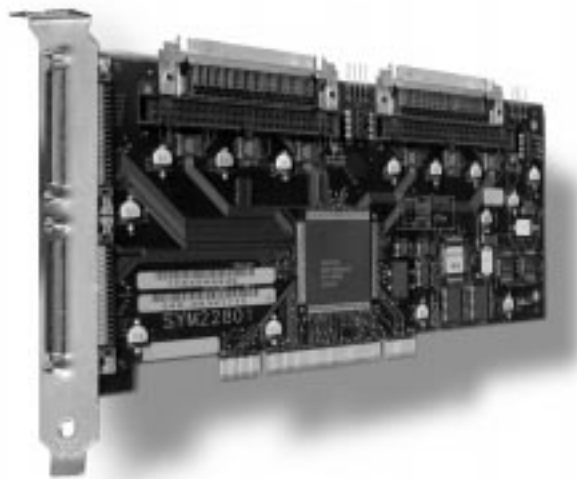**LSI LOGIC** ®

*Symbios SYM22801* **Data Sheet**

# Symbios SYM22801
## *PCI-Dual Channel Multi-function Single-ended Ultra SCSI Solution*



The SYM22801 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 SYM22801 leverages the SYM53C876 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 SYM22801 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 SYM22801 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).

### 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 Symbios 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

## 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 SYM53C875 for maximum performance
- Local memory bus for FLASH memory BIOS storage
- Symbios 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

## 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 SYM53C825A and SYM53C875
- Tagged command queuing for peak performance in multitasking 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

## Technical Description

The SYM22801 uses the SYM53C876 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 below shows which cable combinations are allowed.

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).

| 8-bit Internal | 16-bit Internal | 8-bit External | 16-bit External |
|:---:|:---:|:---:|:---:|
| ✓ | | | |
| | ✓ | | |
| | | ✓ | |
| | | | ✓ |
| ✓ | | ✓ | |
| ✓ | | | ✓ |
| | ✓ | ✓ | |
| | ✓ | | ✓ |
| ✓ | ✓ | | |

**Cable Combinations –**
*legal cable combinations allowed by the SYM22801 utilizing the two internal and two external SCSI connectors.*

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| 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 |

***Configuration Settings –***
*configuration settings which can be changed on the SYM22801.*

## 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.

## 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.

## Hardware Specifications

### Host Bus
PCI 2.1 Compliant

On-board, field upgradable, 64K bytes Flash ROM for BIOS

On-board serial NVRAM for enhanced SCSI Plug and Play (SCAM) support

### Internal connectors per channel
68-pin, right angle, high density latching SCSI bus

50-pin, vertical, low-density SCSI bus

4-pin, for off-board SCSI Active LED

### External connector per channel
68-pin, VHDCI high density shielded, with screw jacks

### Processor
High performance SCSI RISC core

### Termination
Automatic, Active

### Termination power
Self-resetting

### Form Factor
Approx. 7.5" x 4.2" board size, PCI 2.1 Universal Board PCI connector

### Bracket
ISA/EISA style

### Electrical
5V +/- 5% (3.0 A max)

12V +/- 5% (50 mA max)

### PCI max power dissipation
15 Watts

PRSNT1# - open

PRSNT2# - ground

### Environmental
5° to 55° C (operating)

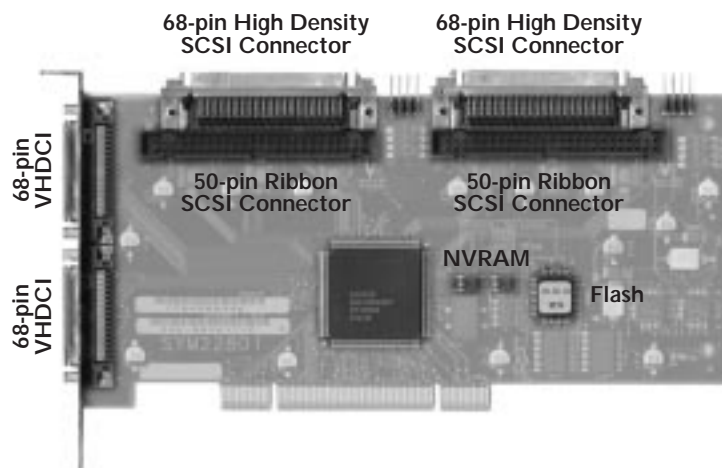5% to 90% relative humidity(non-condensing)

### MTBF
> 500,000 hours

### Agency certification
FCC Class B

CISPR B

VCCI Class 2

CE Mark

UL 94V0 rated

***Board Layout –***
*graphical representation of the SYM22801 PCI-Dual Channel Multi-function Single-ended Ultra SCSI Host Adapter.*

# *LSI Logic* **Sales Locations**

## North American Sales Locations

### Western Sales Area

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