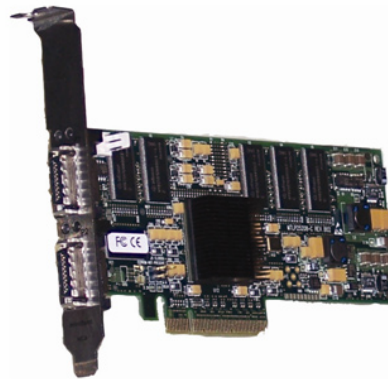# 7104-HCA-*xxx*

InfiniBand (IB) 4X SDR to PCI Express Host Channel Adapter (HCA)

Strategic Benefits

- Seamless IB enabling of PCI Express (PCIe) servers
- No operating system or application changes required
- Improved server CPU utilization with Remote Direct Memory Access (RDMA) protocols
- Fast 10-Gbps technology today for High Performance Business Computing (HPBC)
- Server connectivity to IB based intelligent virtual I/O and clustering fabrics

Key Design Features

- Single or dual 4X (10 Gbps) IB ports
- PCIe x8 support
- Fully PCIe compliant
- Low profile design
- Comprehensive suite of high performance Upper Level Protocols (ULPs)
  – µDAPL
  – Sockets Direct Protocol (SDP)
  – Reliable Datagram Sockets (RDS)
  – VirtualNIC
  – VirtualHBA
  – IPoIB
  – MPI
  – Windows® SDP
- Supports up to 130K queue pairs and 130K completion queues

An integral member of the QLogic family of interconnect offerings, the 7104-HCA-*xxx* series Single Data Rate (SDR) HCA is a single or dual port 4X IB HCA utilizing a x8 PCIe interface to enable higher server bandwidth than is possible with PCI-X. It offers an aggregate to 20 Gbps of full-duplex bandwidth.

The QLogic HCA creates an expressway of balanced bandwidth between the server and the IB fabric, allowing information transfer at 10 Gbps, up to 10 times the bandwidth of current server interfaces. A comprehensive host environment of high-performance ULPs contained within the QLogic software family enables the HCA to provide unprecedented performance to core business applications that are supported by DataBase Management Systems (DBMS), clustering, HPBC, and high availability clustering.

QLogic HCA in the Enterprise. Combined with its ULPs, the HCA is the channel by which today's complex and costly enterprise environments quickly evolve to feed ever-growing processing requirements. Clustering, Ethernet, and Fibre Channel are all concurrently supported via a single 10-Gb pipe. The net effect is a significantly reduced level of infrastructure complexity and improved business responsiveness, with a lower total cost of ownership.

The HCA, used in conjunction with QLogic's family of InfiniBand clustering switches and virtual I/O systems, is part of a complete end-to-end InfiniBand solution ready to enable today's servers to handle tomorrow's processing requirements.

Guaranteed Interoperability. InfiniBand ecosystem partner certifications, combined with agency and regulatory testing, ensures all products meet industry compliance hardware and software specifications. All HCAs are tested extensively with third-party hardware, along with multiple software applications, to ensure best-in-class InfiniBand interoperability and compatibility. You can be confident purchasing QLogic HCAs to meet your InfiniBand networking needs.

Investment Protection. For over 15 years, QLogic has been a technological leader with products that address the current needs of customers, yet provide strong investment protection to support emerging technologies and standards. QLogic stands alone in the industry with its product portfolio depth and experience in successfully delivering technological solutions that address the needs of today and tomorrow.

7104-HCA-*xxx* InfiniBand (IB) 4X SDR to PCI Express Host Channel Adapter (HCA)

Host Bus Interface Specifications

PCI Express compliant
- Low profile design
- x8 PCIe support
- *PCI Express Base Specification* 1.2 compatible

InfiniBand Interfaces and Specifications

Transport types
- Unreliable Datagram (UD)
- Reliable Connection (RC)

Transport services
- RDMA read request
- RDMA write request and atomic operations
- Send/Receive

Kernel bypass

InfiniBand specifications
- 8 virtual lanes plus management lane
- Configurable up to 130K queue pairs and 130K completion queues[1]
- Configurable up to 256k memory regions/520K Windows regions[1]
- Auto configurable MTU 256 to 2048 bytes (2048 default)
- Support for 64 configurable P_Keys per port
- Up to 8 RDMA read requests as target per queue pair
- Maximum message size 2 GB
- 1 constant and 31 configurable Global IDs (GUIDs)
- Support acknowledge (ACK) coalescing
- Memory, work queue, and completion queue accesses protection
- InfiniBand v1.1 and v1.2 compliant

Connectivity

- Dual 4X (10 Gb) or 1X (2.5 Gb) speeds - copper HSSD

1. *Memory options are 128MB or 256 MB for the PCIe HBA. The architecture supports up to 16 GB. Larger memory sizes will be released as application requirements grow.*

Tools and Utilities

Management support
- QLogic InfiniBand Fabric Suite
- BMA, PMA, SMA, CM
- Fabric and device discovery
- Generates SMA traps

Operating environments
- Linux®
- Windows 200*x*

Host Driver/Upper Level Protocol (ULP) Support

µDAPL
- ULP RDMA server-to-server access utilizing User Direct Access Program Library (µDAPL) APIs

SDP
- Sockets Direct Protocol (SDP) support for high-performance sockets-based data transfers

RDS
- Sockets off-load driver provides reliable, in order, no duplicate delivery semantics for Oracle® Real Application Clusters (RAC)

VirtualNIC
- Ethernet ULP and advanced functionality (port sharing, load balancing, Ethernet IB switching)

VirtualHBA
- Fibre Channel ULP and advanced functionality (port sharing, LUN management, SCSI Remote DMA Protocol (SRP))

IPoIB
- ULP to allow Internet Protocol (IP) using IB as a link layer

MPI
- ULP for HPC clusters utilizing Message Passing Interface (MPI) function calls

WSD
- Windows Sockets Direct Protocol (SDP) support for high-performance zero-copy data transfers

Physical Specifications

- Low profile form factor 6.60 in x 2.536 in (167.64 mm x 64.41 mm)

Environment and Equipment Specifications

Maximum power consumption
- 14 W

Typical power consumption
- 10 W

Operating temperature
- 10°C to 45°C at sea level
- 0–3 km (10,000 feet)
- -30°C to 60°C (non-operating)

Humidity (non-condensing)
- Operating: 20% to 80%
- Storage: 5% to 90%

RoHs compliance
- RoHS 5

Agency Approvals—Product Safety

- US
  – UL60950; listed accessory
- Europe
  – EN60950; listed accessory

Agency Approvals—EMI and EMC

US
- FCC Part 15, Class A

Europe
- EN55022 level A, EN55024, EN61000-3-2,-3

Ordering Information

7104-HCA-LPX1P
- Single port, no memory. Ships with driver CD.

7104-HCA-LPX2P
- Dual port, no memory. Ships with driver CD.

7104-HCA-128LPX
- Dual port, 128MB memory. Ships with driver CD.

QLOGIC

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