Lenovo ThinkStation P720

Version: 7 | 03/20/2024

Product Display Name

Information Date	22-Feb-24
Hardware Maintenance Manual	P720 HMM
Drivers & Software	P720 Drivers & Software
Available Whitepapers	RTX GPU Support Matrix P920/P720 Power Configurator P920/P720 Memory Configurations Intel VROC Support
Description	The ThinkStation P720 is high performance dual socket workstation. An Intel Purley-based product, the P720 provides excellent performance and quality for applications where processor, memory, graphics, and storage requirements are key. The P720 is positioned between two Purley-based workstations, the single socket P520 and dual socket P920.

CPU

Processor Support	Xeon Scalable Processors (Platinum, Gold, Silver, Bronze)
Socket Type	Socket-P0 (LGA 3647)

Operating Systems

Preloaded	Windows 11 Pro 64-bit for Workstations Ubuntu 16.04 LTS (configuration specific) Ubuntu 18.04 LTS (configuration specific) Ubuntu 20.04 LTS (configuration specific)
Supported	Red Hat Enterprise Linux 7.3 Red Hat Enterprise Linux 8.2 Ubuntu 16.04 LTS Ubuntu 18.04 LTS Ubuntu 20.04 LTS

Memory

Slots	Up to 12 DIMMs
Channels	Each Processor Supports up to 6 DIMM Sockets, 6 Channels per CPU
Type	288-Pin, 1866/2133/2400/2666/2933MHz ECC RDIMM
ECC Support	Yes
Speed	Up to 2933MHz
Max DIMM Size	64GB DDR4 ECC RDIMM
Max System Memory	768GB

Storage

SATA	9 x SATA Connectors, Gen 3
PCIe	2 x M.2 PCIe connectors onboard
SAS	Supported via Optional Broadcom Adapter
eSATA	1 x eSATA Connector, Gen 3

Video

Integrated Graphics	Not Available
Discrete Graphics	PCIe Add-In-Card, Details in Section Below
Multi-GPU Support	Yes
Type	PCIe Add-In-Card
Bus Interface	PCIe x16

Slots

Slot 1	PCIe 3.0 x16, Full Height, Full Length, 75W, With Latch Note – Full Length Supported if Onboard M.2 Slots Not Utilized
Slot 2	PCIe 3.0 x16, Full Height, Full Length, 75W, With Latch
Slot 3	PCIe 3.0 x8, Full Height, Full Length, 25W, Open Ended
Slot 4	PCIe 3.0 x16, Full Height, Full Length, 75W, With Latch

Slot 5	PCI, Full Height, Full Length
Slot 6	PCIe 3.0 x4, Full Height, Half Length, 25W, Open Ended (PCH)

Front I/O

USB	4 x USB 3.1 Gen 1 Type-A 5Gb/s (includes one 15W charging port)
Audio	1 x Combo Audio/Microphone Jack (3.5mm)
Media Card Reader	Front 9 in 1 Media Card Reader Standard (USB 2.0) Optional: Front 15 in 1 Media Card Reader (requires Flex module)
Flex Bay	Flex Module: Supports Two 5.25" Flex Bays With Several Options Integrated · Up to Two Half Height Optical Drives · Up to Two 5.25” slim ODD Cages · Up to One Front Access Storage Enclosure · Up to One Flex Module for One or More of the Following Options: 9.0mm Optical/ 15-in-1 USB 3.1 Gen 1 Reader/Front eSATA/Dual Port Front Thunderbolt/Front USB 3.1 Gen 1 Type-C/ 4-Digit Diagnostic Display Note: 1. Only one can be supported from 15-in-1 reader, Thunderbolt, and 4-Digit display 2. Up to two ports are suppported from 1394, eSATA, and USB Type-C
Disclaimers	Note: Actual USB throughout will vary depending on the type and quantity of USB devices used.

Rear I/O

USB	2 x USB 2.0 Type-A 480Mb/s 4 x USB 3.1 Gen 1 Type-A 5Gb/s
Audio	3 x Rear (Line Out, Line In, MIC); Retaskable to 5.1
DisplayPort	As Supported by GPU
HDMI	As Supported by GPU
DVI	As Supported by GPU
VirtualLink	As Supported by GPU
VGA Port	As Supported by GPU
Serial Port	Optional 1 x Rear Port
Ethernet	2 x 1GbE – RJ45
PS/2	2 x PS/2
IEEE 1394	Not Available
eSATA	Optional PCIe Bracket
Parallel Port	Not Available
Optional Network Adapter	Intel I210-T1 Single Port Gigabit Ethernet Adapter Intel I350-T2 Dual Port Gigabit Ethernet Adapter

	Intel I350-T4 Quad Port Gigabit Ethernet Adapter PCI-E 1 x WiFi Card with BT HP External Antenna Kit (8265 AC)
Disclaimers	Note: Actual USB throughout will vary depending on the type and quantity of USB devices used.

