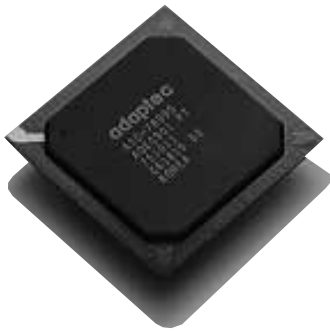


# AIC™ -7899

## Dual-Channel PCI-to-Ultra160/m SCSI Single-Chip Host Adapter



### Product Benefits

- **Up to 320 MByte/sec data transfer rates on dual Ultra160/m SCSI channels**
- **66 MHz, 64-bit PCI interface that supports zero wait-state memory; also operates on 33 MHz, 32-bit PCI busses**
- **Truly independent Ultra160/m SCSI channels can be split into separate SCSI and RAID configurations**
- **PC99 compliant**
- **Each channel supports up to 15 devices on a standard Ultra2 SCSI LVD cable configuration up to 12 meters**
- **Fully compatible with the AIC-3860 LVD-to-single-ended transceiver**

### Overview

Providing outstanding performance and flexibility for servers and high-end workstations, the dual-channel AIC-7899 single-chip host adapter meets tomorrow's requirements today. It delivers Ultra160/m SCSI data rates up to 160 MByte/sec on each channel to address emerging bandwidth-hungry applications, such as real-time video, data mining, Internet/Intranet, and scientific modeling and simulation. The AIC-7899 chip features a 66 MHz, 64-bit PCI interface for next-generation high-end servers and workstations.

Migration to new Ultra160/m SCSI technology is easy with the AIC-7899. It accommodates Ultra160/m, Ultra3, Ultra2, and earlier SCSI generations. The chip is available in a 388-pin Ball Grid Array (BGA) package.

### Key Benefits

#### Increased SCSI Performance

With the AIC-7899 dual-channel host adapter, performance takes a giant leap forward. Ultra160/m technology doubles Ultra2 SCSI data transfer rates—up to 160 MByte/sec. With two channels, the AIC-7899 delivers a total of 320 MByte/sec bandwidth.

In addition, the AIC-7899 single-chip host adapter features a PCI bus interface that supports zero wait-state memory from 66 MHz, 64-bit to 33 MHz, 32-bit. The 66 MHz, 64-bit interface quadruples the bandwidth provided by a 33 MHz, 32-bit PCI interface, from 133 MByte/sec to 533 MByte/sec, enabling maximum system throughput for each Ultra160/m channel.

The separate SCSI channels of the AIC-7899 utilize two unique PCI device IDs. In workstation and server RAID applications, the two Ultra160/m SCSI channels can be independent RAID and SCSI configurations, controlled by two different device drivers for maximum flexibility and effective use of system storage.

#### Improved Data Integrity

The AIC-7899 fully supports Ultra160/m Cyclic Redundancy Check (CRC). The CRC detects data integrity errors that would not be detected by simple parity checking used by previous SCSI

generations. The higher 160 MByte/sec data rate achieved on existing LVD cable configurations mandated this improved data integrity feature.

#### SCSI Bus Configuration Testing

The AIC-7899 fully supports Ultra160/m and Ultra3 SCSI Domain Validation. Domain Validation provides SCSI bus configuration testing to help insure Ultra160/m devices operate at optimum speed.

#### Long Cables

Using Low Voltage Differential (LVD), each AIC-7899 channel supports up to a maximum of 15 devices on a 12 meter cable. In a point-to-point arrangement, cabling can extend to 25 meters. The AIC-7899 operates on any existing Ultra2 SCSI supported cable configuration. The cable-length distances provide greater system configuration flexibility, especially for clustering and RAID applications. The AIC-7899 can also support High Voltage Differential (HVD) busses with external HVD transceivers.

#### Backward Compatibility

The AIC-7899 incorporates an advanced multi-mode I/O cell that supports Ultra2, Ultra3, and Ultra160/m SCSI LVD devices, as well as single-ended devices. With Ultra160/m devices, the SCSI bus performs at full Ultra160/m speeds and full LVD cable lengths. With two Ultra160/m channels, one can be used for Ultra160/m LVD peripherals and the other for previous-generation SCSI devices.

In mixed environments of LVD and single-ended devices, the AIC-7899 host adapter chip can couple with an Adaptec AIC-3860 transceiver chip to bridge the signaling discontinuity. By dividing the SCSI bus into independent single-ended and LVD segments, the AIC-3860 supports legacy devices without limiting performance and LVD segment cable lengths.

Ultra160/m SCSI uses the same connectors and cables as Ultra2, so upgrading system performance is easy and cost-effective.

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1 stop bit, no parity)

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# AIC-7899

**Performance**

- 66 MHz, 64-bit PCI interface supports zero wait-state memory—also operates on PCI busses down to 33 MHz, 32-bit
- Up to 160 MByte/sec on each Ultra160/m SCSI channel for a total bandwidth of 320 MByte/sec
- Two 20-MIPS PhaseEngine® RISC processors for fast SCSI command processing
- Two 1024-byte data FIFO buffers for efficient PCI bus utilization
- Cache line-streaming for improved PCI bus utilization
- Dual Address Cycle (DAC) provides greater system memory addressability
- Target mode to support clustering, bridge and RAID applications
- Tagged command queuing enables changing SCSI command execution order to improve performance

**Additional Features**

- Independent Ultra160/m SCSI channels using two unique PCI device IDs can be configured for separate SCSI and RAID configurations
- Advanced multimode Ultra160/m SCSI I/O cell for supporting Low Voltage Differential (LVD) or single-ended devices
- Full Ultra160/m and Ultra3 SCSI Domain Validation and CRC support
- JTAG boundary scan to support system-level interconnect testing
- 3.3V/5V PCI interface for providing flexibility for designing high-performance, low-power systems
- Enhanced Logical Unit Number (LUN) supports up to a maximum of 32 LUNs
- Microsoft® PC99 compliant
- Microsoft Advanced Cluster Server compatible
- PCI Hot-Plug compatible
- Fully compatible with the AIC-3860 for single-ended device connection

**Software Support**

- Microsoft Windows NT®, Windows® 95 and 98, Novell NetWare, SCO Openserver, SCO UnixWare, IBM OS/2, Sun Solaris, and Linux

**SCSI Device Support**

- Connection for up to 30 SCSI devices in two Ultra160/m SCSI channels
- Support for a combination of 16-bit Ultra160/m, Ultra3, Ultra2, Ultra, and standard SCSI devices including disk drives, disk arrays, tape drives, CD-ROM and CD-R drives, jukeboxes, removable drives, scanners, and printers
- Slower Ultra SCSI legacy devices can be connected to Adaptec's AIC-3860 LVD-to-single-ended SCSI transceivers for optimal SCSI bus performance

