LSI Integrated SCSI

LSI 896 32-bit 2Ch. Ultra2 SCSI
LSI 1010-33 32-bit 2Ch. Ultra160 SCSI
LSI 1010-66 64-bit 2Ch. Ultra160 SCSI

Contents

1. Introduction

General Description

The onboard LSI integrated Dual Channel Ultra2 SCSI provides two SCSI-3, Ultra2 SCSI interfaces that require BIOS support. The dual channel LSI integrated SCSI provides 16-bit Low Voltage Differential (LVD) and Single-Ended (SE) SCSI solutions for your computer. This supports legacy Fast SCSI devices, Ultra SCSI devices, Ultra2 SCSI devices, and the newest Ultra160 SCSI devices. PCI SCSI Device Management System (SDMS™) software operates the chipset, but the design of the chipset does not prevent other software to be used with it. BIOS support for this chipset is incorporated in the ASUS motherboard BIOS.

SCSI Interface

- Two separate SCSI channels
- 16-bit SE/LVD
- Automatically enabled termination
- One 68-pin high-density for channel A
- One 68-pin high-density for channel B
- Fast, Ultra, and Ultra2 data transfer capability
- SCSI TERMPWR source with autoresetting circuit breaker and TERMPWR shorted LED for each channel
- SCSI Plug and Play
- SCAM (SCSI Configured AutoMatically).
- Flash EEPROM for BIOS storage
- Serial NVRAM (Non Volatile Random Access Memory) on each channel for user configuration utility and SCAM information storage

1. Introduction

The SCSI Interface

The SCSI functionality for the LSI integrated SCSI is contained within the LSI integrated PCI-SCSI I/O Processor chip. The LSI integrated SCSI connects directly to the two SCSI buses for SE or LVD SCSI applications and generates timing and protocol in compliance with the SCSI standard. Each SCSI interface operates at a burst transfer rate of up to 40 Mbyte per second for wide single-ended transfers, and up to 80 Mbyte per second for wide LVD SCSI transfers.

The SCSI interfaces on the LSI integrated SCSI operates as two 16-bit, synchronous or asynchronous, single-ended or LVD, and supports Ultra2 SCSI protocols and 16-bit arbitration. The LSI integrated SCSI provides autosensing, dual mode SE/LVD SCSI termination. Termination is normally enabled. When a SCSI device is sensed to be connected to both connectors, LSI integrated SCSI termination is automatically disabled. The LSI integrated SCSI supplies SCSI bus TERMPWR (termination power) through a blocking diode and self-resetting 1.5 A short circuit protection device. A 40 MHz oscillator is installed with the LSI integrated SCSI to provide the clock frequency to the LSI integrated SCSI that is necessary to support Wide Ultra2 SCSI transfers of up to 80 Mbytes/s.

Wide Ultra2 SCSI

The LSI integrated SCSI has full support for Wide Ultra2 SCSI. This interface is an extension of the SCSI-3 family of standards that expands the bandwidth of the SCSI bus to allow faster synchronous data transfers, up to 80 Mbytes/s. Wide Ultra2 SCSI provides a doubling of the data rate over the Ultra2 SCSI interface, while it increases cable lengths and allows a larger number of devices on the cable than Ultra2 SCSI interfaces. Special SCSI cables are specified for operation with Wide Ultra and Ultra2 SCSI devices, and you must consider the total number of devices and the length of your SCSI bus when setting up your system.

The cable provided is matched for a Fast/Ultra/Ultra2 SE or LVD operation. This cable also has built-in LVD termination since most Ultra2 hard disk drives are not made with onboard LVD termination.

1. Introduction

Connecting Your SCSI Peripherals

All internal SCSI bus connections to the LSI integrated SCSI integrated SCSI are made with an unshielded, 68-conductor ribbon cable. One side of this cable is marked with a color to indicate the pin-1 side. The connectors on this cable are keyed to ensure proper pin-1 connection. Use Ultra/Ultra2 rated cables for these bus speeds.

All external SCSI bus connections to the LSI integrated SCSI integrated SCSI are made with shielded, 68-conductor cables. The connectors on this cable are always keyed to ensure proper pin-1 connection. Some internal cables come with a SE/LVD on one end. This end should be furthest from the integrated SCSI.