Ethernet

Vendor	Intel Jacksonville I219LM, Intel Springville I210AT
Speeds	10/100/1000Mbps
Functions	PXE, ASF, WOL, Jumbo Frames, Teaming
Connectors	2 x RJ45

Audio

Vendor	Realtek
Type	HD (5.1)
Internal Speaker	Yes
Connectors	3 x Rear 3.5mm Jacks (Line In, Line Out, Microphone In)
Chipset	ALC662
Number of Channels	6 Channels
Number of Bits/Audio Resolution	6 Channel DAC supports 16/20/24 bit PCM Stereo ADC supports 16/20 bit PCM

Thermal

Temp Sensors	Ambient Thermal Sensor – Thermal diode Connected to Super I/O CPU VR Sensor – Thermal diode Connected to Super I/O DIMM VR Sensor- Thermal diode Connected to Super I/O PSU Thermal Sensor- Thermistor PCI Zone 1 Sensor- Thermistor PCI Zone 1 Sensor- Thermistor PCI Zone 1 Sensor- Thermistor M.2 Sensor- Thermistor
Fans	CPU x2 Fan 4-pin header with 3-pin key Rear SYSTEM Fan x1 4-pin header, Lotes ABA-WAF-050-K01 Front Fan x1 4-pin header Lotes ABA-WAF-050-K01 ODD bay Fan x2 4-pin header with 3-pin key PSU Fan x1 Main PSU power connector, DIMM Fans x2

Power Specifications

Power Supply	900W and 690W	1000W
Power Efficiency	92% Efficient @ 50% Load	92% Efficient @ 50% Load
Main	C14	C14
Operating Voltage Range	100 – 240V	100 – 240V
Rated Voltage Range	90-264VAC	90-264VAC
Rated Line Frequency	47Hz / 63Hz	47Hz / 63Hz
Operating Line Frequency Range	50Hz / 60Hz	50Hz / 60Hz
Rated Input Current	9A-15A	9A-15A
Graphics	1 x 8 pin (6+2) with 690 watt PSU 2 x 8 pin (6+2) with 900 watt PSU Dongle to CPU 8-pin available	2 x (8 pin + 6 pin)
Power Supply Fan	Yes	Yes
ENERGY STAR® Qualified (config dependent)	Yes	Yes
80 PLUS Compliant	Yes	Yes
Built-in Self Test (BIST) LED	Yes	Yes
Aux Power Drop	Yes	Yes

BIOS

Vendor	AMI

Chassis Information

Color	Graphite Black
PSU	1000W, 900W and 690W Available, Autosensing, 92% PSU, 80 PLUS Platinum Qualified
Thermal Solutions	Two System Fans Standard (1 front, 1 rear), One Fan per CPU, One PSU Fan
Dimensions	446mm/17.3" H 485mm/19.1" D 175mm/6.9" W
Weight	25.7kg / 56.7lbs

Packaging Dimensions

Height (mm/in)	593mm / 23.35"
Width (mm/in)	317mm / 12.48"
Depth (mm)	611mm / 24.06"

Security & Serviceability

TPM	Infineon SLB9665TT TPM 2.0
Asset ID	Yes, 1024 x 8bit
vPro	Intel vPro for WS (AMT 9.x)
Cable Lock Support	Yes, Optional Kensington Cable Lock
Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control	Yes
Power-On Password	Yes
Setup Password	Yes
NIC LEDs (integrated)	Yes
Access Panel Key Lock	Unique Key Lock Kit – Optional Common Key Lock Kit – Optional
Boot Sequence Control	Yes
Padlock Support	Not Supported
Boot without keyboard and/or mouse	Yes
Access Panel	Tool-less Side Cover Removal
Optical Drive	Tool-less
Hard Drives	Tool-less
Expansion Cards	Tool-less
Processor Socket	Tool-less
Color coded User Touch Points	Yes
Color-coordinated Cables and Connectors	Yes
Memory	Tool-less
System Board	Tool-less
Restore CD/DVD/USB Set	Not Included, Restore Media Available via Lenovo Customer Support Center

Operating Environment

Air Temperature	Operating: 10ºC to 35ºC (50ºF to 95ºF)
Storage	Storage: -40ºC to 60ºC (-40ºF to 140ºF) in Original Shipping Carton Storage: -10ºC to 60ºC (14ºF to 140ºF) Without Carton
Humidity	Relative Humidity Operating: 10% to 80% (non-condensing) Relative Humidity Storage/Transit: 10% to 90% (non-condensing) Wet Bulb Temperature Operating: 25ºC (77ºF) max Wet Bulb Temperature Non-operating: 40ºC (104ºF) max
Altitude	Operating: -15.2m to 3048m (-50ft to 10000ft) Storage: -15.2m to 10668m (-50ft to 35000ft)
Vibration	Package Vibration: Random,1.04G at 2-200 Hz, 15 Minutes XYZ 6 faces Operating Vibration: Random,0.27G at 5-500 Hz, 30 Minutes Per Surface (X,Y,Z) Non-Operating Vibration: Random,1.04G at 2-200 Hz, 15 Minutes Per Surface (±X,±Y,±Z)
Shock	Operation Shock: 3ms (15G) for 4 Axis (+X, -X, +Y,-Y) 3ms (30G) for 2 Axis (+Z, -Z), Half-sine Wave, Each Side Will do One Time Rack Operation Shock: 5ms (15G) for 6 Axis (+X, -X, +Y,-Y,+Z, -Z), Half-sine Wave, Each Side Will do One Time Non-operating Shock: Trapezoidal Wave, 50G, 9ms, 6 Sides (+X, -X, +Y,-Y, +Z ,-Z), Filter 300Hz, Each Side Shock One Time
Board Size	13.15" x 14.9" (334mm x 378.5mm)
Layout	Custom ATX
Disclaimers	

Motherboard Core

Processor Support	Xeon Scalable Processors (Platinum, Gold, Silver, Bronze)
Socket Type	Socket-P0 (LGA 3647)
Memory Support	DDR4 up to 2933MHz RDIMM Memory
CPU-CPU Interconnect	UPI up to 10.4GT/s
Voltage Regulator	Intel VR13.0 – 165W TDP Capable
Chipset (PCH)	Intel C621 Chipset
Flash	32MB
Super I/O	Nuvoton NCT6685
Clock	Intel Native isCLK
Audio	Realtek ALC662 Codec
Ethernet	Intel Jacksonville I219LM, Intel Springville I210AT
SAS	Optional via Broadcom Adapter
Disclaimers	

