



HP Z230 Tower Intel® Core™ i5 i5-4670 8 GB DDR3-SDRAM 1 TB HDD NVIDIA® Quadro® K600 Windows 7 Professional Mini Tower Workstation Black



Brand : HP

Product code: F3F51PA

Product name : Z230 Tower

Intel Core i5-4670 (3.4GHz, 6MB cache, 4 cores), Intel PCH C226, 8GB 1600MHz DDR3 non-ECC, 1TB 7200 rpm SATA, NVIDIA Quadro K600, Intel HD Graphics 4600, SATA SuperMulti DVD, Gigabit Ethernet, Windows 7 Professional 64-bit/Windows 8 Pro 64-bit
HP Z230 Tower. Processor frequency: 3.4 GHz, Processor family: Intel® Core™ i5, Processor: i5-4670. Internal memory: 8 GB, Internal memory type: DDR3-SDRAM, Memory clock speed: 1600 MHz. Total storage capacity: 1 TB, Storage media: HDD, Optical drive: DVD Super Multi. On-board graphics card model: Intel® HD Graphics 4600, Discrete graphics card model: NVIDIA® Quadro® K600. Operating system installed: Windows 7 Professional, Operating system architecture: 64-bit. Power supply: 400 W. Product type: Workstation

Processor		Design	
Processor manufacturer *	Intel	Product colour *	Black
Processor family *	Intel® Core™ i5	Country of origin	China
Processor generation	4th gen Intel® Core™ i5	Performance	
Processor *	i5-4670	Chipset	Intel® C226
Processor number of cores	4	Product type *	Workstation
Processor threads	4	Software	
Processor boost frequency	3.8 GHz	Operating system installed *	Windows 7 Professional
Processor frequency *	3.4 GHz	Operating system architecture	64-bit
Processor socket	LGA 1150 (Socket H3)	Recovery operating system	Windows 8 Pro
Processor cache	6 MB	Processor special features	
Processor cache type	Smart Cache	Intel® Small Business Advantage (Intel® SBA)	✗
Bus type	QPI	Intel Wireless Display (WiDi) Technology	✓
FSB Parity	✗	Intel 64	✓
Processor lithography	22 nm	Enhanced Intel SpeedStep Technology	✓
Processor operating modes	64-bit	Embedded options available	✗
Processor series	Intel Core i5-4600 Desktop series	Intel® InTru™ 3D Technology	✓
Processor codename	Haswell	Intel® Insider™	✓
Thermal Design Power (TDP)	84 W	Intel Clear Video HD Technology	✓
Tcase	72.72 °C	Intel Clear Video Technology	✗
PCI Express slots version	3.0	Intel VT-x with Extended Page Tables (EPT)	✓
Maximum number of PCI Express lanes	16	Intel TSX-NI	✗
PCI Express configurations	1x16, 2x8, 1x8+2x4	Idle States	✓
Number of processors installed	1	Thermal Monitoring Technologies	✓
Number of QPI links	1	Intel Stable Image Platform Program (SIPP)	✓
Stepping	C0	Intel AES New Instructions	✓
Maximum internal memory supported by processor	32 GB	Intel® Secure Key	✓
Memory types supported by processor	DDR3-SDRAM	Intel® OS Guard	✓
Memory clock speeds supported by processor	1333,1600 MHz	Intel Trusted Execution Technology	✓
Memory bandwidth supported by processor (max)	25.6 GB/s	Execute Disable Bit	✓
ECC supported by processor	✗	Intel FDI Technology	✓
Memory		Intel Flex Memory Access	✗
Internal memory *	8 GB	Intel Fast Memory Access	✗
Internal memory type	DDR3-SDRAM		
Memory layout (slots x size)	2 x 4 GB		
Memory slots	4x DIMM		

Memory		Processor special features	
Memory clock speed	1600 MHz	Intel® Smart Cache	✓
Non-ECC	✓	Intel Enhanced Halt State	✓
Memory channels	Dual-channel	Intel Demand Based Switching	✗
Storage		Intel Clear Video Technology for MID	✗
Total storage capacity *	1 TB	Processor package size	37.5 x 37.5 mm
Storage media *	HDD	Supported instruction sets	AVX 2.0, SSE4.1, SSE4.2
Optical drive *	DVD Super Multi	Processor code	SR14D
Number of HDDs installed	1	Scalability	1S
Hard drive capacity	1 TB	CPU configuration (max)	1
Hard drive interface	SATA	Graphics & IMC lithography	22 nm
Hard drive rotational speed	7200 RPM	Thermal solution specification	PCG 2013D
Graphics		Intel Virtualization Technology for Directed I/O (VT-d)	✓
On-board graphics card *	✓	Intel Identity Protection Technology version	1.00
Discrete graphics card model *	NVIDIA® Quadro® K600	Intel Stable Image Platform Program (SIPP) version	1.00
Discrete graphics card memory	1 GB	Intel Secure Key Technology version	1.00
On-board graphics card family	Intel® HD Graphics	Intel Virtualization Technology (VT-x)	✓
On-board graphics card model *	Intel® HD Graphics 4600	Intel Small Business Advantage (SBA) version	1.00
On-board graphics card base frequency	350 MHz	Intel TSX-NI version	0.00
On-board graphics card dynamic frequency (max)	1200 MHz	Intel Dual Display Capable Technology	✓
Maximum on-board graphics card memory	1.74 GB	Intel Rapid Storage Technology	✗
Number of displays supported (on-board graphics)	3	Processor ARK ID	75047
On-board graphics card DirectX version	11.1	Intel® Smart Response Technology	✗
On-board graphics card ID	0x412	Intel® Rapid Start Technology	✗
Network		Intel Turbo Boost Technology	2.0
Ethernet LAN connection *	✓	Intel Smart Connect Technology	✗
Ethernet LAN data rates	10,100,1000 Mbit/s	Intel Hyper-Threading Technology	✗
Cabling technology	10/100/1000Base-T(X)	Intel® Quick Sync Video Technology	✓
Wi-Fi *	✗	Intel My WiFi Technology	✓
Ports & interfaces		Intel Identity Protection Technology	✓
USB 2.0 ports quantity *	6	Intel Anti-Theft Technology	✓
USB 3.2 Gen 1 (3.1 Gen 1) Type-A ports quantity *	4	Conflict-Free processor	✓
DVI port	✗	Power	
PS/2 ports quantity	2	Power supply *	400 W
Ethernet LAN (RJ-45) ports	1	Weight & dimensions	
Microphone in	✓	Width *	170 mm
Headphone outputs	1	Depth *	442 mm
Line-out	✓	Height *	399 mm
Line-in	✓	Weight *	8.8 kg
Expansion slots		Packaging content	
PCI Express x1 (Gen 2.x) slots	1	Mouse included	✗
PCI Express x4 (Gen 2.x) slots	1	Keyboard included	✗
PCI Express x16 (Gen 2.x) slots	1	Display	
PCI Express x16 (Gen 3.x) slots	1	Display included *	✗
Design		Other features	
Form factor *	Mini Tower	Optical drives quantity	1
Water cooling system	✗		
Number of 3.5" bays	2		
Number of 5.25" bays	2		
Number of 2.5" bays	1		



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