SCSI Bus Termination

The devices that make up the SCSI bus are connected serially (chained together) with SCSI cables. The first and last physical SCSI devices connected on the ends of the SCSI bus must have a set of resistors called terminators. All other SCSI devices on the bus must have their terminators removed or disabled.

REMEMBER: The LSI integrated SCSI integrated SCSI is also on the SCSI bus, and its termination is automatically enabled when it is connected to the end of the bus.

Low-voltage differential peripheral devices are normally terminated with external terminators, but are sometimes set with jumpers or with a switch on the peripheral. Refer to the peripheral manufacturer's instructions and to the user's manual for your computer for information on how to identify the terminator setting of each device and how to change it.

When connecting another integrated SCSI to a connector, termination must be disabled on the board that is not at the end of the bus through software control.

Internal SCSI Connections

If only internal SCSI device connections on your integrated SCSI have been made, then terminate the last internal device on the SCSI bus. You must disable the termination on all other devices. Termination on the LSI integrated SCSI integrated SCSI is automatically enabled in this case.

2. Starting

External SCSI Connections

If only external SCSI device connections have been made, then terminate the last external device on the SCSI bus. You must disable the termination on all other devices. Termination on your integrated SCSI is automatically enabled in this case.

Internal and External SCSI Connections

If internal and external SCSI devices are connected, then terminate the last internal and external devices on the SCSI bus. You must disable the termination on all other devices. Termination on your integrated SCSI is automatically disabled in this case.

NOTE: If an internal connection to another LSI integrated SCSI has been made, or any connection to a device that uses the same sensing method for automatic termination as your LSI integrated SCSI, you must override the termination for that channel through software control.

Setting SCSI IDs

You must set each SCSI device and the integrated SCSI to a separate SCSI ID, 0 through 15 for a 16-bit SCSI. SCSI ID 7 is the preset integrated SCSI setting, giving it the highest priority on the SCSI bus. If you plan to boot your computer from a hard disk drive on the SCSI bus, that drive should have SCSI ID 0, or the lowest SCSI ID on the bus. The peripheral device SCSI IDs are usually set with jumpers or with a switch on the peripheral. Refer to the peripheral manufacturer's instructions and to the user's manual for your computer to determine the ID of each device and how to change it. You must have no duplication of SCSI IDs on a SCSI bus.

NOTE: As SCAM support is OFF by default for the LSI integrated SCSI, you may choose to turn this ON to assist in assigning SCSI IDs.

Determine the SCSI ID of each device on the SCSI bus. Note any duplications. Make any necessary changes to the SCSI IDs and record the IDs for future reference.

Setting Interrupts

Normally, you do not change the default interrupt routing for the LSI integrated SCSI, since performance is usually increased by having two separate interrupts.

Configuring the LSI Integrated SCSI

In most cases you should not need to change the default configuration of your integrated SCSI. You may decide to alter these default values if there is a conflict between device settings, or if you need to optimize system performance.

The following tables list the configuration settings you can change. The global settings effect your integrated SCSI and all SCSI devices which are connected to it. The device settings effect only individual SCSI devices.

Global Default Settings

Settings for the Integrated SCSI & All Devices	Default Settings
SCAM Support	Off
Parity Checking	Enabled
Integrated SCSI SCSI ID	7
Scan Order	Low to High (0-Max)

Device Default Settings

Settings for Individual SCSI Devices	Default Settings
Synchronous Transfer Rate (MB/Sec)	40 or 80
Data Width	16
Disconnect	On
Read/Write I/O Time-Out (secs)	10
Scan for Devices at Boot Time	Yes
Scan for SCSI LUNs	Yes
Queue Tags	Enabled

3. Configuring

The SCSI BIOS Utility

If you have SCSI BIOS version 4.0, and it includes the SCSI BIOS Configuration Utility, you can change the default configuration of your SCSI host adapters. You may decide to alter these default values if there is a conflict between device settings or if you need to optimize system performance.