Supported Components

Processor Level	Platinum	Gold	Silver	Bronze
Processor	Intel Xeon PLATINUM 8160T	Intel Xeon GOLD 6242 Intel Xeon GOLD 6238T Intel Xeon GOLD 6234 Intel Xeon GOLD 6230 Intel Xeon GOLD 5222 Intel Xeon GOLD 5218 Intel Xeon GOLD 6142 Intel Xeon GOLD 6136 Intel Xeon GOLD 6134 Intel Xeon GOLD 6128 Intel Xeon GOLD 5122 Intel Xeon GOLD 5120T Intel Xeon GOLD 5118	Intel Xeon SILVER 4216 Intel Xeon SILVER 4215 Intel Xeon SILVER 4214 Intel Xeon SILVER 4214R Intel Xeon SILVER 4210 Intel Xeon SILVER 4210R Intel Xeon SILVER 4209T Intel Xeon SILVER 4208 Intel Xeon SILVER 4116 Intel Xeon SILVER 4114 Intel Xeon SILVER 4114T Intel Xeon SILVER 4112 Intel Xeon SILVER 4110 Intel Xeon SILVER 4109T Intel Xeon SILVER 4108	Intel Xeon BRONZE 3204
Memory Type	RDIMMs – 2666MHz or 2933MHz, CPU Dependent			
Memory	8GB DDR4 ECC RDIMM PC4-2933 16GB DDR4 ECC RDIMM PC4-2933 32GB DDR4 ECC RDIMM PC4-2933 64GB DDR4 ECC RDIMM PC4-2933 8GB DDR4 ECC RDIMM PC4-2666 16GB DDR4 ECC RDIMM PC4-2666 32GB DDR4 ECC RDIMM PC4-2666			
Disclaimers				

Storage

3.5" SATA Hard Disk Drive (HDD)	1TB SATA HDD 7200rpm, 6Gb/s, 3.5" 2TB SATA HDD 7200rpm, 6Gb/s, 3.5" 4TB SATA HDD 7200rpm, 6Gb/s, 3.5" (enterprise class) 6TB SATA HDD 7200rpm, 6Gb/s, 3.5" (enterprise class)
2.5" SATA Hard Disk Drive (HDD)	500GB 2.5" SATA HDD 7200rpm (FIPS certified)
2.5" SATA Solid State Drive (SSD)	256GB SATA SSD, 6Gb/s, TLC, 2.5", OPAL 512GB SATA SSD, 6Gb/s, TLC, 2.5" OPAL 512GB SATA SSD, 6Gb/s, TLC, 2.5", Non-OPAL 1024GB SATA SSD, 6Gb/s, TLC, 2.5" OPAL 2048GB SATA SSD, 6Gb/s, TLC, 2.5" OPAL

M.2 PCIe Solid State Drive (SSD)	256GB M.2 PCIe – SSD, Gen 3 x4, NVMe, OPAL 256GB M.2 PCIe – SSD, Gen 3 x4, NVMe, OPAL – Intel 512GB M.2 PCIe – SSD, Gen 3 x4, NVMe, OPAL 512GB M.2 PCIe – SSD, Gen 3 x4, NVMe, OPAL – Intel 512GB M.2 PCIe – SSD, Gen 3 x4, NVMe, Non-OPAL 1024GB M.2 PCIe – SSD, Gen 3 x4, NVMe, OPAL 2048GB M.2 PCIe – SSD, Gen 3 x4, NVMe, OPAL
PCIe Add-in-Card Solid State Drive (SSD)	480GB Half Height, Half Length, PCIe NVMe SSD, Gen 3 x4 – Intel 905p
Disclaimers	

RAID

RAID Levels and Requirements	M.2 RAID via Intel VROC SATA RAID via Onboard Intel Controller or Broadcom Adapter SAS RAID via Broadcom Adapter
Notes	Supported RAID levels for a system will vary from the stated capabilities of the RAID controller due to dependencies on the number and capacity of physical disks in the system and on customer requirements for performance, fault tolerance, or data redundancy. Max supported RAID 0/1/5/10.
Optional Hard Disk Drive Controllers	Broadcom 9460-16i ROC PCIe Adapter, Supports 0/1/5/10 Broadcom 9440-8i IOC PCIe Adapter, Supports 0/1/5/10
Intel VROC	Intel Virtual RAID On CPU (VROC) – Basic, Supports 0/1/10 Intel Virtual RAID On CPU (VROC) – Premium, Supports 0/1/5/10
Disclaimers	

Optical Drive/Removable Media

DVD-ROM Drive	DVD-ROM Drive – 16x/48x Slim SATA DVD-ROM
DVD Burner/CD-RW Drive	DVD Burner/CD-RW Rambo Drive Slim ODD DVD Burner/CD-RW
Blu-Ray Burner Drive	Blu-Ray Burner Drive w/AACS encryption Slim Blu-Ray ODD DVD Burner
Media Card Reader Specifications	Front 9-in-1 USB 2.0 Media Card Reader Standard Optional Front 15-in-1 Media Card Reader (requires Flex module)
Disclaimers	

Keyboard And Pointing Devices

Keyboard	Traditional USB Keyboard Traditional PS/2 Keyboard

	Smart Card USB Keyboard Calliope USB Keyboard
Pointing Devices	Calliope USB Mouse Lenovo USB Laser Mouse Fingerprint USB Mouse PS/2 Optical Mouse
Disclaimers	

