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# 64-bit PCI-to-Fibre Channel Host Adapter

## Technical Data

### Features

- **Fibre Channel Data Transfer Rates:**
  - Up to 100 MB/s (Half Duplex)
  - Up to 200 MB/s (Full Duplex)
- **GBIC Physical Interface Provides Flexibility for Optical or Copper Connections**
- **Supports Fibre Channel Arbitrated Loop (FC-AL) including Public Loop and Fabric (F- and FL-Port Login)**
- **One or Less PCI Bus Interrupt per SCSI I/O Operation**
- **64-bit Universal PCI Interface, Compliant with PCI 2.1**
- **PCI Hot Plug Support**
- **Supports PCI Dual Address Cycles (64-bit PCI Addressing)**

### Workstation and Server Applications

- **Storage Area Networks (SANs)**
- **Data Warehousing**
- **Clustering**
- **Remote Back-Up**
- **Near On-Line Storage**
- **Video Editing & CAD**

### Description

The HHBA-5101 is a 64-bit PCI-to-Fibre Channel Host Bus Adapter for mass storage applications that require FC-AL or Fabric, Class 3 and SCSI upper layer protocol handling.

At the heart of the HHBA-5101 is the HPFC-5100 Tachyon TL Fibre Channel Interface Controller IC.

The Tachyon TL controller is based on the proven TACHYON hardware state machine architecture. This architecture enables performance to scale proportional to the system CPU resources available and avoids bottlenecks associated with on-chip processors. The TACHYON architecture is also designed to realize the full potential of Fibre Channel by providing the highest levels of concurrency via numerous independent functional hardware blocks that enable parallel control, command and data processing. The result is minimized latency and I/O overhead coupled with the highest levels of parallelism to provide maximum I/O rates and bandwidth.

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### HHBA-5101

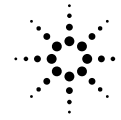


### Software Driver Support

The HHBA-5101 supports a comprehensive set of software drivers for major Operating Systems: Microsoft® Windows NT®, Novell NetWare®, SCO UnixWare®, Solaris x86, and an I20 HDM. Additional drivers will be available soon.

### Product Offering

The HHBA-5101 is available in five configurations. The HHBA-5101xK is a kit which includes an adapter card, manual and OS drivers on diskette. In addition, there are two kit options which include an industry standard GBIC: HHBA-5101xK-01 with an 850 nm optical GBIC or HHBA-5101xK-02 with an HSSDC Copper GBIC. The HHBA-5101x and HHBA-5101xP are single and bulk packaged adapters, respectively.



## Specifications

### Fibre Channel Operation

Fibre Channel Data Rate	1 Gbit/sec, 100 Mbytes/sec (half duplex), 200 Mbytes/sec (full duplex)
Topology	Arbitrated Loop – Public and Private, Fabric Support (F- and FL-login)
Class	3
Upper Layer Protocol	SCSI FCP – On-chip automation of complete SCSI I/O
Loop Initialization	Completely hardware-based for high availability
Arbitrated Loop Capabilities	Loop map, Loop directed reset, Loop broadcast
Link Diagnostics	Link Status indicators, internal/external loopback
Compliance	FC-PH, FC-AL, FC-PLDA, FCP-SCSI

### PCI

Compliance	PCI Local Bus specification v2.1
Rate & Width	33 MHz, 64/32-bit PCI
Burst Transfer Rate	264 Mbytes/second, guaranteed for length of frame, inbound & outbound at 64-bit, 33 MHz
Dual Address Cycle Support	Yes
Additional PCI Features	Zero wait state multiple cache line bursting capable up to full frame size, 32-byte cache line

### Tachyon TL Architectural Features

Complete Hardware-based Design	Numerous independent functional blocks concurrently processing inbound data, outbound data, control and commands in hardware Six DMA channels Automation of complete I/O on-chip in hardware Results in lowest latency & I/O overhead and highest levels of parallelism
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### Physical and Environmental

PCB Size	Universal PCI short card
PCB Power	9 W max, 6 W typical at 5 V $\pm$ 5%
Supply Voltage	5 V $\pm$ 5%
Operating Temperature Range	0° to 55° Centigrade (no airflow)
Storage Temperature Range	-40° to 70° Centigrade
Relative Humidity	Up to 90% (non-condensing)

### Operating System Support

Microsoft Windows NT (x86)	NT 4, Windows 2000
Novell NetWare	4.2 NWPA, 5.0 NWPA
SCO UnixWare	7.0
Solaris x86	7.0
I20 HDM	1.5

### Certifications

FCC Class B	*US/FDA/CDRH Laser AEL Class I (21CFR)
CE	*TÜV Rheinland Laser AEL Class 1 (EN60825-1+A11)
VCCI ITE Class	
C-TICK (AZ/NZS 3548)	

\*Note: Applies to HHBA-5101xK-01 (with 850 nm optical GBIC inserted).