You can see the version number of your SCSI BIOS in a banner displayed on your computer monitor during boot. If the utility is available, the following message also appears on your monitor:

> **Press Ctrl-C to start ASUS Configuration Utility...**

This message remains on your screen for about five seconds, giving you time to start the utility. If you decide to press "Ctrl-C," the message changes to:

> **Please wait, invoking ASUS Configuration Utility...**

After a brief pause, your computer monitor displays the Main Menu of the SCSI BIOS Configuration Utility. As NVRAM (Non Volatile Random Access Memory) is available on the LSI integrated SCSI, changes can be made and stored using this menu driven utility.

IMPORTANT: This utility is a powerful tool. If, while using it, you somehow disable all of your controllers, pressing Ctrl-A (or Ctrl-E on version 4.04 or later) after memory initialization during reboot allows you to re-enable and reconfigure.

Not all devices detected by the Configuration utility can be controlled by the BIOS. Devices such as tape drives and scanners require that a device driver specific to that peripheral be loaded. This device driver is provided by the devices manufacturer.

Configuration Utility Main Menu

When you start the SCSI BIOS Configuration Utility, the Main Menu appears. This menu displays a list of up to four SCSI devices in your system and information about each of them. The LSI integrated SCSI appears on the menu as two LSI integrated SCSI entries; one for each channel. To select an adapter, use only the arrow keys and enter key. Then, you can view and/or change the current settings for that adapter and the SCSI devices attached to it. You can select an adapter only if Current Status is "On". Changes are possible since NVRAM is present on this integrated SCSI.

3. Configuring

Below the list of host adapters on the Main Menu display, you see eight options. They are described in detail below. If these settings are altered, the system reboots upon exit from the configuration utility using the Quit option.

Change Adapter Status

The change adapter status allows you to activate or deactivate a integrated SCSI and all SCSI devices attached to it. When this option is used to make a change, the change takes place after a reboot that is automatic upon exit from the utility. To change an adapter's status, select it and press Enter. Then press the Escape (Esc) key to exit from this menu.

Adapter Boot Order

The adapter boot order allows you to set the order in which host adapters will boot when you have more than one ASUS integrated SCSI in your system. When this option is selected, the Boot Order menu appears:

To change an adapter's boot order, select it and press Enter. You are then prompted to enter the new boot sequence number. To remove an adapter's boot order, press Enter again rather than entering a new sequence number. While the maximum capacity is 32 adapters, only 0 through 3 can be assigned a boot order. If an invalid number is entered, an error message appears. When the adapters are ordered as desired, press the Escape (Esc) key to exit from this menu.

Additional Adapter Configuration

The additional adapter configuration allows you to configure an adapter that is not assigned a boot order. When this option is selected, the Adapter Configuration menu appears:

Highlight the adapter to be configured and press Enter. The message "Resetting Adapter, Please wait" appears, and then the system scans for devices. Finally, the Utilities Menu appears and lists the available options, which are described below.

Display Mode

Display mode determines how much information about your host adapters and SCSI devices appear on your computer monitor during boot. For more complete information, choose the verbose setting. For a faster boot, choose the terse setting.

Mono/Color

Mono/color allows you to choose between a monochrome or color display for the SCSI BIOS Configuration utility. You might need to choose the mono setting to get a more readable screen on a monochrome monitor.

3. Configuring

Language

If enabled, the Language option allows you to select from five languages for the configuration utility: English, German, French, Italian, and Spanish. Call for support if you have any additional questions.

Help

The Help option allows you to bring up a help screen with information about the Main Menu.

Quit

The Quit option allows you to exit from the SCSI BIOS Configuration utility when on the Main Menu.

Esc

Pressing the Esc key allows exit from all the screens except the Main Menu.

Utilities Menu

When you select a integrated SCSI on the Main menu, the Utilities menu appears. Choose Adapter Setup to view and change the selected adapter settings. Choose Device Selections to view and change settings for the devices attached to the selected adapter. You are returned to this menu after making changes to the configuration of any integrated SCSI or connected SCSI device. Before you exit this menu, you are prompted to save or cancel any changes.

Adapter Setup Menu

When you select Adapter Setup, the Adapter Setup menu appears:

The settings in this menu are global settings that affect the selected integrated SCSI and all SCSI devices attached to it.

