Agilent HHBA-5218, HHBA-5219
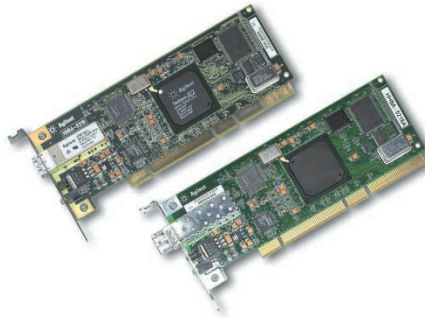## Low Profile, 2 Gb/s Fibre Channel Adapters for High Performance Applications

Product Overview

Features
- **Low profile, MD2 short card**
- **64-bit, 66 MHz universal PCI interface (2.2 compliant)**
- **Fibre channel data transfer rates:**
  - **Up to 200 MB/s (half duplex)**
  - **Up to 400 MB/s (full duplex)**
- **Auto speed negotiation 1 or 2 Gb/s**
- **LED link speed indicator**
- **Loop and fabric boot BIOS, EFI support**
- **FC class 2 and 3**
- **FC tape class 3**
- **Supports fibre channel arbitrated loop (FC-AL) including public loop and fabric (F- and FL-port login)**
- **Copper and optical media interfaces**
  - **HHBA-5218: Small Form Factor Pluggable (SFP) cage**
  - **HHBA-5219: Small Form Factor (SFF) LC optical transceiver**

Applications
- **Storage Area Networks (SANs)**
- **Clustering**
- **Back-up**
- **Near on-line storage**
- **Video editing and CAD**
- **Data mining**
- **Data warehousing**
- **OLTP**
- **RAID and JBOD**

Product Description

Agilent's HHBA-5218 and HHBA-5219 are low profile, 2 Gb/s, 64-bit, 66 MHz PCI to Fibre Channel Adapters for enterprise Storage Area Network (SAN) applications. The low profile Fibre Channel Adapters provide auto-speed negotiation for seamless integration in one and two Gigabit environments. The low profile adapters are specifically designed for use in 1U and 2U servers. The versatility of the new Fibre Channel Adapters is based on Agilent's market-leading Tachyon Fibre Channel (FC) controllers, offering unmatched performance and flexibility.

Broad Product Offering

Agilent's low profile 2 Gb/s adapters support both fiber-optic and copper cable connections. For high-end applications where performance and reliability are critical, the HHBA-5219 comes with a Small Form Factor (SFF)

embedded LC optical transceiver for use with mutimode optical cable. For applications requiring either an optical or copper interface, the HHBA-5218 includes a cage (receptacle) for a Small Form Factor Pluggable (SFP) LC optical or an HSSDC-2 copper transceiver.

Scalable Performance Matches Demanding SAN Requirements

The 2 Gb/s Fibre Channel Adapters are powered by Agilent Tachyon controllers, based on a Finite State Machine (FSM) architecture. The FSM allows performance to scale seamlessly with increased server CPU power. By contrast, processor-based adapters are limited by the maximum performance of the processor itself.

Software Support

Agilent offers a Tachyon Software Developer's Kit (TSDK) for Windows NT® 4.0, Linux environments and VXWorks.

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Specifications

Fibre Channel Operation

Fibre Channel Data Rate	2 Gbit/sec: 200 MBytes/sec (half duplex), 400 MBytes/sec (full duplex)
Auto-Speed Negotiation	1 or 2 Gb/s
BIOS Support	INT13, Legacy BIOS for IA-64, Extensible Firmware Interface (EFI)
Topology	Arbitrated Loop – Public and Private, Fabric support (F- and FL-login)
FC Service Class	Class 2 (ACK_0, ACK_1) and Class 3
Upper Layer Protocol	SCSI FCP – On-chip automation of complete SCSI I/O
Loop Initialization	Completely hardware-based for high availability
Link Diagnostics	Link Status indicators, internal/external loopback
Link Speed	2 Gb status indicator
Compliance	FC-PH, FC-AL, FC-PLDA, FCP-SCSI

PCI

Compliance	PCI Local Bus Specifications Rev. 2.2
Rate & Width	66/33 MHz, 64/32-bit PCI
Burst Transfer Rate	528 Mbytes/sec, guaranteed for length of frame, inbound & outbound at 64-bit, 66 MHz
Dual Address Cycle Support	Yes (64-bit PCI addressing)
Hot Plug Support	Yes
Additional PCI Features	Zero wait state multiple cache line bursting capable up to full frame size, 32-byte cache line

Tachyon XL2 Architectural Features

Complete Hardware-based Design	Less than one interrupt per I/O
	Numerous independent functional blocks concurrently processing inbound data, outbound data, control and commands in hardware
	Automation of complete I/O on-chip in hardware results in lowest latency & I/O overhead and highest levels of parallelism

Physical and Environmental

PCB Size	Low Profile PCI Card, MD2 form factor (length 6.6" x height 2.536")
PCB Power	7W max at 5V $\pm$ 5%
Supply Voltage	3.3V $\pm$ 5%, 5V $\pm$ 5%
Operating Temperature Range	0° to 55° Centigrade (no airflow)
Storage Temperature Range	-40° to 70° Centigrade
Relative Humidity	up to 90% (non-condensing)

Softwrae Support

Tachyon Software Developer's Kit (TSDK)	Windows NT 4.0
	Linux Environments
	VXWorks

Certifications

FCC Class B	US/FDA/CDRH Laser AEL Class 1 (2 CFR)
CE	TÚV Rheinland Laser AEL Class 1 (EN60825-1+A11)
VCC ITE Class	Yes
C-TICK (AZ/NZS 3548)	Yes

Product Offering	Description
Low Profile Products	
HHBA-5218x	Single Adapter card with SFP transceiver cage
HHBA-5218xP	Bulk packaging includes Adapter card with SFP transceiver cage
HHBA-5218xP1	Bulk packaging includes Adapter card with SFP optical transceiver
HHBA-5219x	Single Adapter card with SFF transceiver
HHBA-5219xP	Bulk packaging Adapter card with SFF transceiver
Standard Products	
HHBA-5220x	Single Adapter card with SFP transceiver cage
HHBA-5220xP	Bulk packaging includes Adapter card with SFP transceiver cage
HHBA-5220xP1	Bulk packaging includes Adapter card with SFP optical transceiver
HHBA-5221x	Single Adapter card with SFF transceiver
HHBA-5221xP	Bulk packaging Adapter card with SFF transceiver

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