



Application Note: Trenton System Host Board (SHB), IOBxx and PEX10 Compatibility
Date: April 26, 2010

Introduction

This application note explains which version of an optional I/O and/or PCI Express link expansion board should be used with specific Trenton system host boards. Trenton PICMG 1.3 backplane compatibility is also explained when using the PCI Express expansion link capabilities of the IOB31, IOB33 and PEX10 boards. The PEX10 is a PCIe link expansion board that takes advantage of the additional PCI Express 2.0 interfaces supported by the Intel® Xeon® EC5500/LC5500-series (i.e. Jasper Forest) processors used on Trenton’s JXT6966 SHB.

Trenton System Host Board (SHB) and IOBxx Compatibility Chart

| IOB Module | T4L (6483) | TML (6490) | TQ9 (6731) | MCG-Series (6680, 6690, 6675, 6695) | NLI / NLT (6313, 6396) | SLT / SLI (6515, 6521) | MCX-Series (6633, 6685, 6638, 6700) | JXT / JXTS (6966) |
|-----------------------|---------------|---------------|---------------|---|------------------------------|------------------------------|---|-------------------------|
| IOB33JX (7015-004) | | | | | | | | X |
| IOB33MC (7015-002) | | | X | X | | | X | |
| IOB33 (7015-000) | X | X | | | X | X | | |
| IOB32NI (6830-001) | | | X | X | | | X | |
| IOB32MC (6830-002) | | | X | X | | | X | |
| IOB31 (6474-000) | X | X | X | X | X | X | X | |
| IOB30 (6391-000) | X | X | | | X | X | | |
| IOB30MC (6391-001) | | | X | X | | | X | |

IOB33 Product Description

The IOB33 is Trenton’s latest optional I/O module and was originally designed for the JXT6966 and JXTS6966 boards. However, the IOB33 is a universal I/O expansion module because it combines the functionality of the previous IOB30 and IOB31 boards into a single board that will function on any Trenton PICMG 1.3 system host board. There are three versions of the IOB33 to accommodate the I/O bracket differences of the Trenton PICMG 1.3 SHBs.

Like the IOB31, the IOB33 also has a x4 PCIe mechanical edge card connector that plugs into the PCIe Expansion slot on selected Trenton PICMG 1.3 backplanes. When using either an IOB31 or IOB33 with a Trenton JXT6966, JXTS6966, TQ9, TML or T4L SHB a x1 PCIe electrical link is routed off the SHB and down to the backplane’s PCIe expansion slot. A x4 PCIe link is routed to the backplane expansion slot when using an IOB31 or IOB33 with a MCX-series, MCG-series, SLT, SLI, NLT or NLI system host board. A listing of the IOB33 compatible backplanes (i.e. Trenton backplanes with a PCIe expansion slot) can be found in the IOB31 section of this document.



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IOB32 Product Description

Trenton's IOB32 is an optional, plug-in module that enables Trusted Platform Module or TPM 1.2 functionality in a system using a Trenton PICMG 1.3 system host board. Two versions of the IOB32 are available for use on the Trenton TQ9 SHB or any model of Trenton's MCX- or MCG-series of SHBs. The model **IOB32MC (model number 6830-002)** supports the TPM 1.2 functions while providing expanded I/O support for serial communication ports, floppy drive and parallel printer interfaces, PS/2 pointing devices and keyboards. Model **IOB32NI (6830-001)** only provides TPM 1.2 support for systems that do not need expanded I/O functionality. A controlled impedance connector provides a high-integrity electrical connection between the IOB32 and the SHB and mounting hardware is included to provide a robust mechanical connection between the IOB32 and the SHB.

IOB31 Product Description

The IOB31 complements the advanced USB and SATA I/O capability of the SHBs by providing on-board headers to support additional I/O such as serial communication ports, floppy drive and parallel printer interfaces, PS/2 pointing devices and keyboards. Cables are needed to go from the IOB31 headers to the system I/O devices. There is no I/O plate for the IOB31. This IOB version enables PCI Express backplane link expansion by providing a x4 PCI Express edge connector that connects to the **PCI Express expansion slot** on the following PICMG 1.3 Trenton backplanes:

BPX6806
BPX3/14
BPX5
BPX6620
BPX6719
BPG4
BPG6544
BPG6600
BPG6714
BPC7009
BPC7041

The additional PCI Express backplane interface provided by the IOB31 is either a x1 or x4 PCIe link. The specific link width routed to a backplane depends on which Trenton SHB is used with the IOB31. This extra PCIe link to the backplane expands the capabilities of the PICMG 1.3 backplanes by extending the number of PCI Express links allowed in the PICMG 1.3 specification, which results in increasing the number of high-speed devices, and backplane card slots supported on a PICMG 1.3 backplane.

IOB30 Product Description

The IOB30 is an optional I/O expansion board that connects to the controlled impedance connector (P20) on a Trenton PICMG 1.3 system host board to complement the advanced USB and SATA I/O capability of the SHBs by providing additional I/O support for serial communication ports, floppy drive and parallel printer interfaces, PS/2 pointing devices and keyboards. A combo I/O plate is provided with the IOB30 and attaches to the SHB using the connector hardware and the SHB's mounting tab. The Ethernet connectors used on the Trenton TQ9, MCG-series and MCX-series SHBs required an IOB30 I/O plate with a different opening for the LANs; therefore, the **IOB30MC (model number 6391-001)** must be used on these SHBs. The other SHBs (T4L, TML, SLI, SLT, NLI and NLT) use the **IOB30 (model number 6391-000)** version. The IOB30 is secured to a Trenton PICMG 1.3 system host board using the provided standoffs and IOB30 mounting hardware.



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PEX10 Product Description

Direct PCI Express 2.0 interfaces from the Jasper Forest processors are a compelling feature of Trenton's JXT6966 and JXTS6966 system host boards. The JXT6966 is a dual-processor SHB with more available PCIe lanes than the twenty PCIe lanes currently defined in the PICMG[®] 1.3 SHB Express[®] industry specification. Many system designers could utilize the additional sixteen PCIe 2.0 lanes offered by CPU1 on a Trenton JXT6966 SHB to increase a systems data bandwidth and information throughput. The PEX10 is an optional PCI Express expansion board that makes these additional lanes available to the system designer.

The PEX10 board mounts to the back of a Trenton JXT6966 and is a passive interface card that routes four additional PCIe 2.0 x4 electrical links from CPU1 on a JXT6966 down to a mechanical x16 PCIe link expansion slot on the backplane. The Trenton BPC7009 and BPC7041 backplanes feature this additional PCI Express 2.0 link expansion slot. The multiple x4 PCIe links are connected directly to option card slots on the passive BPC7041 backplane. PCIe Gen 2 link re-drivers are used on the BPC7041 backplane to ensure signal integrity between the SHB and the option card. The x4 links on a BPC7009 backplane are routed to PCIe switching devices to ensure signal integrity and to combine the x4 links into x8 electrical links for use on selected option card slots and other backplane devices.

NOTE: At this time, the PEX10 is compatible with only the Trenton JXT6966 SHB and the Trenton BPC7009 and BPC7041 backplanes.