

Before You Begin

INTRODUCTION

It is important to be aware of the system considerations listed below before installing your NTM6900 (6900-xxx) or WTM7026 (7026-xxx) embedded motherboard. The NTM6900 motherboard supports the Intel® Xeon® 5500 series of Nehalem-EP processors, while the WTM7026 features the Intel® Xeon® 5600 series of Westmere-EP CPUs. System performance may be affected by incorrect usage of the features listed below.

MECHANICAL LAYOUT AND CHASSIS INSTALLATION

Trenton's NTM6900 and WTM7026 Extended ATX motherboards comply with the SSI-EEB Enterprise Bay Specification 2008, Revision 1.0. This specification defines the Extended ATX motherboard form factor including the board's mechanical dimensions, mounting hole locations, option card slot locations, I/O connector placements, maximum component heights and the motherboard's I/O plate dimensions.

Note: The I/O plate for the motherboard is packed with the motherboard inside its own separate bag. The I/O plate needs to be installed into the standard chassis opening to cover the gaps between the motherboard's I/O connectors and ensure ESD protection.

Chassis that adhere to the SSI-EEB industry standard should be used with the embedded motherboard. See the NTM6900 or WTM7026 dimension diagram for more details.

12V AUX POWER REQUIREMENTS

Both 12V AUX motherboard connectors (P15 and P16) must be connected to the system power supply to ensure proper board operation.

DDR3 MEMORY

The DDR3 memory modules used in the NTM6900 or WTM7026 must be ECC registered (72-bit) DDR3 DIMMs and must be PC3-10600, PC3-8500 or PC3-6400 compliant.

NOTES:

- All memory modules must have gold contacts.
 - Low voltage (DDR3L) DIMMs are not supported.
 - To maximize memory interface speed, populate each memory channel with DDR3 DIMMs having the same interface speed.
 - Populate the memory channels starting with the DIMM socket farthest from the CPU. Work your way toward the processor populating the DIMM sockets labeled with an "A" first followed by the "B" labeled sockets.
 - If populating a memory channel with a Quad-rank and a Single- or Dual-rank DIMM place the Quad-rank DIMM farthest from the processor.
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The motherboard will support DIMMs with different speeds, but the memory channel interface will operate at the speed of the slowest DIMM.

CPU FAN CONNECTION OPTIONS

The motherboard uses a 4-wire fan mounted on each CPU heat sink to ensure proper system operation. These CPU fans connect to P28 for CPU1 and P31 for CPU2. Like the system fan connectors, these fans make use of the ACPI soft control lines via jumpers W2 and W4. Jumper W4 is associated with P28 and W2 works with P31. The factory default settings for W2 and W4 is CLOSED which enables speed control for the CPU fans. If jumpers W2 and W4 are removed, the speed of the CPU fans will not be accurately controlled. Today's processors have internal logic to prevent excessive temperatures from damaging the CPUs should a failure occur with the system's ACPI control signals. The *Advanced Setup* chapter in the manual contains information on the motherboard's ACPI BIOS settings. Motherboards that have BIOS revision TTIRYF27 or later support the speed control functionality for the CPU fans.

SYSTEM FAN CONNECTION OPTIONS

The four chassis fan connections on the NTM6900 and WTM7026 motherboards are labeled: P25, P26, P27 and P30. A system fan speed control jumper (W7, W6, W5 and W3) is associated with each system fan connector and the position of this jumper determines speed control operation. Speed control operation is a function of the fan type used in the chassis design. Three-wire fans and four-wire fans with a PWM control line will behave differently depending on the jumper settings. These jumper settings are shown in the system fan speed control table.

