



HP Z220 CMT and HP Z220 SFF Memory Configurations and Optimization

The purpose of this document is to provide an overview of the memory configuration for the HP Z220 CMT and HP Z220 SFF Workstation and to provide recommendations to optimize performance.

Supported memory modules¹

The types of memory supported on a HP Z220 CMT and HP Z220 SFF Workstations are:

- 2 GB, 4 GB and 8 GB PC3-12800U 1600MHz DDR3 Unbuffered non-ECC DIMMs
- 2 GB, 4 GB and 8 GB PC3-12800E 1600MHz DDR3 Unbuffered ECC DIMMs
- 1.35V and 1.5V DIMMs, but the system will operate the DIMMs, safely, at 1.5V only.
- Single and dual rank 2 Gb and 4 Gb based DIMMs

See the Memory Technology White Paper for additional technical information.

Figure 1

Processor and memory support

Processor	Supports Non-ECC Memory	Supports ECC Memory	Notes
Intel® Core™ i3-32xx	X	X	
Intel® Core™ i3-21xx	X	X	
Intel® Core™ i5-34xx	X		*
Intel® Core™ i5-35xx	X		*
Intel® Core™ i7-37xx	X		*
Xeon® E3-12xx v2	X	X	
Pentium® G6xx	X	X	

* If ECC memory is added to the system, the ECC function is disabled and the DIMMs will appear to the system as Non-ECC memory.

Platform capabilities

Maximum capacity: 32 GB

- HP Z220 has a total of 4 memory sockets
- 2 channels with 2 sockets per channel

Speed

- 1600 MHz, 1333 MHz and 1066 MHz DIMMs are supported
- Memory will operate at the speed of the slowest rated installed processor or DIMM.

The processor determines what type of memory is supported on the HP Z220. Please see Figure 1 for a complete list of processors and memory support.

Memory features

ECC is supported on Unbuffered ECC DIMMs.

- Single-bit errors are automatically corrected.
- Multi-bit errors are detected and will cause the system to immediately reboot and halt with an F1 prompt error message.

Although HP does support non-ECC memory on this platform, as a lower cost option, it should be noted that non-ECC memory does not detect or correct single-bit or multi-bit errors which can cause instability or corruption of data in the platform. See Memory Technology White Paper for more information.

Optimize performance

Generally, maximum memory performance is achieved by evenly distributing total desired memory capacity across all operational channels. Proper individual DIMM capacity selection is essential to maximizing performance. Refer to the Optimal Memory Configuration tables below for more information.

Figure 2

Optimal memory configurations

(Note: The following tables do not include all available factory installed configurations)

Total Capacity	DIMM1	DIMM2	DIMM3	DIMM4	Rating
2 GB*	2 GB				Good
4 GB*	2 GB		2 GB		Best
4 GB~	4 GB				Good
6 GB~	2 GB	2 GB	2 GB		Better
8 GB	2 GB	2 GB	2 GB	2 GB	Best
	4 GB		4 GB		
12 GB	4 GB	2 GB	4 GB	4 GB	Best
16 GB	4 GB	4 GB	4 GB	4 GB	Best
16 GB~	8 GB		8 GB		Best
24 GB~	8 GB	4 GB	8 GB	4 GB	Best
32 GB	8 GB	8 GB	8 GB	8 GB	Best

* For 32-bit operating systems, there is a memory limit of 4 GB.

~ Although supported, these configurations are not factory configurable at this time.

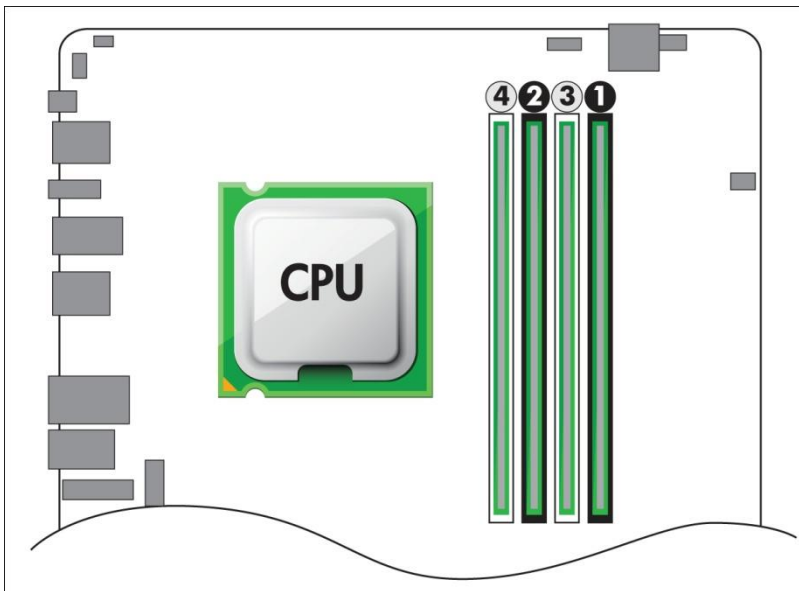
HP recommends Windows® 7.

Loading rules

- Each channel includes two DIMM sockets; black and white connector pairs represent a channel. Load all black slots first and then load the white slots starting with the slot furthest from the CPU.
- Load the memory modules in order of size, starting with the largest module and finishing with the smallest module.
- See diagram for loading order

Figure 3

Loading order



Additional resources

hp.com/go/whitepapers

hp.com/support/Z220CMT_manuals

hp.com/support/Z220SFF_manuals

1 Each processor supports up to two channels of DDR3 memory. To realize full performance at least 1 DIMM must be inserted into each channel.

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