Expansion Bays

5.25" External Access Bays	Two 5.25" Flex Bays, Supports the Following: · Up to Two Half Height Optical Drives · Up to Two 5.25” Slim ODD Cages, Each Supports One 9.0mm Optical Drive · Up to One 5.25" Slim ODD and HDD Cage for One 9.0mm Optical Drive Plus One 3.5" or 2.5" SATA Disk · Up to One Front Access Storage Enclosure for One 3.5" or 2.5" SATA Disk · Up to One Flex Module for One or More of the Following Options: 9.0mm Optical/15-in-1 USB 3.1 Gen 1 Reader/Front eSATA/Front Thunderbolt/Front USB 3.1 Gen 1 Type-C Note: 1. Only one can be supported from the following: 15-in-1 memory card reader, dual Thunderbolt ports Note: 2. Up to two ports are suppported from 1394, eSATA, and USB Type-C
Disclaimers	

PCIe Adapters

Network	Intel I210-T1 Single Port Gigabit Ethernet Adapter Intel I350-T2 Dual Port Gigabit Ethernet Adapter Intel I350-T4 Quad Port Gigabit Ethernet Adapter Bitland BN8E88 1000M PCIe ASF FH Aquantia 5G Ethernet Adapter (single port) Intel X540-T2 10G Ethernet Adapter (dual port) Intel X550-T2 10G Ethernet Adapter (dual port)
Thunderbolt	Front Thunderbolt Card Kit – Supports Two Optional Thunderbolt Ports (USB Type-C) on Flex Module, One of Two Ports Supports Video Out Rear Thunderbolt PCIe Adapter
USB	Rear USB 3.1 Type C PCIe Adapter V1.0 FH Bracket
WiFi Cards	Intel PCIe WiFi Card With BT External Antenna Kit (8265 AC)
PCIe to M.2 Adapter Card	PCIe x4 to M.2 Adapter (for NVMe SSD) Quad M.2 PCIe Adapter
Disclaimers	

CPU Specifications

CPU	Intel Xeon PLATINUM 8160T	Intel Xeon GOLD 6242	Intel Xeon GOLD 6142	Intel Xeon GOLD 6136	Intel Xeon GOLD 6238T	Intel Xeon GOLD 6234	Intel Xeon GOLD 6134	Intel Xeon GOLD 6230	Intel Xeon GOLD 6128	Intel Xeon GOLD 5222	Intel Xeon GOLD 5122	Intel Xeon GOLD 5120T	Intel Xeon GOLD 5218	Intel Xeon GOLD 5118	Intel Xeon GOLD 5115	Intel Xeon Silver 4216	Intel Xeon Silver 4116	Intel Xeon Silver 4215	Intel Silver 4214	Intel Xeon Silver 4114	Intel Xeon Silver 4114T
# of Cores	24	16	16	12	22	8	8	20	6	4	4	14	16	12	10	16	12	8	12	10	10	4	10	8
# of Threads	48	32	32	24	44	16	16	40	12	8	8	28	32	24	20	32	24	16	24	20	20	8	20	16
Processor Base Frequency	2.1 GHz	2.8 GHz	2.6 GHz	3 GHz	1.9 GHz	3.3 GHz	3.2 GHz	2.1 GHz	3.4 GHz	3.8 GHz	3.6 GHz	2.2 GHz	2.3 GHz	2.3 GHz	2.4 GHz	2.1 GHz	2.1 GHz	2.5 GHz	2.2 GHz	2.2 GHz	2.2 GHz
Max Turbo Frequency	3.7 GHz	3.9 GHz	3.7 GHz	3.7 GHz	3.7 GHz	4 GHz	3.7 GHz	3.9 GHz	3.7 GHz	3.9 GHz	3.7 GHz	3.2 GHz	3.9 GHz	3.2 GHz	3.2 GHz	3.2 GHz	3 GHz	3.5 GHz	3.2 GHz	3 GHz	3 GHz
Cache	33 MB L3	22 MB	22 MB L3	24.75 MB L3	30.25 MB	24.75 MB	24.75 MB L3	27.5 MB	19.25 MB L3	16.5 MB	16.5 MB L3	19.25 MB L3	22 MB	16.5 MB L3	13.75 MB L3	22 MB	16.5 MB L3	11 MB	16.5 MB	11.5 MB L3
TDP	150 W	150 W	150 W	150 W	125 W	130 W	130 W	125 W	115 W	105 W	105 W	105 W	125 W	105 W	85 W	100 W	85 W	85 W
Intel ARK Spec Link	Intel Xeon PLATI	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon GOL	Intel Xeon Sil	Intel Xeon Sil	Intel Silver 4	Intel Xeon Sil	Intel Xeon Sil

	NUM8160T	D6242	D6142	D6136	D62238T	D62234	D6134	D6230	D6128	D5222	D5122	D51220T	D5218	D5118	D5115	VER4216	VER4116	VER4215	214	VER4114	VER41144T

