IXH610
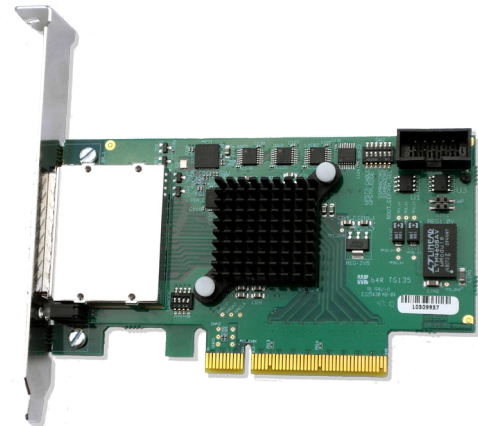## PCI Express® Gen2
Host Adapter

Application developers seeking higher throughput and lower latency are increasingly looking at PCI Express for inter-system communication. Dolphin Express provides an optimized PCI Express intercommunication platform for financial, industrial, medical, and military systems, utilizing standard, low cost PCI Express components. The IXH610 Gen2 PCI Express Host Adapter is our high performance cabled interface to external processor subsystems or I/O subsystems. Based on IDT® Gen2 PCI Express bridging architecture, the IXH610 host adapter includes advanced features such as non-transparent bridging (NTB) and clock isolation.

For high performance application developers, the IXH610 host adapter combines 40 Gbit/s performance with less than one microsecond latency, significantly improving overall inter-system communication. Connecting remote I/O subsystems in transparent mode requires no special drivers, so deployment is fast and easy. Inter-processor communication also benefits from the high throughput and low latency.

The IXH610 performs both Direct Memory Access (DMA) and Programmed IO (PIO) transfers, effectively supporting both large and small data packets. DMA transfers result in efficient larger packet transfers and processor off-load. PIO transfers optimize small packet transfers at the lowest latency. The

combination of DMA and PIO creates a highly potent data transfer system.

Dolphin's software suite takes advantage of this data transfer scheme. Delivering a complete deployment environment for customized and standardized applications. The Shared-Memory Cluster Interconnect (SISCI) API is a robust and powerful shared memory programming environment. The optimized TCP/IP driver and SuperSockets™ software remove traditional networking bottlenecks. IP and sockets applications take advantage of the high performance PCI Express interconnect without modification. The overall framework is designed to meet all the demands for rapid development of inter-processor communication systems.

With the implementation of clock isolation, the IXH610's signal quality is excellent. By isolating the system clock and transmitting an extremely low jitter high quality clock to downstream devices, the IXH610 offers users high signal quality and increased cable distances. Signal quality is essential for applications such as test and measurement equipment, medical equipment, and storage subsystem seeking high performance and data quality.

The Dolphin Express IX family also includes the IXS600 8 port PCI Express Switch and the IXH620 XMC board for embedded applications.

FEATURES

- ► PCI Express® 2.1 compliant - 5.0 Gbps per lane
- ► Link compliant with Gen1 PCI Express
- ► 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 connection 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
- ► Low Profile PCI Express form factor
- ► EEPROM for custom system configuration
- ► Link and status LEDs through face plate

**IDT** **Based on IDT® Technology**

Dolphin
INTERCONNECT SOLUTIONS

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IXH610
PCI Express® Gen2 Host adapter

Product Deployment Applications

Inter-processor connections

Figure 1

When used for inter-host connections, the IXH610 adapter is capable of node to node connections or connections through a IXS600 Switch as shown in figure 1. Adding industrial systems is done by connecting to the IXH620 XMC adapter. Each connection supports 40 Gbps with latencies as low as .79 microseconds. Designed for x8 PCI Express Systems, the IXH610 supports any system with a standard x8 or x16 PCI Express slot.
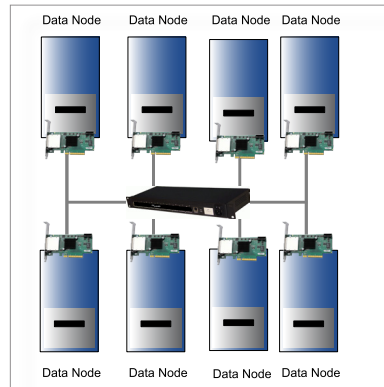

Remote I/O Connections

Figure 2

The IXH610 functions as a high quality transparent connection to remote PCI Express I/O subsystems. These subsystems include test equipment, I/O expansion systems, specialized equipment, and storage systems. The IXH610 is specially designed for higher signal quality and support for spread spectrum clocking. The IXH612 is used as a target adapter in I/O expansion applications.
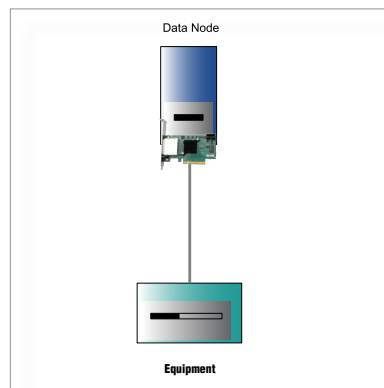
SPECIFICATIONS

Link Speeds	40 Gbit/s
Application Performance	0.79 microsecond latency (application to application)
Active Components	IDT® PES24NT6AG2 x8 Gen2 PCI Express Switch
PCI Express®	Base Specification 2.1
Topologies	Point to point, Switched
Cable Connections	One x8 standard PCI Express copper cable, fiber optic cable support
Power Consumption	7 watts
Mechanical Dimensions	PCI Express® Card Electromechanical Specification 2.0
Operating Environment	Operating Temperature: 0°C -55°C Relative Humidity: 5% -95% non-condensing
Dolphin Software	SuperSockets™ Berkley Sockets API Microsoft WinSock2/LSP support SISCI API
Safe Boot configuration Mode	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	IXH610 Host Adapter IXH612 Target Adapter

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