Maximum Power Consumption	N/A
External Connectors	Display Port

## 2GB AMD Radeon R7 250

Bus Type	PCIEx16
GPU core clock	1050MHz
Frame Buffer Memory (onboard and shared) Size and Speed	2GB / 1000MHz
Maximum Power Consumption	< 50W
Overlay Planes	Yes
Maximum Color Depth	32-bit
Maximum Vertical Refresh Rate	60Hz (4096x2160)
Multiple Display Support	Yes
Operating System Graphics / API Support	D3D / OpenGL4.3 / OpenCLv1.2 / DirectX11
Supported Resolutions & Max Refresh Rates (Hz) (Analog)	Single-Link DVI: 1920 x 1200, 60Hz DisplayPort: 4096 x 2160, 60Hz





and/or digital)	VGA: 1920 x 1440, 90Hz
External Connectors	DisplayPort, SL-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
<b>Environmental Operating Conditions (Non-Condensing)</b>	
Operating Temperature Range	10°-50° C
Relative Humidity Range	5-90% RH
Altitude Range	0-20,000 ft.

## 1GB AMD Radeon R5 240

Bus Type	PCIEx16
GPU core clock	825MHz
Frame Buffer Memory (onboard and shared) Size and Speed	1GB / 1000MHz
Maximum Power Consumption	< 35W
Overlay Planes	Yes
Maximum Color Depth	32-bit
Maximum Vertical Refresh Rate	60Hz (4096x2160)
Multiple Display Support	Yes
Operating System Graphics / API Support	D3D / OpenGL4.3 / OpenCLv1.2 / DirectX11
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or digital)	Single-Link DVI: 1920 x 1200, 60Hz DisplayPort: 4096 x 2160, 60Hz VGA: 1920 x 1440, 90Hz
External Connectors	DisplayPort, SL-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 4.7 / 16.764 x 12.0
<b>Environmental Operating Conditions (Non-Condensing)</b>	
Operating Temperature Range	10°-50° C
Relative Humidity Range	5-90% RH
Altitude Range	0-20,000 ft.



## Hard Drives

### 2.5" 500GB SATA3 Secure Encrypted Hybrid Drive

	7020 MT and 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	16MB
Average Seek Time	15ms (read)
Rotational Speed	5400rpm
Logical Blocks	976,773,168
<b>Power Source</b>	
Power Consumption (reference only)	Idle 0.7W, Active 3.25W
Spin Up Current (reference only)	5V (1A)
<b>Environmental Operating Conditions (Non-Condensing)</b>	
Temperature Range	5 °C to 60 °C
Relative Humidity Range	10% to 90% non-condensing
Maximum Dew Point Temperature	Operating: 25 °C Non-operating: 33 °C
Altitude Range	-1000ft. to 10000ft.
<b>Environmental Non-Operating Conditions (Non-Condensing):</b>	
Temperature Range	-40 °C to 65 °C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	33 °C
Altitude Range	-1000ft. to 10000ft.

### 2.5" 256GB SOLID STATE DRIVE

2.5" 128GB SOLID STATE DRIVE	7020 MT and SFF
Capacity (bytes)	256,060,514,304
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	>800K hours
Logical Blocks	500,118,192
<b>Power Source</b>	
Power Consumption (reference only)	Idle 0.5W, Active 2.5W
Maximum Current (reference only)	5V (1500mA)
<b>Environmental Operating Conditions (Non-Condensing)</b>	
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
<b>Environmental Non-Operating Conditions (Non-Condensing):</b>	
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 SATA3 Solid State Drive

	7020 MT and 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: 25 °C Non-operating: 33 °C
Altitude Range	-1000 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	-1000ft. to 10000ft.

## 2.5" 500GB SATA3 HYBRID HDD W/8GB FLASH

	7020 MT and 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
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 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	-1000ft. to 10000ft.

## 2.5" 320GB SATA2 16MB

	7020 MT and SFF
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	16MB
Average Seek Time	13ms
Rotational Speed	7200 rpm
Logical Blocks	625,142,448
<b>Power Source</b>	
Power Consumption (reference only)	Idle 0.7W, Active 3.25W (running IO meter utility)
Spin Up Current (reference only)	5V (1A)
<b>Environmental Operating Conditions (Non-Condensing)</b>	
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.
<b>Environmental Non-Operating Conditions (Non-Condensing):</b>	
Temperature Range	-40 °C to 65 °C
Relative Humidity Range	5% to 95% non-condensing
Maximum Wet Bulb Temperature	33 °C
Altitude Range	-1000ft. to 10000ft.