HDD Specifications

Drive	500GB SATA – 7200rpm, 6Gb/s, 2.5"	1TB SATA – 7200rpm, 6Gb/s, 3.5"	2TB SATA – 7200rpm, 6Gb/s, 3.5"	4TB SATA – 7200rpm, 6Gb/s, 3.5"	6TB SATA – 7200rpm, 6Gb/s, 3.5"
3.5" SATA Hard Disk Drive (HDD)	Not Available	Yes	Yes	Yes	Yes
2.5" SATA Hard Disk Drive (HDD)	Yes	Not Available	Not Available	Not Available	Not Available
Connector	SATA	SATA	SATA	SATA	SATA
Transfer Rate (Gb/sec)	160MB/s OD Read	Average Data Rate, Read/Write 156MB/s	Average Data Rate, Read/Write 156MB/s	Sustained Data Transfer Rate 216 – 226MB/s	Sustained Data Transfer Rate 216 – 226MB/s
Spindle Speed (RPM)	7,200	7,200	7,200	7,200	7,200
DC Power to Drive Ready (sec)	3.5	<10.0	<17.0	<17.0	<17.0
Average Latency (msec)	4.2	4.16	4.16	4.16	4.16
Input (VDC)	5	5	5	5	5
Typical (Watts)	1.9	6.19	6.7	7.35	8.13
Idle (Watts)	0.7	4.6	4.5	5.45	6.21
Physical Dimensions	69.85mm x 100.34mm x 7mm	101.6mm x 146.99mm x 19.88mm	101.6mm x 146.99mm x 26.1mm	101.85mm x 147mm x 26.1mm	101.85mm x 147mm x 26.1mm
Weight (grams)	90	420	535	680	705
Operating (C) Ambient	0 to 60	0 to 60	0 to 60	5 to 60	5 to 60
Operating (C) Base Casting	60	60	60	60	60
Non-Operating (C) Ambient	(-40 to 70)	(-40 to 70)	(-40 to 70)	(-40 to 70)	(-40 to 70)
Gradient (C per Hour)	20	20	20	20	20
Operating (Gs @ 2ms)	400	70	80	Read 70 Gs / Write 40 Gs	Read 70 Gs / Write 40 Gs
Non-Operating (Gs @ 2ms)	1000	350	300	300	250

Solid State Storage Specifications

Drive	512GB 2.5" SATA SSD	1TB 2.5" SATA SSD	2TB 2.5" SATA SSD	256GB NVMe M.2 SSD TLC	512GB NVMe M.2 SSD TLC	1024GB NVMe M.2 SSD TLC	2048GB NVMe M.2 SSD TLC	480GB AIC Optane™ SSD	1.5TB U.2 Optane ™ SSD
Dimensions Millimeters (W x D x H)	70 x 100 x 7.0	70 x 100 x 7.0	70 x 100 x 7.0	22 x 80 x 2.3	22 x 80 x 2.3	22 x 80 x 2.3	22 x 80 x 2.3	20 x 168 x 104	70 x 100 x 15
Interface Type	SATA-III	SATA-III	SATA-III	PCIe Gen 3.0 x4 NVMe	PCIe Gen 3.0 x4 NVMe	PCIe Gen 3.0 x4 NVMe	PCIe Gen 3.0 x4 NVMe	PCIe Gen 3.0 x4 NVMe	PCIe Gen 3.0 x4 NVMe
Power Active (AVG)	1.9W	2.2W	6W	5W	5W	5W	5W	18W	18W
Power Idle	50mW	50mW	50mW	50mW	50mW	50mW	50mW	7W	7W
Typical Sequential Read	540MB/s	540MB/s	530MB/s	3000 MB/s	3200 MB/s	3200 MB/s	3500 MB/s	2700 MB/s	2700 MB/s
Typical Sequential Write	500MB/s	500MB/s	500MB/s	1300 MB/s	1600 MB/s	1600 MB/s	3000 MB/s	2200 MB/s	2200 MB/s
Operating Temperature Range	0 to 55°C	0 to 55°C	0 to 55°C	0 to 55°C	0 to 55°C	0 to 55°C	0 to 55°C	0 to 85°C	0 to 85°C
Endurance Rating (Lifetime Writes)	150TB	300TB	600TB	85TB	150TB	300TB	600TB	8.76PB	27.3PB
Mean Time Between Failures (MTBF)	2.0M POH	2.0M POH	2.0M POH	2.0M POH	2.0M POH	2.0M POH	2.0M POH	2.0M POH	2.0M POH
Hardware Encryption	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit	No	No
Disclaimers	SSD performance measured with Crystal Disk Mark version 6.0.2 with the default 1000 MB data set. Sequential measurements are with 1 Thread, Queue-Depth 32. Random measurements are with 4 threads and queue-depth 32.								

Discrete Graphics Adapter

Adapter	Quadro P4000	Quadro P620	Quadro P1000	Quadro P2200	T400	T600	T1000	Quadro RTX 4000	Quadro RTX 5000	Quadro RTX 6000	Quadro RTX 8000	RTX A4000	RTX A5000	RTX A6000	Quadro GV100
Bus Interface	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 4.0 x16	PCIe 4.0 x16	PCIe 4.0 x16	PCIe 3.0 x16
Display Interface	3 x m	4 x m	4 x m	4 x D	3 x m	4 x m	4 x m	3 x D	4 x D	4 x D	4 x D	4 x D	4 x D	4 x D	4 x D

