

AIC[®]-7890/7891

Single-chip PCI-to-Ultra2 SCSI Host Adapters



Product Highlights

- Up to 80 Mbyte/sec data transfer rates
- Choice of 64-bit (AIC-7891) or 32-bit (AIC-7890) PCI interface
- Compliance with PC 97 and PCI 2.1
- Advanced multimode I/O cell that accommodates either Ultra2 or legacy single-ended devices
- Supports up to 15 devices on a 12 meter cable

Overview

Providing outstanding performance and flexibility, the AIC-7890 and AIC-7891 single-chip host adapters meet tomorrow's requirements today. They deliver Ultra2 SCSI data transfer rates up to 80 MByte/sec to address emerging bandwidth-hungry applications, such as real-time video, data mining, and scientific modeling and simulation. The AIC-7891 chip features a 64-bit PCI interface for next-generation workstations and servers. Both host adapters support extended cable lengths of 12 meters (or 25 meters in a point-to-point configuration), making them ideal for clustering and RAID configurations.

Migration to new Ultra2 SCSI technology is easy with the AIC-7890 and AIC-7891 single-chip host adapters. Both accommodate new Ultra2 and earlier-generation SCSI peripherals. The chips are pin compatible to simplify board design and are available in a 272-pin Plastic Ball Grid Array (PBGA) package. Finally, Adaptec's Common Hardware Interface Module (CHIM) provides software portability across system platforms as well as parallel and serial interfaces such as Ultra and Ultra2 SCSI, fibre channel, and host-based RAID.

Key Benefits

Increased SCSI Performance

With the AIC-7890 and AIC-7891 single-chip host adapters, performance takes a giant leap forward. Ultra2 technology doubles Ultra SCSI data transfer rates—up to 40 MByte/sec in 8-bit mode and up to 80 MByte/sec in 16-bit mode.

In addition, the AIC-7891 single-chip host adapter features a 64-bit PCI interface. This interfaces doubles the PCI bandwidth and will address the needs of next generation 64-bit workstations and servers.

These host adapters integrate several other performance-enhancing features. A 20-MIPS PhaseEngine[®] RISC processor off loads I/O command processing from the system CPU. And the data FIFO buffer is doubled to 512 bytes for more efficient PCI bus utilization.

Longer Cables

Using Low Voltage Differential (LVD) technology, these Ultra2 SCSI single-chip host adapters can support up to a maximum of 15 devices on a 12 meter cable. This represents a fourfold increase over UltraSCSI cable length. In a point-to-point configuration, cabling can be extended up to 25 meters. The increased cable length provides greater flexibility in system configuration, especially in clustering and RAID applications.

Backward Compatibility

The AIC-7890 and AIC-7891 incorporate an advanced multimode I/O cell that supports both single-ended and Ultra2 devices. With Ultra2 devices, the SCSI bus performs at full Ultra2 speeds and extended cabling. When a single-ended device is attached, the bus defaults to single-ended speed and cable length.

In mixed environments of Ultra2 and single-ended devices, the AIC-7890 and AIC-7891 host adapters can be coupled with an Adaptec AIC-3860 transceiver chip to bridge the compatibility gap. By dividing the SCSI bus into independent single-ended and LVD segments, the AIC-3860 supports legacy devices without limiting performance and cable length on the LVD segment. (see figure)

Ultra2 SCSI uses the same connectors and cables as UltraSCSI, so upgrading is easy and cost effective.

AIC® -7890/7891 FEATURES SUMMARY

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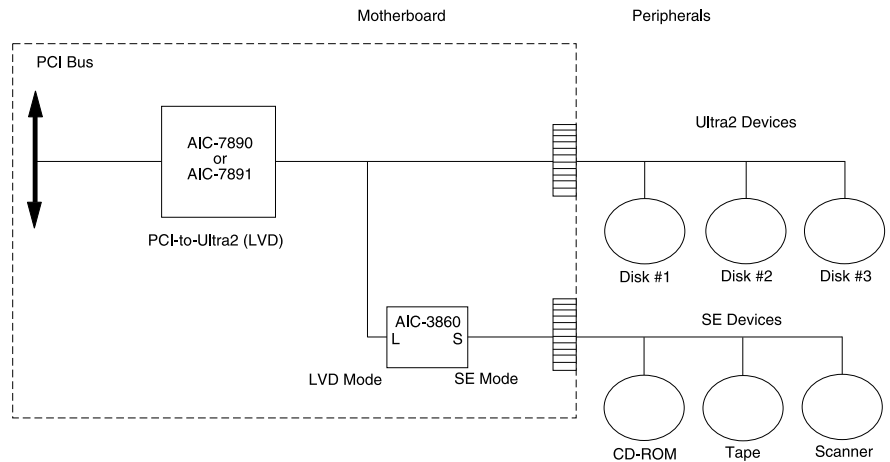
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(Figure) Optimizing performance in a mixed Ultra2 and single-ended peripheral configuration.

Performance

- PCI interface
 - AIC-7890: 32 bit
 - AIC-7891: 64 bit
- Up to 80 MByte/sec on the Ultra2 SCSI bus
 - Up to 40 MByte/sec data transfer rate in 8-bit mode
 - Up to 80 MByte/sec data transfer rate in 16-bit mode
- 20-MIPS PhaseEngine RISC processor for SCSI command processing
- 512-byte data FIFO buffer for efficient PCI bus utilization
- Cache line streaming for improved PCI bus utilization
- Dual Address Cycle (DAC) on the AIC-7890 chip and AIC-7891 provides greater system memory addressability
- Target mode to support clustering, bridge and RAID applications
- Tagged command queuing allows changes in the order of SCSI command execution to improve performance

Additional Features

- Advanced multimode Ultra2 SCSI I/O cell for supporting single-ended or Ultra2 devices
- 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
- ARO-1130 series support and RAIDport II compatible
- Microsoft® Windows NT® Wolfpack clustering compatible
- I₂O-ready system compatible

Software Support

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

SCSI Device Support

- Connection for up to 15 SCSI devices
- Support for a combination of 8-bit and 16-bit Ultra2, Ultra, and standard SCSI devices including disk drives, tape drives, CD-ROM and CD-Recordable drives, jukeboxes, removable drives, scanners, printers, and disk arrays