SCAM Support – BIOS version 4.0 and above supports the SCSI Plug and Play protocol called SCAM (SCSI Configured AutoMatically). SCAM support by default is off in versions 4.11.00 and later for the LSI integrated SCSI. You may choose to turn this on. Note that if this BIOS is flashed with existing settings, then these settings will not be changed to reflect the new BIOS defaults. Go into the Configuration Utility to change settings.

Parity – The PCI to SCSI host adapters always generate parity, but some older SCSI devices do not. Therefore, you are offered the option of disabling parity checking.

3. Configuring

NOTE: **When disabling parity checking, it is also necessary to disable disconnects for all devices, as parity checking for the reselection phase is not disabled. If a device does not generate parity, and it disconnects, the I/O never completes because the reselection never completes.**

Host SCSI ID – In general, it is suggested that you do not change your integrated SCSI ID from the default value of 7, as this gives it the highest priority on the SCSI bus.

Scan Order – This option allows you to tell the SCSI BIOS and device drivers to scan the SCSI bus from low to high (0 to max) SCSI ID, or from high to low (max to 0) SCSI ID. If you have more than one device on the SCSI bus, changing the scan order changes the order in which drive letters are assigned by the system. Drive order may be reassigned differently in systems supporting the BIOS Boot Specification (BBS). See the PCI SCSI Device Management System SDMS 4.0 User's Guide, Chapter 2 "SCSI BIOS" for additional information regarding BBS.

NOTE: This scan order option may conflict with operating systems that automatically assign a drive order.

Removable Media Support – This option defines the removable media support for a specific drive. When this option is selected, a window appears with three choices:

- None
- Boot Drive Only
- With Media Installed

None – indicates there is no removable media support whether the drive is selected in BBS as being first, or first in scan order in non-BBS.

Boot Drive Only – provides removable media support for a removable hard drive if it is first in the scan order.

With Media Installed – provides removable media support wherever the drive(s) actually resides. One of these choices can be selected by highlighting it and pressing Enter.

CHS Mapping – This option defines the cylinder head sector (CHS) values that will be mapped onto a disk without pre-existing partitioning information. SCSI Plug and Play Mapping is the default value. To support interchange with noncompatible systems, there is another option that can be selected by choosing CHS Mapping and then cursoring to "Alternate CHS Mapping".

NOTE: Neither of these options will have any affect after the disk has been partitioned with the FDISK command. To remove partitioning, two options are available:

- Reformat the disk using the Format Device option. See the section "Device Selections Menu" below.

- Use the FDISK /MBR command at the C:\ prompt, where MBR represents master boot record.

IMPORTANT: Reformatting the disk or using FDISK /MBR erases all partitioning and data that exists. Be careful when using either the Format utility or the FDISK /MBR command that you target the correct disk. After clearing the partitions and data, it is necessary to reboot and clear memory or the old partitioning data will be reused, thus nullifying the previous operation.

Device Selections Menu

When you select the Device Selections option, the corresponding menu appears. The settings in this menu affect individual SCSI devices attached to the selected integrated SCSI. Changes made from this menu do not cause the system to reboot upon exit from the SCSI BIOS Configuration Utility. To change a value, select the required device by using the arrow keys and press Enter. A new menu appears providing the options and utilities available. For example, you could cursor to Sync Rate to change the Sync Rate value of the chosen device.

Sync Rate (Mbytes/s) – The value set with this option defines the maximum data transfer rate the integrated SCSI attempts to negotiate. The integrated SCSI and a SCSI device must agree to a rate they can both handle.

Width (bits) – The value set with this option defines the maximum SCSI data width the integrated SCSI attempts to negotiate. The integrated SCSI and a SCSI device must agree to a width they can both handle. Only host adapters that can do 16-bit data transfers have this option enabled.

Disconnect – SCSI devices have the ability to disconnect from the initiator during an I/O transfer. This disconnect frees the SCSI Bus to allow other I/O processes. This option tells the integrated SCSI whether or not to allow a device to disconnect. Some devices run faster with disconnects enabled (mostly newer devices), while some run faster with disconnects disabled (mostly older devices).

3. Configuring

Read/Write I/O Time-out (seconds) – This option sets the amount of time the integrated SCSI waits for a read, write, or seek command to complete before trying the I/O transfer again. Since this provides a safeguard allowing the system to recover if an I/O operation fails, it is recommended that you always set the time-out to a value greater than zero.