	DP 1.4	DP 1.4	DP 1.4	P 1.4	DP 1.4	DP 1.4	DP 1.4	P 1.4 1 x VirtualLink	P 1.4 1 x VirtualLink	P 1.4 1 x VirtualLink	P 1.4 1 x VirtualLink	P 1.4 a	P 1.4 a	P 1.4 a	P 1.4
Graphics Chipset	Pascal	Pascal	Pascal	Pascal	Turing	Turing	Turing	Turing	Turing	Turing	Turing	Ampere	Ampere	Ampere	Volta
Memory Clock Frequency (MHz)	1003 MHz	1252 MHz		1253 MHz	1251 MHz		1625 MHz	1750 MHz		1750 MHz	1750 MHz		2000 MHz	858 MHz	
Memory Size	2GB GDDR5	2GB GDDR5	4GB GDDR5	5GB GDDR5X	2GB GDDR6	4GB GDDR6	4GB GDDR6	8GB GDDR6	16GB GDDR6	24GB GDDR6	48GB GDDR6	16GB GDDR6	24GB GDDR6	48GB GDDR6	32GB HBM2
Memory Interface	64-bit	128-bit	128-bit	160-bit	64-bit	128-bit	128-bit	256-bit	256-bit	384-bit	384-bit	256-bit	384-bit	384-bit	4096-bit
Memory Bandwidth	Up to 32GB/s	Up to 80GB/s	Up to 82GB/s	Up to 200GB/s	80GB/s	160GB/s	160GB/s	Up to 416GB/s	Up to 448GB/s	Up to 672GB/s	Up to 672GB/s	448GB/s	Up to 768GB/s	Up to 768GB/s	Up to 870GB/s
GPU Cores	CUDA Cores: 256	CUDA Cores: 512	CUDA Cores: 640	CUDA Cores: 1280	CUDA Cores: 384	CUDA Cores: 640	CUDA Cores: 896	CUDA Cores: 2304 Tensor Cores: 288 RT Cores: 36	CUDA Cores: 3072 Tensor Cores: 384 RT Cores: 48	CUDA Cores: 4608 Tensor Cores: 576 RT Cores: 72	CUDA Cores: 4608 Tensor Cores: 576 RT Cores: 72	CUDA Cores: 6411 Tensor Cores: 192 RT Cores: 48	CUDA Cores: 8,192 Tensor Cores: 256 RT Cores: 64	CUDA Cores: 10,752 Tensor Cores: 336 RT Cores: 84	CUDA Cores: 5120 Tensor Cores: 640
GPU Core Frequency (MHz)	1228 MHz	1266 MHz	1266 MHz	1000 MHz	Coming Soon	Coming Soon	Coming Soon	1005 MHz	1620 MHz	1440 MHz	1395MHz	Coming Soon	Coming Soon	Coming Soon	1132 MHz
Maximum Power Consumption	30 W	40 W	47 W	75 W	30 W	40 W	50 W	Total board power: 160 W	Total board power: 265 W	Total board power: 295 W	Total board power: 295 W	140 W	230 W	300 W	250 W

								Total graphics power: 125 W	Total graphics power: 230 W	Total graphics power: 260 W	Total graphics power: 260 W								
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	3 x 4096×2160 @ 60Hz 1 x 5120×2880 @ 60Hz	4 x 4096×2160 @ 60Hz 4 x 5120×2880 @ 60Hz	4 x 4096×2160 @ 60Hz 4 x 5120×2880 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz	4 x 3840×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 4 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 3840 x 2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz	4 x 4096×2160 @ 120Hz 4 x 5120×2880 @ 60Hz 2 x 7680×4320 @ 60Hz
Thermal Solution	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Active	Active	Active	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Active	Active	Active	Ultra-quiet Active Fansink
Dimension	2.713” H x 5.7” L Single Slot, Low Profile	2.713” H x 5.7” L Single Slot, Low Profile	2.713” H x 5.7” L Single Slot, Low Profile	4.4" H x 7.9" L Single Slot	2.7" H x 6.1" L Single Slot	2.7" H x 6.1" L Single Slot	2.7" H x 6.1" L Single Slot	4.4" H x 9.5" L Single Slot	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 9.5" L Single Slot	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 10.5" L Dual Slot, Full Height
Advanced Display	Not Available	Not Available	Not Available	Not Available	Coming Soon	Coming Soon	Coming Soon	SYNC 2	SYNC 2	SYNC 2	SYNC 2	SYNC 2	SYNC 2	SYNC 2	Not Available
SLI/NVLink Support	Not Available	Not Available	Not Available	Not Available	Coming Soon	Coming Soon	Coming Soon	Not Available	NV Link	NV Link	NV Link	NV Link	NV Link	NV Link	NV Link

Ethernet Specifications

Card	Intel I210-T1 Single Port Gigabit Ethernet Adapter (Springville)	Intel I350-T2 Dual Port Gigabit Ethernet Adapter (Stony Lake T2)	Intel I350-T4 Quad Port Gigabit Ethernet Adapter (Stony Lake T4)	Intel X540-T2 Dual Port Copper 10Gb Ethernet Adapter	Intel X710-DA2 Dual Port Fiber 10Gb Ethernet Adapter	Intel Ethernet SFP+ SR Optics Module	Intel Dual Band Wireless-AC 7260 ASM	Intel Winstorm Peak 8265 2×2 AC+BT 4.2 Vpro M.2 Combo
Supplier PN	I210T1, MM# 941033	I350T2G1P20, MM# 928941	I350T4G1P20, MM# 928942	MM#928955	MM# 952103	MM#: 941243	7260HMWDTX.R, MM# 936170	MM#: 946658
Data Rates Supported	10/100/1000Mbps copper	10/100/1000Mbps (Copper), 1000Mbps (Fiber)	10/100/1000Mbps (Copper), 1000Mbps (Fiber)	100/1000Mbps and 10Gbps Copper	1GbE/10GbE Optical fiber 10GbE Direct Attach (DAC)	Not Available	Intel Dual Band Wireless-AC 7260	Intel Dual Band Wireless-AC 8265
Controller Details	Intel® Ethernet Controller I210	Intel Ethernet Controller I350	Intel Ethernet Controller I351	Intel Ethernet Controller X540	Intel Ethernet Controller X710-AM2	Not Available	Intel Dual Band Wireless-AC 7260, Dual Band, 2×2, WiFi+BT	Intel Dual Band Wireless-AC 8265, 2×2, WiFi+BT, MU-MIMO
Controller Bus Architecture	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe 3.0 (8GT/s)	Not Available	PCIe M.2	PCIe M.2
Data Transfer Mode	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet	Not Available	WiFi (802.11 ac), 2.4GHz, 5GHz	WiFi (802.11 ac), 2.4GHz, 5GHz
Power Consumption	0.81W	Copper: I350-T2 V2= 4.4W Fiber: I350-F2= 5.5W	Copper: I350T4 V2= 5W LC-Fiber: I350F4 = 6W	X540-T2: 10Gps= 17.4W 1Gbps= 9.5W 100Mbps=6.6W X540-T1: 10Gbps =10.8W 1Gbps= 7.7W 100Mbps= 6.4W	Dual-port 10GBASE-SR= 4.3W typ/4.8W max Dual-port 1000BASE-SX= 4W typ/4.3W max Dual-port 10GBASE-LR= 4.5W	Not Available	Not Available	Not Available

