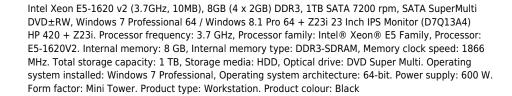


## HP 420 + Z23i Intel® Xeon® E5 Family E5-1620V2 8 GB DDR3-SDRAM 1 TB HDD Windows 7 Professional Mini Tower Workstation Black

Brand: HP Product code: WM612EA#KIT1

Product name: 420 + Z23i







Processor		Software	
Processor manufacturer * Processor family * Processor *	Intel® Xeon® E5 Family E5-1620V2	Operating system architecture Recovery operating system Operating system installed *	64-bit Windows 8.1 Pro Windows 7 Professional
Processor number of cores	4	Processor special features	
Processor threads Processor boost frequency Processor frequency * Processor socket	8 3.9 GHz 3.7 GHz	Intel Wireless Display (WiDi) Technology Intel 64	×
Processor cache	LGA 2011 (Socket R) 10 MB	Enhanced Intel SpeedStep Technology	✓
Processor cache type	Smart Cache	Embedded options available	×
Bus type	QPI	Intel® InTru™ 3D Technology	×
FSB Parity	×	Intel® Insider™	×
Processor lithography	22 nm	Intel Clear Video HD Technology	×
Processor operating modes Processor series	64-bit Intel Xeon E5-1600 v2	Intel Clear Video Technology	×
Processor series Processor codename Thermal Design Power (TDP)	Ivy Bridge EP	Intel VT-x with Extended Page Tables (EPT)	<b>✓</b>
Tcase	70 °C	Intel TSX-NI	×
PCI Express slots version	3.0	Idle States	1
Maximum number of PCI Express lanes	40	Thermal Monitoring Technologies Intel AES New Instructions	<b>/</b>
PCI Express configurations	x4, x8, x16	Intel® Secure Key	· ·
Number of processors installed	1	Intel® OS Guard	· /
Maximum internal memory supported by processor	256 GB	Intel Trusted Execution Technology	<b>✓</b>
Memory types supported by processor	DDR3-SDRAM	Execute Disable Bit	<b>✓</b>
Memory clock speeds supported by processor	800,1066,1333,1600,1866 MHz	Intel FDI Technology Intel Flex Memory Access	×