System Fan Speed Control Operation	P25 → W7	P26 → W6	P27 → W5	P30 → W3
4-Wire-System Fans				
System fan speed controlled via ACPI soft control commands * = Factory default W# jumper setting	Closed* - No effect, system fan speed max.	Closed* - No effect, system fan speed max.	Closed* - System fan under ACPI control	Closed* - System fan under ACPI control
System fan speed runs at max speed all of the time	Open – No effect, system fan speed max	Open – No effect, system fan speed max	Open – System fan speed range limited – Not Recommended	Open – System fan speed range limited – Not Recommended
3-Wire System Fans				
System fan speed controlled via ACPI soft control commands * = Factory default W# jumper setting	Closed* - No effect, system fan speed max.	Closed* - No effect, system fan speed max.	Closed* - System fan runs at max. speed	Closed* - System fan runs at max. speed
System fan speed runs at max speed all of the time	Open – No effect, system fan speed max	Open – No effect, system fan speed max	Open – System fan has some limited speed control	Open – System fan has some limited speed control

System fans connected to connectors P25 and P26 will always run at full speed because the W7 and W6 control jumpers have no effect regardless of position. Alternatively, system fans connected to P27 or P30 may vary in speed based on the temperature sensor readings and the associated ACPI soft control signal commands. The *Advanced Setup* chapter in the manual contains information on the motherboard’s ACPI BIOS settings. Motherboards that have BIOS revision TTIRYF27 or later support the speed control functionality for the system fans.

SATA RAID OPERATION

The ICH10R I/O Controller Hub used on the NTM6900 and WTM7026 features Intel® Matrix Storage Technology, which allows the ICH10R’s SATA controller to be configured as a RAID controller supporting RAID 0, 1, 5 and 10 implementations. To configure the SATA ports as RAID drives or to use advanced features of the ICH10R, you must install the Intel® Matrix Storage Manager. A link to the software is available under the **Downloads** tab on either the [NTM6900](#) or the [WTM7026](#) product detail web pages located on Trenton’s website.

PCI EXPRESS OPTION CARD SLOT CONFIGURATIONS

There are six PCI Express® option card slots supported on Trenton’s NTM6900 and WTM7026 motherboards. Five of these slots (PCIe7, PCIe6, PCIe5, PCIe4 and PCIe2) support either PCI Express 2.0 or 1.1 option cards. PCIe3 is a PCI Express slot dedicated to supporting PCIe 1.1 option cards. Slots 2, 4 and 6 are x16 mechanical slots driven with x8 PCIe electrical links. Slots 3, 5, and 7 are x8 mechanical slots driven with x4 PCIe electrical links.

PCI CARD SLOT CONFIGURATION

There is an additional PCI slot supported on the NTM6900 and WTM7026 to enable a mix of option card bus technologies. The PCI card slot is labeled PCI-1 and the slot is configured with a 32-bit/33MHz parallel PCI bus interface. The motherboard’s PCI slot supports 5V or Universal PCI cards.

ENVIRONMENTAL AND SYSTEM AIRFLOW CONSIDERATIONS

Trenton has performed many hours of thermal testing on the NTM6900 and WTM7026 motherboards under a variety of simulated system conditions using different processor options. The system design using these motherboards should provide a chassis airflow of 350LFM over the motherboard. The steady state operating temperature range specification for the Trenton NTM6900 and WTM7026 motherboard is 0° C to 50° C (32° F to 122° F).

Trenton’s thermal testing methodology is engineering driven, verifiable and conservative in order to ensure long-lasting and reliable system operations under varying environmental conditions. We have validated proper board operation with typical temperature excursions 10% above the motherboard’s stated maximum operating temperature. Operating temperature excursions below 0° C have also been verified in Trenton’s labs. The amount and duration of these extended temperature excursions are application dependent. Contact Trenton to discuss your specific system’s environmental parameters should you need to exceed our published operating temperature range specification.

FOR MORE INFORMATION

For more information on any of these features, refer to the appropriate sections of either the *NTM6900 Technical Reference Manual* (#87-006903-000) or the *WTM7026 Technical Reference Manual* (#87-007029-000). The latest manual revision may be found on Trenton’s website - www.TrentonTechnology.com.