Before You Begin

INTRODUCTION

It is important to be aware of the system considerations listed below before installing your THD8141 (8141-xxx) SHB. Overall system performance may be affected by incorrect usage of these features.

DDR3-1600 MEMORY

Trenton recommends unbuffered ECC PC3-12800 or PC3-10600 DDR3 memory modules for use on the THD8141. These unbuffered ECC registered (64-bit) DDR3 DIMMs must be PC3-12800 or PC3-10600 compliant. Unbuffered non-ECC DDR3 DIMMs are also supported on the THD8141 SHB, but you cannot mix the two different memory types on the same board.

NOTES:

- To maximize memory interface speed, populate each memory channel with DDR3 DIMMs having the same interface speed. The SHB will support DIMMs with different speeds, but the memory channel interface will operate speed of the slowest DIMM.
- All memory modules must have gold contacts.
- The SHB supports the following memory module memory latency timings:
  - 9-9-9 for 1333MHz DDR3 DIMMs
  - 11-11-11 for 1600MHz DDR3 DIMMs
- Populate the memory sockets starting with memory channel A and begin by using the DIMM socket closest to the CPU first. Refer to the THD8141 board layout drawing and populate the memory sockets using the population order illustrated in the chart below:

Population order[#]	CPU1
1	BK0A
2	BK1A
3	BK0B
4	BK1B

[#]Using a balanced memory population approach ensures maximum memory interface performance. A "balance approach" means using an equal number of DIMMs on the THD8141 SHB whenever possible.

The memory DIMMs on the SHB connect directly to the CPU and at least one memory module must be installed on the board.

PCI EXPRESS 3.0 LINKS AND PICMG® 1.3 BACKPLANES

The PCI Express® links A0, A2 and A3 on the THD8141 connect to PCI Express 3.0 retimers and the retimers connect directly to the Haswell processor. PCIe 3.0 retimers are used to maximize signal integrity regardless of where an end-point device is located on a PICMG 1.3 backplane. The PCIe links can operate as either PCI Express 3.0, 2.0 or 1.1 links based on the end-point devices on the backplane that are connected to the SHB. In addition to automatically configuring themselves for either PCIe 3.0, 2.0 or PCIe 1.1 operations, the links also configure themselves for either graphics or server-class operations. In other words, the multiple PCIe links from the processor (links A0, A2 and A3) can be combined into a single x16 PCIe electrical link or a combination of one x8 and two x4 links on a backplane. The CPU's PCIe links may train down to x1 links, but cannot bifurcate into multiple x1 links. The PCIe link (B0) is a PCIe 2.0 interface that comes from the board's PCH. Link B0 has a x4 default configuration and can automatically bifurcate into four, x1 PCIe links. Refer to the *PCI Express® Reference* chapter and to *Chapter 4 - PCI Express Backplane Usage* of this manual for more information.

PICMG 1.3 BACKPLANE USAGE WITH THE THD8141

THD8141 combo-class, PICMG 1.3 system host board supports the standard's optional SHB-to-backplane USB (4) and Gigabit Ethernet (1) interfaces. Both 3rd party industry standard PICMG 1.3 backplanes as well as a variety of Trenton backplanes are compatible with the THD8141 including the Trenton BPG8194, BPC8219, BPG8155, and the BPG8032. There are several backplanes Trenton does not recommend for use on the THD8141. See Tech Info – Trenton PICMG 1.3 Backplanes Compatible with the THD8141 on-line document or *Chapter 4, PCI Express Backplane Usage* for more details.

POWER CONNECTION

The PICMG® 1.3 specification supports soft power control signals via the Advanced Configuration and Power Interface (ACPI). The THD8141 supports these signals, controlled by the ACPI and are used to implement various sleep modes. When control signals are implemented, the type of ATX or EPS power supply used and the operating system software will dictate how system power should connect to the SHB. It is critical that the correct method be used. Refer to - *Power Connection* section in the THD8141 manual to determine the method that will work with your specific system design. The *Advanced Setup* chapter in the manual contains the ACPI BIOS settings.

MOUSE/KEYBOARD "Y" CABLE

Many of the legacy I/O connections that previously required an optional IOB33 board have been incorporated into the THD8141 design. Unless you need a parallel printer port, you should not need an IOB33 in your THD8141-based system. *(Note: the current THD8141 BIOS does not support the IOB33's floppy port interface.)* If you have an IOB33 I/O board in your system and you are using a "Y" cable attached to the bracket mounted mouse/keyboard mini Din connector, be sure to use Trenton's "Y" cable, part number 5886-000. Using a non-Trenton cable may result in improper SHB operation.

SATA RAID OPERATION (WINDOWS O/S SETUP)

The Intel® C226 Platform Controller Hub (PCH) used on the SHB features Intel® Rapid Storage Technology (Intel® RST) and requires a several unique drivers. A .zip file is available on the Trenton Systems website to help you configure the SATA ports as RAID drives connected to the THD8141 while taking advantage of the PCH's drive array management.

If you would like your system to provide you with an immediate notification of a failed drive in the RAID array then the "Hot Plug" setting on the Advanced/SATA THD8141 BIOS screen needs to be ENABLED for each drive in the array. If this BIOS setting is DISABLED a drive failure, notification alert may take several minutes or even longer if there is no hard drive activity on the RAID array.

DVI-D AND ANALOG VIDEO PORTS

The THD8141 offers both a DVI-D and an analog video port. The digital DVI-D port is a vertical port mounted directly on the SHB. This port is useful in system designs that incorporate a flat panel LCD display directly into the system enclosure. The ports may run simultaneously; however, the specific dual monitor implementation is a function of the system's operating system and video driver parameters. Like the SATA RAID file a THD8141 video driver file is available under the DOWNLOADS tab of the THD8141 product detail webpage.

INTEL® AMT 9.0

Intel® AMT 9.0 is supported on the THD8141 and includes useful features for managing clients remotely. Windows .Net Framework 3.5 or higher must be installed to avoid AMT x.x "unknown device" errors. Serial port console redirect and IDE-R are not currently supported in AMT 9.0 on the THD8141.

BIOS

The THD8141 features the Aptio® 4.x BIOS from American Megatrends, Inc. (AMI) with a ROM-resident setup utility called the Aptio Text Setup Environment or TSE. *(Note: the SHB's current THDES008 BIOS has the Hibernate and Sleep states disabled.)* Details of the Aptio TSE are provided in the separate *THD814 BIOS Technical Reference* manual.

OPERATING SYSTEMS

Trenton Systems has successfully tested the THD8141 system host board with a wide variety of operating systems including Linux (Red Hat RHEL, Centos and SUSE), Windows® Win7 (32 or 64-bit), Windows® 2008 Sever 64, Windows® Win8.1 64, Windows® 2012 Server 64, and Oracle® Solaris 11. However, there are some operating systems that Intel® does not recommend for use with the board's Haswell processor and Lynx Point PCH architecture, notably, Windows® XP (32 or 64-bit), and Windows® 2003 Server.

FOR MORE INFORMATION

Refer to the appropriate sections *THD8141Hardware Technical Reference Manual*. The BIOS and hardware technical reference manuals are available under the **Downloads** tab on the THD8141 web page.