					typ/ 5.1W max Dual-port Direct Attach (Twinax)= 3.3W typ/3.7W max			
IEEE Standards Compliance	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.3 100/1000/10GBASE-T	IEEE 802.3 1/1010GBASE-SR/LR, SFF-8431 10GSFP+DAC	Not Available	IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w	IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w, 802.11r, 802.11k, 802.11v (pending)
Boot ROM Support	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	Not Available	Not Available	Not Available
Network Transfer Mode (Full/Half Duplex)	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available	Not Available
Network Transfer Rate	1,000Mbps Full Duplex	1,000Mbps Full Duplex	1,000Mbps Full Duplex	1,000Mbps Full Duplex	1,000Mbps Full Duplex	Not Available	300/867Mbps	867Mbps
Operating System Driver Support	Windows 7/8/10, Linux, Free BSD, XEN,Vmware	Windows 7/8/10, Linux, Free BSD, XEN,Vmware	Windows 7/8/10, Linux, Free BSD, XEN,Vmware	Windows 7/8/10, Windows Server Linux, FreeBSD	Windows 2008, 2012; RHEL 6.5/7.0, FreeBSD 9/10, Vmware ESXi 5.x	Not Available	Windows 10, 32-bit*, Windows 10, 64-bit*, Windows 8.1, 32-bit*, Windows 8.1, 64-bit*, Windo	Windows 10, 64-bit*, Windows 8.1, 64-bit*, Windows 7, 32-bit*, Windows 7, 64-bit*, Linux*

							ws 8, 32-bit*, Windows 8, 64-bit*, Windows 7, 32-bit*, Windows 7, 64-bit*, Linux*	
Manageability	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available	Not Available
Manageability Capabilities Alerting	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available	Not Available
TDP	Firmware Based Thermal Management	Firmware Based Thermal Management	Firmware Based Thermal Management	Firmware Based Thermal Management	Not Available	Not Available	Not Available	Not Available
Operating Temperature Range	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	Not Available	0°C to 80°C (32°F to 176°F)	0°C to 80°C (32°F to 176°F)
# of Ports	1	2	4	2	2	Not Available	Not Available	Not Available
Data Rate Per Port	10/100/1000Mbps (copper)	10/100/1000Mbps (copper), 1000Mbps (fiber)	10/100/1000Mbps (copper), 1000Mbps (fiber)	100/1,000Mbps, 10Gbps	1Gbps, 10Gbps	Not Available	Not Available	Not Available
System Interface Type	PCIe Gen 2.1	PCIe Gen 2.1	PCIe Gen 2.1	PCIe Gen 2.1	PCIe 3.0	Not Available	PCIe M.2	PCIe M.2
NC Sideband Interface	Not Available	Not Available	Not Available	Not Available	Yes	Not Available	Not Available	Not Available
Jumbo Frames Supported	Yes	Yes	Yes	Yes	Yes	Not Available	Not Available	Not Available
1000Base-T	Yes	Yes	Yes	Yes	Coming Soon	Not Available	Not Available	Not Available
IEEE 1588	Supported	Supported	Supported	Not Available	Supported	Not Available	Not Available	Not Available
Supported Under vPro	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Supported	Supported

Ethernet Specifications Continued

Model	i210-T1	Dual Port Copper= I350-T2V2 Dual Port LC-Fiber= I350-F2	Dual Port Copper= I350-T4 V2 Dual Port LC-Fiber= I350-F4	Dual Port Copper= X540-T2	X710-DA2	AC 7260 NGW	AC 8265 NGW
Connector	RJ-45 Copper	2 x Ports RJ-45 Copper or 2 x Ports LC-Fiber	4 x Ports RJ-45 Copper or 4 x Ports LC-Fiber	2 x Ports RJ-45 Copper	2 x SFPs Receptable	2 x Antennas	2 x Antennas
Website	i210 T1	i350 T2/F2	i350 T4/F4	x540 T2	x710 DA2	7260 NGW	8265 NGW
Auto-Negotiation	IEEE* 802.3* Auto-negotiation	IEEE* 802.3* Auto-negotiation	IEEE* 802.3* Auto-negotiation	IEEE* 802.3* Auto-negotiation	IEEE* 802.3* Auto-negotiation	Not Available	Not Available
Intel® vPro™	Not Available	Not Available	Not Available	Not Available	Not Available	Supported	Supported
Intel® Standard Manageablity	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available
Power Optimizer Platform Low-power Management Systems	Supported	Supported	Supported	Supported	Supported	Supported	Supported
Energy Efficient Ethernet	Supported	Supported	Supported	Not Available	Supported	Not Available	Not Available
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available
Receive Side Scaling	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available
Dual Tx and Rx Queues	Yes	Yes	Yes	Yes	Yes	Not Available	Not Available
Jumbo Frames (up to 9KB)	Supported	Supported	Supported	Not Available	Supported	Not Available	Not Available
Teaming	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available
Wake from Deep Sx	Supported	Supported	Supported	Not Available	Not Available	Not Available	Not Available
Server Operating System Support	Windows Server 2008,	Windows Server 2008,	Windows Server 2008,	Windows Server 2003,	Windows 2008, 2012;	Not Available	Not Available

