LSI22801
SCSI Host Adapter

The LSI22801 is a PCI-dual channel multi-function, single-ended Ultra SCSI solution.

BENEFITS

- Increased peripheral connectivity - up to 30 devices

- Complete host adapter solution for quick time-to-market

- True multi-function device provides better performance than PCI-to-PCI bridge solutions

- Up to 80 MBps combined synchronous transfer rate for two 16-bit Ultra SCSI channels

- Improved reliability with a single chip solution

- Automatic termination determined by cabling environment (ease of use for OEMs and end users)

- Complete software support with BIOS and drivers

- Termination power supplied through self-resetting current limiting device

- Allows custom driver development with SCSI SCRIPTS™

- Connectors for off-board SCSI active LEDs

- Any drive in a disk array can be used as the boot device

- On-board BIOS supports disk drives with greater than 8-Gbyte capacity
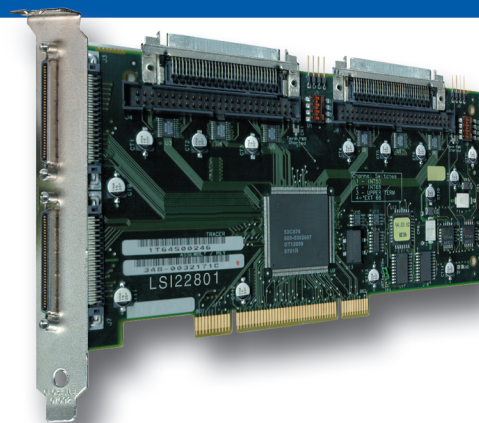
OVERVIEW

The LSI22801 host adapter is a multi-function board providing two independent single-ended Ultra SCSI channels. Both SCSI channels are identical, offering increased connectivity without utilizing additional PCI slots. A single board provides a powerful dual channel, multitasking interface for Ultra SCSI peripherals such as disk, tape, CD-ROM, and other SCSI devices.

The LSI22801 leverages the LSI53C876 PCI dual channel SCSI multi-function controller capable of connecting directly to the PCI bus, presenting one electrical load, while functioning as a single 32-bit PCI DMA bus master.

The LSI22801 includes an on-board configuration utility allowing viewing and changing of default configuration settings for the host adapter and connected SCSI peripherals.

The device also provides advanced features for ease of use by modifying the on-board terminators depending on cable configuration and LEDs to help with termination power (TERMPWR) monitoring.

The LSI22801 has advanced features which makes it the right choice for applications requiring up to 30 connected peripherals, or for isolating peripheral classes (e.g. CD-ROMs and tape drives on one channel and high performance disk drives on the other).

PCI FEATURES

- True multi-function device (per PCI 2.1 Specification) – uses only one PCI slot

- Functions as one 32-bit PCI DMA bus master

- Two independent DMA channels with internal programmable arbitration

- 33 MHz PCI bus zero wait state operation

- Maximum burst transfer rate of 132 MBps

- Supports PCI write and invalidate, read line, and read multiple commands

- Universal 3.3V and 5V PCI

SCSI FEATURES

- 16-bit Ultra SCSI design based on the popular LSI53C875 for maximum performance

- Local memory bus for FLASH memory BIOS storage

- SCSI TolerANT™ active negation SCSI driver and receiver technology

- SCAM (SCSI Configured AutoMatically) Level 1 functionality for SCSI plug-and-play support

- External VHDCI SCSI connector per channel

TECHNICAL DESCRIPTION

The LSI22801 uses the LSI53C876 PCI dual channel SCSI multi-function controller. This single-chip multi-function device connects directly to the PCI bus.

TERMINATION CONTROL

For each channel the adapter will automatically determine when cables are attached to which connector and properly enable or disable the SCSI terminators. The Table 1 below shows which cable combinations are allowed.

8-bit Internal	16-bit Internal	8-bit External	16-bit External
√			
	√		
		√	
			√
√		√	
√			√
	√	√	
	√		
√	√		

Table 1. Cable combinations - legal cable combinations allowed by the LSI22801 utilizing the two internal and two external SCSI connectors

Four jumpers included to manually force the different cable configurations.

TERMINATION POWER

One LED per channel is included to indicate the status of termination power (TERMPWR).

CONFIGURATION UTILITY

The resident menu-driven BIOS configuration utility allows the viewing and changing of the default settings for the host adapter and SCSI devices. The following table lists the configuration settings which can be changed. The global settings affect the host adapter and all SCSI devices connected to it.