Processor		Processor special features	
Memory bandwidth supported by	59.7 GB/s	Intel Fast Memory Access	×
processor (max)  ECC supported by processor		Intel® Smart Cache	✓
ecc supported by processor	<b>✓</b>	Intel Enhanced Halt State	✓
Memory		Intel Demand Based Switching	✓
Internal memory *	8 GB	Intel Clear Video Technology for MID	×
Memory, maximum *	64 GB	Processor package size	52.5 x 45.0 mm
Internal memory type	DDR3-SDRAM	Supported instruction sets	AVX
Memory layout (slots x size) Memory slots	4 x 2 GB 8x DIMM	Scalability	1S
Memory clock speed	1866 MHz	CPU configuration (max)	1
ECC	<b>v</b>	Intel Virtualization Technology for Directed I/O (VT-d)	✓
Memory channels	Quad-channel	Intel Identity Protection Technology	0.00
Storage		version	
Total storage capacity *	1 TB	Intel Secure Key Technology version	1.00
Storage media *	HDD	Intel Virtualization Technology (VT-x)	✓
Optical drive *	DVD Super Multi	Intel TSX-NI version	0.00
Number of HDDs installed	1	Intel Dual Display Capable	x
Hard drive capacity	1 TB	Technology	
Hard drive interface	SATA	Intel Rapid Storage Technology	X
Hard drive rotational speed	7200 RPM	Processor ARK ID	75779
Graphics		Intel Turbo Boost Technology	2.0
Discrete graphics card model *	Not available	Intel Hyper-Threading Technology	<b>✓</b>
Network		Intel® Quick Sync Video Technology	
Ethernet LAN connection *	<b>✓</b>	Intel My WiFi Technology	×
Ethernet LAN data rates	10,100,1000 Mbit/s	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Cabling technology	10/100/1000Base-T(X)	Intel Anti-Theft Technology	×
Wi-Fi *	×	Conflict-Free processor	×
VVI-I I	•		
	•	Power	
Ports & interfaces		Power Power supply *	600 W
Ports & interfaces USB 2.0 ports quantity *	5		600 W
Ports & interfaces		Power supply *	600 W ENERGY STAR
Ports & interfaces USB 2.0 ports quantity * USB 3.2 Gen 1 (3.1 Gen 1) Type-A	5	Power supply *  Sustainability  Sustainability certificates	
Ports & interfaces USB 2.0 ports quantity * USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity * DVI port PS/2 ports quantity	5 4 × 2	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions	ENERGY STAR
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports	5 4 <b>×</b> 2 2	Power supply *  Sustainability  Sustainability certificates	
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports	5 4 <b>x</b> 2 2 2	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width *	ENERGY STAR 177.8 mm
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in	5 4 X 2 2 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth *	ENERGY STAR  177.8 mm  445.2 mm
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs	5 4  X 2 2 1  ✓	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out	5 4  X 2 2 1  ✓	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width *  Depth *  Height *  Weight *  Packaging content	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in	5 4  X 2 2 1  ✓	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots	5 4  X 2 2 1  ✓ 1	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots	5 4  X 2 2 1  ✓ 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots	5 4  X 2 2 1  ✓ 1  ✓ 1  1 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included *	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots	5 4  X 2 2 1  ✓ 1  ✓ 1 1 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots	5 4  X 2 2 1	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI Slots	5 4  X 2 2 1  ✓ 1  ✓ 1 1 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design	5 4  X 2 2 1  V 1 1 1 1 2 1	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *	5 4  X 2 2 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio Contrast ratio (typical)	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *  Number of 3.5" bays	5 4  X 2 2 1   1 1 1 2 1  Mini Tower 3	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio Contrast ratio (typical) Display brightness	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *	5 4  X 2 2 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio  Contrast ratio (typical) Display brightness  Viewing angle, horizontal	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *  Number of 3.5" bays  Number of 5.25" bays	5 4  X 2 2 1	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio Contrast ratio (typical) Display brightness Viewing angle, horizontal Viewing angle, vertical	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *  Number of 3.5" bays  Number of 5.25" bays  Product colour *	5 4  X 2 2 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio  Contrast ratio (typical) Display brightness  Viewing angle, horizontal  Viewing angle, vertical  Other features	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *  Number of 3.5" bays  Number of 5.25" bays  Product colour *  Country of origin  Performance	5 4  X 2 2 1	Power supply *  Sustainability Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display diagonal Display resolution  Native aspect ratio Contrast ratio (typical) Display brightness Viewing angle, horizontal Viewing angle, vertical  Other features  Optical drives quantity	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *  Number of 3.5" bays  Number of 5.25" bays  Product colour *  Country of origin  Performance  Chipset	5 4  X 2 2 1	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display giagonal Display resolution  Native aspect ratio Contrast ratio (typical) Display brightness  Viewing angle, horizontal Viewing angle, vertical  Other features  Optical drives quantity Full HD	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg
Ports & interfaces  USB 2.0 ports quantity *  USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *  DVI port  PS/2 ports quantity  Firewire (IEEE 1394) ports  Ethernet LAN (RJ-45) ports  Microphone in  Headphone outputs  Line-out  Line-in  Expansion slots  PCI Express x4 (Gen 2.x) slots  PCI Express x8 (Gen 2.x) slots  PCI Express x8 (Gen 3.x) slots  PCI Express x16 (Gen 3.x) slots  PCI slots  Design  Form factor *  Number of 3.5" bays  Number of 5.25" bays  Product colour *  Country of origin  Performance	5 4  X 2 2 1	Power supply *  Sustainability  Sustainability certificates  Weight & dimensions  Width * Depth * Height * Weight *  Packaging content  Mouse included  Keyboard included  Display  Display included * Display giagonal Display resolution  Native aspect ratio Contrast ratio (typical) Display brightness  Viewing angle, horizontal Viewing angle, vertical  Other features  Optical drives quantity Full HD	ENERGY STAR  177.8 mm  445.2 mm  447.6 mm  12.5 kg