NOTE: If the time-out is set to zero, then the I/O will never time-out.

Scan for Device at Boot Time – When there is a device you do not want to be available to the system, set this option to "No" for that device. Also, on a bus with only a few devices attached, you can speed up boot time by changing this setting to "No" for all unused SCSI IDs.

Scan for SCSI Logical Units (LUNs) – You can set this option to "No" if you have problems with a device that responds to all LUNs whether they are occupied or not. For example, if there is a SCSI device with multiple LUNs but you do not want all of those LUNs to be available to the system, then set this option to "No." This will limit the scan to LUN0 only.

Queue Tags – This option allows you to enable or disable the issuing of queue tags during I/O requests when your device driver can do this.

Format Device – If enabled, this option allows you to low-level format a magnetic disk drive. Low-level formatting will completely and irreversibly erase all data on the drive. Note that this utility will only format 512 byte sectors. For other sector sizes, do not use this utility.

Verify – This option allows you to read all the sectors on a disk looking for errors. When selected, this option displays the following message:

```
"Verify all sectors on the device
Press ESC to abort
Else press any key to continue"
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Help – This option brings up a help screen with information about the current menu.

Restore Default Setup – This option resets all device selections back to their optimal settings. Select this option to restore all manufacturing defaults for the specified adapter. Note that all user customized options will be lost upon saving after restoring default setup.

Exit this menu – This option allows you to leave the current menu screen and return to the previous screen.

Exiting the SCSI BIOS Utility

Since some changes only take effect after your system reboots, it is important that you exit this configuration utility properly. Return to the Main Menu and exit by using the Quit option.

IMPORTANT: If you reboot the system without properly exiting the utility, some changes may not take effect.

3. Configuring

Glossary of Terms and Abbreviations

Address - A specific location in memory, designated either numerically or by a symbolic name.

Asynchronous Data Transfer - A method of transmission which does not require a common clock, but separates fields of data by stop and start bits. It is slower than synchronous data transfer.

BIOS - Basic Input/Output System. Software that provides basic read/write capability. Usually kept as firmware (ROM based). The system BIOS on the mainboard of a computer is used to boot and control the system. The SCSI BIOS on your integrated SCSI acts as an extension of the system BIOS.

Bit - A binary digit. The smallest unit of information a computer uses. The value of a bit (0 or 1) represents a two-way choice, such as on or off, true or false, and so on.

Bus - A collection of unbroken signal lines across which information is transmitted from one part of a computer system to another. Connections to the bus are made via taps on the lines.

Bus Mastering - A high-performance way to transfer data. The integrated SCSI controls the transfer of data directly to and from system memory without bothering the computer's microprocessor. This is the fastest way for multitasking operating systems to transfer data.

Byte - A unit of information consisting of eight bits.

Chain - A topology in which every processor is connected to two others, except for two end processors that are connected to only one other.

CISPR - A special international committee on radio interference (Committee, International and Special, for Protection in Radio). B-2 Glossary of Terms and Abbreviations

Configuration - Refers to the way a computer is set up; the combined hardware components (computer, monitor, keyboard, and peripheral devices) that make up a computer system; or the software settings that allow the hardware components to communicate with each other.

CPU - Central Processing Unit. The "brain" of the computer that performs the actual computations. The term Micro Processor Unit (MPU) is also used.

DMA - Direct Memory Access. A method of moving data from a storage device directly to RAM, without using the CPU's resources.

4. Appendix

DMA Bus Master - A feature that allows a peripheral to control the flow of data to and from system memory by blocks, as opposed to PIO (Programmed I/O) where the processor is in control and the flow is by byte.

Device Driver - A program that allows a microprocessor (through the operating system) to direct the operation of a peripheral device.