The host adapter boot order can be changed if more than one SCSI host adapter solution is implemented, see Table 2.
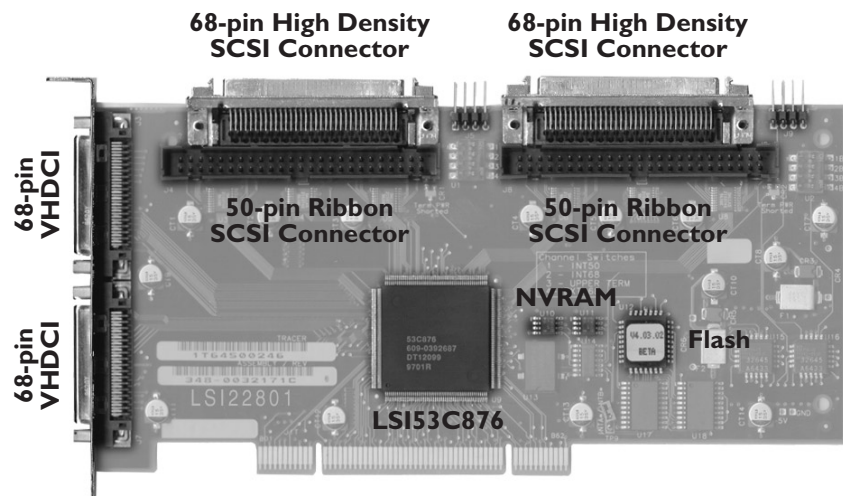
INTERRUPTS

The host adapter includes a jumper to select separate interrupts (channel A routed to INTA# pin and channel B routed to INTB# pin) or shared interrupts (channel A and channel B routed to INTA#/ pin).

SUBSYSTEM ID

Subsystem ID and Subsystem Vendor ID support enables users to develop custom software while still using a standard board configuration.

Setting	Default	Global/Device
SCAM support	On	Global
Parity checking	Enabled	Global
Host adapter SCSI ID	7	Global
Scan order	Low to high (0 - max)	Global
Synchronous transfer rate	40 MB (Ultra)	Device
Data width	16	Device
Disconnect	On	Device
I/O time-out (secs)	10	Device
Scan for device at boot	Yes	Device
Scan for SCSI LUNs	Yes	Device
Queue tags	Enabled	Device

Table 2. Configuration settings - configuration settings can be changed on the LSI22801

LSI22801 PCI-dual channel, multi-function, single-ended, Ultra SCSI host adapter graphical representation

SOFTWARE FEATURES

- Support for DOS, Windows 95, Novell NetWare, Windows NT, UnixWare, and SCO Open Server, OS/2, ASPI

- Software drivers and SCRIPTS compatible with LSI53C825A and LSI53C875

- Tagged command queuing for peak performance in multi-tasking environments

- Shared interrupts and shared memory allow multiple PCI devices in a single-interrupt system

- Software support for CD-ROM, tape backup, hard disk, and removable media support

- Utilities:
  - Install utility
  - Flash utility
  - Configuration utility

- Multiple host adapter support

- Multiple LUNs per SCSI ID for RAID and media changer capability

LSI22801 SCSI Host Adapter

Technical Specifications

PCI Bus	32-bit, 3.3/5 V local bus (versions 2.0 and 2.1)	
PCI Modes	Bus master DMA	
PCI Transfer Rate	up to 132 MBps	
SCSI Asynchronous	up to 14 MBps per channel	
SCSI Synchronous	up to 40 MBps per channel	
PCI Voltage	+5V ±5% (3.0 A max), 12V ±5% (50 mA max)	
PCI Form Factor	7.5" x 4.0"	
Bracket	ISA/EISA	
Certification Level	PCI 2.1 compliant	
SCSI Bus	16-bit	
SCSI Processor	LSI53C876	
Connectors	**External**	**Internal**
Per Channel	68-pin VHDCI	68-pin HD 50-pin ribbon
Termination	Automatic, active	
Termination Power	Self-resetting	
LED Indicators	4-pin header for off-board LEDs	
Environments	**Operating**	**Storage**
Temperature	5°C to 55°C	-55°C to +85°C
Relative Humidity	5 to 90% non-condensing	5 to 90% non-condensing
Max Dew Point Temp	32°C	
Compliances	CE, VCCI, FCC and CISPR class B, UL 94VO	

Software Support

OS Support	**Versions**
DOS	with ASPI support
Windows	95, 98, Me, 2000, NT4.0 SP4 and above
NetWare	4.2, 5.0 and 5.1
UnixWare	2.1 & 7.x
SCO Unix	Open Server 5.x
OS/2	Warp 4.x
Utilities	Install, Flash (DOS only), SCSI format, SCSI configuration, verify

For more information please visit the LSI Logic web site at:
http://storageio.lsilogic.com

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