IXH620
PCI Express® Gen2 XMC Adapter

As performance needs increase in embedded systems, high performance embedded system designers are implementing PCI Express for inter-system communication. Dolphin utilizes PCI Express to create ultra-high performance and flexible solutions for the embedded market. The IXH620 XMC cable adapter enables high speed PCI Express inter-system connections to external systems including servers, single board computers, and I/O subsystems.

The IXH620's 40Gbit/s throughput and sub one microsecond latency deliver superior performance and low latency to systems supporting standard XMC slots or XMC VPX, VME or cPCI carrier boards. The IXH620's x8 cable connection uses an iPass™ connector as a standardized connection method. The XMC adapter supports either upstream or downstream target configurations. To connect remote I/O or processing, the IXH620 implemented IDT™'s transparent or non-transparent bridging (NTB) functions. Used in transparent mode, standard PCI Express devices and drivers require no modifications. In NTB mode, the adapter facilitates inter-processor communication through Programmed IO (PIO) or Remote Direct Memory Access (RDMA). Data transfers are conducted through either Direct Memory Access (DMA) for larger packet sizes and processor off-load or PIO for small packets at the lowest latency. This versatile DMA and PIO implementation creates the optimal data transfer results.

The IXH620 implements a system clock isolation system for excellent signal quality. By isolating the system clock and transmitting an extremely low jitter high quality clock to downstream devices, IXH620 users benefit from improved signal quality, reliability, and cable distances. Signal quality is essential for applications such as test and measurement equipment and medical equipment seeking high throughput and data quality.

The IXH620 comes with Dolphin's comprehensive software suite that reduces time to market for customer applications. The Shared-Memory Cluster Interconnect (SISCI) API is a robust and powerful programming environment for easy development of shared memory applications. Shared memory applications benefit from the 0.79 microsecond inter-system latency and more than 3000 Megabytes/s throughput. The optimized TCP/IP driver and SuperSockets™ software remove traditional networking bottlenecks. IP and Sockets applications can take advantage of the high performance PCI Express interconnect. Sockets applications experience 2.4 microsecond latency and 23 Gigabit/second user payload throughput.

These powerful features make XMC adapter an ideal interconnect for applications such as military and industrial systems that seek high performance and flexibility.

FEATURES

- *PCI Express® 2.1 compliant - 5.0 Gbps per lane*
- *Link compliant with Gen1 PCI Express*
- *VITA 42.0-2005, ANSI/VITA 42.3-2006 compliant*
- *x8 PCI Express port - 40 Gbit/s*
- *RDMA support through PIO and DMA*
- *PCI Express® External Cabling Specification Rev1.0*
  - *PCI Express x8 iPass® Connectors*
- *Copper and fiber-optic cable connections up to 5 meters copper connections, up to 300 meters fiber optic*
- *Clock isolation support*
- *Transparent bridging to cabled I/O devices*
- *Non-transparent bridging to cabled PCI Express systems*
- *Short XMC form factor*
- *EEPROM for custom system configuration*
- *XMC P15 connector*
- *Link and status LEDs through front panel*

(ID)IDT. **Based on IDT® Technology**

Dolphin
INTERCONNECT SOLUTIONS

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Product Deployment Applications

Inter-processor communication

Figure 1

Data Node

Data Node

The IXH620 connects single board computers or systems running a distributed processing environment. Industrial or military customers requiring redundancy or increased compute resources use the IXH620 by itself or in conjunction with the IXS600 switch. Figure 1 illustrates connecting two single board computers with the IXH620. Fast data transfers are enabled through Dolphin's shared memory mechanism.

Remote I/O subsystems

Figure 2

Data Node

External I/O
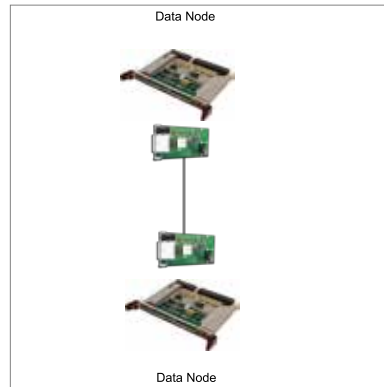
To extend the I/O capabilities of an XMC enabled system, the IXH620 supports host adapter or target adapter configurations. The IXH622 is used for target adapter configurations. Industrial and Military customers requiring increased I/O bandwidth for graphics, processing, or data collection can add IXH620 enabled XMC carrier cards and chassis. Figure 2 illustrates connecting a standard server to and XMC enabled chassis to attach additional XMC cards for test system or increased functionality.
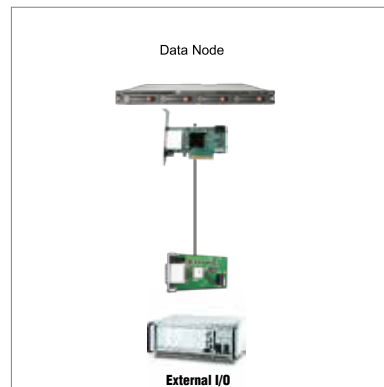
SPECIFICATIONS

Link Speeds	40 Gbit/s
Application Performance	0.79 microsecond latency (application to application)
Active Components	IDT˚ PES24NT6AG2 x8 Gen2 PCI Express Switch
Specifications	PCI Express Base Specification 2.1 VITA 42.0-2005, ANSI/VITA 42.3-2006
Topologies	Point to point, Switched
Cable Connections	One x8 Standard PCI Express copper cable, fiber optic cable support
Power Consumption	7 watts
Mechanical Dimensions	XMC Short form factor
Operating Environment	Operating Temperature: -10˚C -60˚C Relative Humidity: 5% -95% non-condensing
Dolphin Software	SuperSockets™ Berkley Sockets API Microsoft WinSock2/LSP support SISCI API
Safe Boot configuration Modes	Two
Regulatory	CE Mark EN 55022,EN 55024-A1&A2, EN 61000-6-2 FCC Class A UL94V-0 compliant RoHS Compliant
Operating Systems	Windows XP, Windows 2003, Windows 2008, Windows Vista, and Windows 7 Linux VxWorks
Product Codes	IXH620 host adapter

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