Differential - A hardware configuration for connecting SCSI devices. It uses a pair of lines for each signal transfer (as opposed to single-ended SCSI which references each SCSI signal to a common ground).

Dword - A double word is a group of 4 consecutive bytes or characters that are stored, addressed, transmitted, and operated on as a unit. The lower two address bits of the least significant byte must equal zero in order to be dword aligned.

EEPROM - Electronically-Erasable Programmable Read Only Memory. A memory chip typically used to store configuration information. See NVRAM.

EISA - Extended Industry Standard Architecture. An extension of the 16-bit ISA bus standard. It allows devices to perform 32-bit data transfers.

External SCSI Device - A SCSI device installed outside the computer cabinet. These devices are connected in a continuous chain using specific types of shielded cables.

Fast SCSI - A standard for SCSI data transfers. It allows a transfer rate of up to 10 Mbytes/s over an 8-bit SCSI bus and up to 20 Mbytes/s over a 16-bit SCSI bus.

FCC - Federal Communications Commission.

File - A named collection of information stored on a disk.

Firmware - Software that is permanently stored in ROM. Therefore, it can be accessed during boot time.

Hard Disk - A disk made of metal and permanently sealed into a drive cartridge. A hard disk can store very large amounts of information.

Host - The computer system in which a SCSI integrated SCSI is installed. It uses the SCSI integrated SCSI to transfer information to and from devices attached to the SCSI bus.

Integrated SCSI - A circuit board or integrated circuit that provides a SCSI bus connection to the computer system.

Internal SCSI Device - A SCSI device installed inside the computer cabinet. These devices are connected in a continuous chain using an unshielded ribbon cable.

4. Appendix

IRQ - Interrupt Request Channel. A path through which a device can get the immediate attention of the computer's CPU. The PCI bus assigns an IRQ path for each SCSI integrated SCSI.

ISA - Industry Standard Architecture. A type of computer bus used in most PC's. It allows devices to send and receive data up to 16-bits at a time.

Kbyte - Kilobyte. A measure of computer storage equal to 1024 bytes.

Local Bus - A way to connect peripherals directly to computer memory. It bypasses the slower ISA and EISA busses. PCI is a local bus standard.

Logical Unit - A subdivision, either logical or physical, of a SCSI device (actually the place for the device on the SCSI bus). Most devices have only one logical unit, but up to eight are allowed for each of the eight possible devices on a SCSI bus.

LUN - Logical Unit Number. An identifier, zero to seven, for a logical unit.

LVD - Low-Voltage Differential. LVD is a robust design methodology that improves power consumption, data integrity, cable lengths and support for multiple devices, while providing a migration path for increased I/O performance.

Mbyte - Megabyte. A measure of computer storage equal to 1024 kilobytes.

Main Memory - The part of a computer's memory which is directly accessible by the CPU (usually synonymous with RAM).

Motherboard (**Mainboard**) - A large circuit board that holds RAM, ROM, the microprocessor, custom integrated circuits, and other components that make a computer work. It also has expansion slots for host adapters and other expansion boards.

Multi-tasking - The executing of more than one command at the same time. This allows programs to operate in parallel.

Multi-threading - The simultaneous accessing of data by more than one SCSI device. This increases the data throughput.

NVRAM - Non Volatile Random Access Memory. Actually an EEPROM (Electronically-Erasable Programmable Read Only Memory chip) used to store configuration information. See EEPROM.

Operating System - A program that organizes the internal activities of the computer and its peripheral devices. An operating system performs basic tasks such as moving data to and from devices, and managing information in memory. It also provides the user interface.

4. Appendix

Parity Checking - A way to verify the accuracy of data transmitted over the SCSI bus. One bit in the transfer is used to make the sum of all the 1 bits either odd or even (for odd or even parity). If the sum is not correct, an error message appears.

PCI - Peripheral Component Interconnect. A local bus specification that allows connection of peripherals directly to computer memory. It bypasses the slower ISA and EISA busses.

Peripheral Devices - A piece of hardware (such as a video monitor, disk drive, printer, or CD-ROM) used with a computer and under the computer's control. SCSI peripherals are controlled through a SCSI integrated SCSI.