## 3.5" 500GB SATA3 Hard Disk Drive

	7020 MT and 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	64MB
Average Seek Time	13ms
Rotational Speed	7200 rpm
Logical Blocks	976,773,168
<b>Power Source</b>	
Power Consumption (reference only)	Idle 54W, Active 10.0 (running IOmeter utility)
Spin Up Current (reference only)	5V (1A), 12V (2A)
<b>Environmental Operating Conditions (Non-Condensing)</b>	
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.



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	-1000ft. to 10000ft.

### 3.5" 1TB SATA3 Hard Disk Drive

	7020 MT and 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	64MB
Average Seek Time	12ms
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 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	-1000ft. to 10000ft.



# Optical Drives

## DVD-ROM

DVD-ROM	7020 MT	7020 SFF
External Dimensions inches/centimeters (Without Bezel – W x H x D)	148.4mm(6in.)/ 42mm (2 in.)/ 171mm(6.73 in.) max	128mm(5.04 in.)/ 12.7mm(0.5 in.)/ 126.1mm(4.97 in.)
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)	10000mA*
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

\*Current after initial rush. Inrush current (width $\geq$ 2ms) up to 1300mA max.



## DVD-RW

DVD +/- RW <sup>1</sup>	7020 MT	7020 SFF
External Dimensions inches/centimeters (Without Bezel – W x H x D)	148.4mm(6in.)/ 42mm (2 in.)/ 171mm(6.73 in.) max	128mm(5.04 in.)/ 12.7mm(0.5 in.)/ 126.1mm(4.97 in.)
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	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)	10000mA*
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 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 SFF.

Media Card Reader	7020 MT only
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	<p>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</p>
Support Specification Versions:	<p>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</p>





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

<b>System Configuration</b>	Integrated NIC:	Enable w/PXE
	SATA Operation:	AHCI
	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)
	Miscellaneous Devices	Enable (Express card, PCI slot)
<b>Video</b>	Multi-display	Enable
	Primary-Display	Auto
<b>Performance</b>	Multiple Core Support:	All
	Intel® SpeedStep™:	Enable
	C States Control:	Disable
	Limit CPUID Value:	Disable
	Intel TurboBoost	Enable
	HyperThread control:	Enable
<b>Virtualization Support</b>	Virtualization:	Enable
	VT for Direct I/O:	Disable
	Trusted Direct I/O:	Disable
<b>Security</b>	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



<b>Power Management</b>	AC Recovery:	Power off
	Auto On Time:	Disable
	Deep Sleep Control:	Enable in S4 and S5
	Fan Control Override:	Disable
	Wake on LAN/WLAN:	Disable
	Block sleep	Disable
<b>Maintenance</b>	Service Tag:	Set by the factory
	Asset Tag:	Optional User Entry
	SERR Message:	Enable
<b>POST Behavior</b>	Numlock LED:	Enable
	Keyboard Errors:	Enable
	POST HotKeys:	Enable
	Fastboot	Thorough
<b>Audio</b>	Audio Operation:	Enabled Audio



# 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](http://www.dell.com/regulatory_compliance). The Regulatory Datasheet for this product is located at [http://www.dell.com/regulatory\\_compliance](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](http://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 7020 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, 16X, SATA, HH *2
Graphics Adapter	AMD OUGA10*2

## Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 7020 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	4.0
HDD Operating	4.0
CPU Stressed	4.4
ODD Operating	5.6

## A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10<sup>-5</sup> 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<sup>1</sup>:

Declared Sound Pressure (LpA)				
Operating Mode	Tabletop System		Floor Standing System	
	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	30.4	27.1	24.9	25.5
HDD Operating	29.9	26.7	24.4	25.2
CPU Stressed	34.0	30.3	26.1	26.1
ODD Operating	46.8	42.1	38.6	37.1

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



## OptiPlex 7020 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, 18X, SATA, 12.7
Graphics Adapter	AMD OUGA10*2

## Declared Sound Power (LWAd)

The Declared Noise Emission in accordance with ISO 9296 for the OptiPlex 7020 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	4.0
HDD Operating	4.0
CPU Stressed	4.1
ODD Operating	4.7

## A-Weighted Sound Pressure Level (dB)

The Declared A-weighted Sound Pressure Level in decibels (re 2x10<sup>-5</sup> 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<sup>1</sup>:

Declared Sound Pressure (LpA)				
Operating Mode	Tabletop System		Floor Standing System	
	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	29.7	25.1	20.6	22.0
HDD Operating	30.1	25.3	20.6	22.1
CPU Stressed	41.1	34.5	27.9	28.8
ODD Operating	39.8	33.4	31.0	30.3

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