	2012, 2016. 2019 Linux (RHEL/SLES), Free BSD, Xen, Vmware	2012, 2016. 2019 Linux (RHEL/SLES), Free BSD, Xen, Vmware	2012, 2016. 2019 Linux (RHEL/SLES), Free BSD, Xen, Vmware	2008; RHEL 4, Linux/SLES 11, Vmware	RHEL 6.5/7.0, FreeBSD 9/10, Vmware ESXi 5.x		
Network Proxy/ARP Support	Supported	Supported	Supported	Supported	Supported	Not Available	Not Available

BIOS Specifications

WMI Support	Compliant With Microsoft WBEM and the DMTF Common Information Model
ROM-Based Setup Utility (F1)	System Configuration Setup Program (text only interface) Available at Power-on With F1 Key
Bootblock Recovery	Recovers System BIOS if the Flash ROM Becomes Corrupted
Replicated Setup	Saves System Configuration Settings to a File That Can Then be Used to Replicate the Settings to Other Systems
Boot Control	Boot Control Available Through ROM-based Setup Utility or With F12 Key at Power-on
Memory Change Alert	Power-on Error Message in the Event of a Decrease in System Memory
Thermal Alert	Power-on Error message in the Event of a Fan Failure
Asset Tag	Supports Ability to Set SMBIOS Type 2 Baseboard Asset Tag Field
System/Emergency ROM Flash Recovery With Video	Supports Process to Recover the System BIOS if the Flash ROM Becomes Corrupted
Remote Wakeup/Remote Shutdown	System Admin Can Power On/Off a Client Computer from a Remote Location to Provide Maintenance
Quick Resume Time	Supports Low Power S3 (suspend to RAM) and Prompt Resume Times
ROM Revision Level	System UEFI (BIOS) Version Reported in SMBIOS Type 0 Structure and in BIOS Setup
Keyboard-less Operation	System Can be Booted Without a Keyboard
Per-port Control	Allows I/O Ports to be Individually Enabled/Disabled Through ROM-based Setup or WMI Interface
Adaptive Cooling	Offers Multiple Settings for Fan Control Ranging Between Better Performance and Better Acoustics
Security	User and Administrator Passwords Can Protect Boot and ROM-based Setup – Support Electronic Lock – Chassis Intrusion Detection – UEFI Secure Boot Support – HDD Password Can Protect HDD Data – Windows UEFI Firmware Update Support – Device Guard Support – Optional Access Panel Lock, Kensington Lock, and Pad Lock
Intel(R) AMT (includes ASF 2.0)	Allows System to be Supported from a Remote Location

Intel(R) TXT	Intel(R) Trusted Execution Technology Provides a Security Foundation to Build Protections Against Software Based Attacks
Memory Modes	Supports Mirroring, Lock Step, and Sparing Memory Modes
Windows 10 Ready	Supports Windows 10 Requirements for Secure Flash, UEFI v 2.6 Device Guard Support Spec

Industry Standard Specification Support

UEFI	Unified Extensible Firmware Interface v2.7
ACPI (Advanced Configuration and Power management Interface)	Advanced Configuration and Power Interface v6.1
ASF 2.0	DMTF Alert Standard Format Specification v2.0
ATA (IDE)	AT Attachment 6 with Packet Interface (ATA/ATAPI-6)
CD Boot	El Torito Bootable CD-Rom Format Specification, v1.0
EHCI	Enhanced Host Controller Interface for Universal Serial Bus, Revision v1.0
PCI	NA (No PCI slot)
PCI Express	PCI Express Base Specification v3.0
SATA	Serial ATA Revision 3.0 Specification
TPM	Trusted Computing Group TPM Specification v2.0
UHCI	Universal Host Controller Interface Design Guide, Revision v1.1
USB	Universal Serial Bus Revision v1.1 Universal Serial Bus v2.0 Universal Serial Bus v3.0
SMBIOS	DMTF System Management Spec v3.2.1
XHCI	XHCI SPEC Revision v1.2

Social And Environmental Responsibility

Quality Control	Lenovo is a member of an eco declaration system that enforces regular independent quality control
Hazardous Substances and Preparation	· Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1) · Products do not contain Asbestos · Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorcarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide · Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparation · Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP

	· Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cmÂ²/week REACH Article 33 information about substances in articles is available at: http://www.lenovo.com/social_responsibility/us/en/ThinkGreen_products.html#environment
Batteries	Not Available
Safety, EMC Connection to the Telephone Network and Labeling	Not Applicable, no Connection to a Telephone Network

Acoustic Noise Emissions Declaration

System Software Manager	Lenovo ThinkStation Supports Software Management Tools by Lenovo Vantage

Regulations & Standards

EMC & Safety	FCC DoC for North America VCCI Certification for Japan BSMI Certification for Taiwan EU/EFTA CE Mark & DoC UL/CUL(P920,P720,P520,P520c), cTUVus(P330) UL-GS(P920,P720,P520,P520c), TUV-GS(P330) IEC60950-1 CB Report/Certificate Saudi Arabia SASO Kuwait KUCAS China CCC Mark Hong Kong SAR (CB report) Singapore PSB South Africa SABS Russia-EAC Morocco-CM Mexico-NOM Kazakhstan-EAC Belarus-EAC Serbia KVALITET Ukraine UKrCEPRO India-BIS USA Chemical Emission Test

Environmentals

Energy Star	ENERGY STAR® v7.0
EPEAT	EPEAT® Silver Certification Available on Select Models
Greenguard	Greenguard
RoHS	RoHS Compliant

ErP Lot-3 2013	Yes
Hazardous Substances	· Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenol ethers (PBDE) · Products do not contain Asbestos · Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorcarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide · Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparation · Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP · Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm_/week
Disclaimers	EPEAT registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.