

IXH631

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 IXH631 Gen2 PCI Express Host Adapter is our high performance cabled interface to external processor subsystems. Based on IDT® Gen2 PCI Express bridging architecture, the IXH631 host adapter includes advanced features for non-transparent bridging (NTB) and clock isolation.

For high performance application developers, the IXH631 host adapter combines 20 Gbit/s or 40 Gbit/s performance with less than one microsecond latency, significantly improving overall inter-system communication. Inter-processor communication benefits from the high throughput and low latency.

The IXH631 performs both Remote Direct Memory Access (RDMA) and Programmed IO (PIO) transfers, effectively supporting both large and small data packets. RDMA transfers result in efficient larger packet transfers and processor off-load. PIO transfers optimize small packet transfers at the lowest latency. The combination of RDMA and PIO creates a highly potent data transfer system.

Dolphin's software suite takes advantage of PCI Express' RDMA and PIO data transfer scheme. Delivering a complete deployment environment for

customized and standardized applications. The suite includes a Shared-Memory Cluster Interconnect (SISCI) API as well as a TCP/IP driver and SuperSockets software. The SISCI API is a robust and powerful shared memory programming environment. The optimized TCP/IP driver and SuperSockets™ software remove traditional networking bottlenecks, allowing standard IP and sockets applications to take advantage of the high performance PCI Express interconnect without modification. The overall framework is designed for rapid development of inter-processor communication systems.

With the implementation of clock isolation, the IXH631's signal quality is excellent. By isolating the system clock and transmitting an extremely low jitter high quality clock to downstream devices, the IXH631 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.

Features

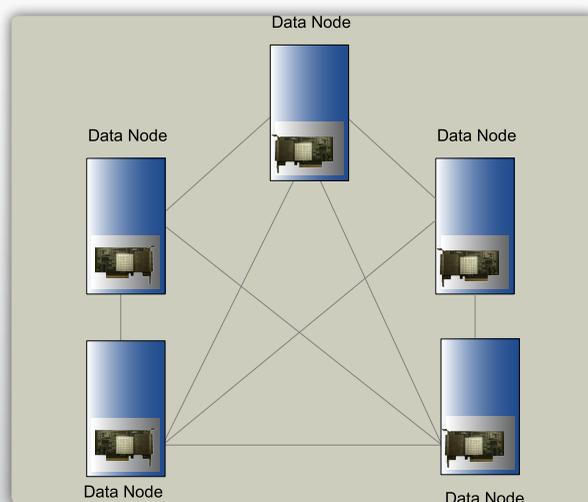
- » PCI Express® 2.1 compliant - 5.0 Gbps per lane
- » Link compliant with Gen1 PCI Express
- » PCI Express iPass+ HD Interconnect System / MiniSAS-HD® Connectors
- » Four PCI Express Ports
- » Two -x8 PCI Express ports
- » Four- x4 PCI Express ports
- » RDMA support through PIO and DMA
- » Copper and Fiber-optic cable connection up to 8 meters copper connections, up to 100 meters fiber optic
- » Clock isolation support
- » Non-transparent bridging to cabled PCI Express systems
- » Low Profile PCI Express form factor
- » EEPROM for custom system configuration
- » Link status LEDs through face plate



Product Deployment Applications

Host to host connections

When used for inter-host connections, the IXH631 adapter is capable of connecting five nodes at Gen2 x4 as shown in figure 1 or three nodes at Gen2 x8. The IXH631 supports four host connections. Each port is 20 Gbps with latencies as low as 0.74 microseconds. Two ports can be combined to create a x8 PCI Express port. The IXH631 supports any system with a standard x8 or x16 PCI Express slot.



Specifications

Link Speeds	20 Gbit/s per port
Application Performance	0.74 microsecond latency (application to application)
Active Components	IDT® Gen2 PCI Express Switch
PCI Express®	Base Specification 2.1
Topologies	Mesh Topology
Cable Connections	Four x4 iPass ⁺ /MiniSAS HD copper cable, fiber optic cable support
Power Consumption	7 watts
Mechanical Dimensions	Low profile - 68.90 mm (2.731 inches) x 120 mm (6.600 inches)
Operating Environment	Operating Temperature: 0°C -55°C Relative Humidity: 5% -95% non-condensing

Dolphin Software	SuperSockets™ Berkley Sockets API Microsoft WinSock2/LSP support Advanced TCP/IP driver SISCI API
Safe Boot configuration Mode	Two
Regulatory	CE Mark FCC Class A UL94V-0 compliant RoHS Compliant
Operating Systems	Windows RTX Linux VxWorks
Product Codes	IXH631 Host Adapter