Pin-1 Orientation - The alignment of pin-1 on a SCSI cable connector and the pin-1 position on the SCSI connector into which it is inserted. External SCSI cables are always keyed to insure proper alignment, but internal SCSI ribbon cables are sometimes not.

PIO - Programmed Input/Output. A way the CPU can transfer data to and from memory via the computer's I/O ports. PIO is usually faster than DMA, but requires CPU time.

Port Address - Also Port Number. The address through which commands are sent to a integrated SCSI board. This address is assigned by the PCI bus.

Port Number - See Port Address.

Queue Tags - A way to keep track of multiple commands that allows for increased throughput on the SCSI bus.

RAM - Random Access Memory. The computer's primary working memory in which program instructions and data are stored and are accessible to the CPU. Information can be written to and read from RAM. The contents of RAM are lost when the computer is turned off.

RISC Core - ASUS SCSI chips contain a RISC (Reduced Instruction Set Computer) processor, programmed through microcode scripts.

ROM - Read Only Memory. Memory from which information can be read but not changed. The contents of ROM are not erased when the computer is turned off.

SCAM - SCSI Configured AutoMatically. A method to automatically allocate SCSI IDs via software when SCAM compliant SCSI devices are attached.

SCSI - Small Computer System Interface. A specification for a high performance peripheral bus and command set. The original standard is referred to as SCSI-1.

4. Appendix

SCSI-2 - The current SCSI specification which adds features the original SCSI-1 standard.

SCSI-3 - The next SCSI specification, which adds features to the SCSI-2 standard. Although this version is still in development, parts of the SCSI-3 standard are already in use.

SCSI Bus - A integrated SCSI and one or more SCSI peripherals connected by cables in a linear chain configuration. The integrated SCSI may exist anywhere on the chain, allowing connection of both internal and external SCSI devices. A system may have more than one SCSI bus by using multiple host adapters.

SCSI Device - Any device that conforms to the SCSI standard and is attached to the SCSI bus by a SCSI cable. This includes SCSI host adapters and SCSI peripherals.

SCSI ID - A way to uniquely identify each SCSI device on the SCSI bus. Each SCSI bus has eight available SCSI IDs numbered 0 through 7 (or 0 through 15 for Wide SCSI). The integrated SCSI usually gets ID 7 giving it priority to control the bus.

SDMS - SCSI Device Management System. An ASUS software product that manages SCSI system I/O.

STA - SCSI Trade Association. A group of companies that cooperate to promote SCSI parallel interface technology as a viable mainstream I/O interconnect for commercial computing.

Single-Ended SCSI - A hardware specification for connecting SCSI devices. It references each SCSI signal to a common ground. This is the most common method (as opposed to differential SCSI which uses a separate ground for each signal).

Synchronous Data Transfer - One of the ways data is transferred over the SCSI bus. Transfers are clocked with fixed-frequency pulses. This is faster than asynchronous data transfer. Synchronous data transfers are negotiated between the SCSI integrated SCSI and each SCSI device.

System BIOS - Controls the low level POST (Power On Self Test), and basic operation of the CPU and computer system.

Termination - The electrical connection required at each end of the SCSI bus, composed of a set of resisters. It improves the integrity of bus signals.

4. Appendix

4. Appendix

Ultra SCSI - A standard for SCSI data transfers. It allows a transfer rate of up to 20 Mbytes/s over an 8-bit SCSI bus and up to 40 Mbytes/s over a 16-bit SCSI bus. STA (SCSI Trade Association) supports using the term "Ultra SCSI" over the term "Fast-20".

Ultra2 SCSI - A standard for SCSI data transfers. It allows a transfer rate of up to 40 Mbytes/s over an 8-bit SCSI bus, and up to 80 Mbytes/s over a 16-bit SCSI bus. STA (SCSI Trade Association) supports using the term "Ultra2 SCSI" over the older term "Fast-40".

VCCI - Voluntary Control Council for Interference.

VHDCI - Very High Density Cable Interconnect. A trapezoidal shielded connector that has a 0.8 mm pitch.

Wide SCSI - A SCSI-2 feature allowing 16 or 32-bit transfers on the SCSI bus. This dramatically increases the transfer rate over the standard 8-bit SCSI bus.

Wide Ultra SCSI - The STA term for SCSI bus width 16 bits, SCSI bus speed maximum data rate 40 Mbytes/s.

Wide Ultra2 SCSI - The STA term for SCSI bus width 16 bits, SCSI bus speed maximum data rate 80 Mbytes/s.

Word A two byte (or 16-bit) unit of information.