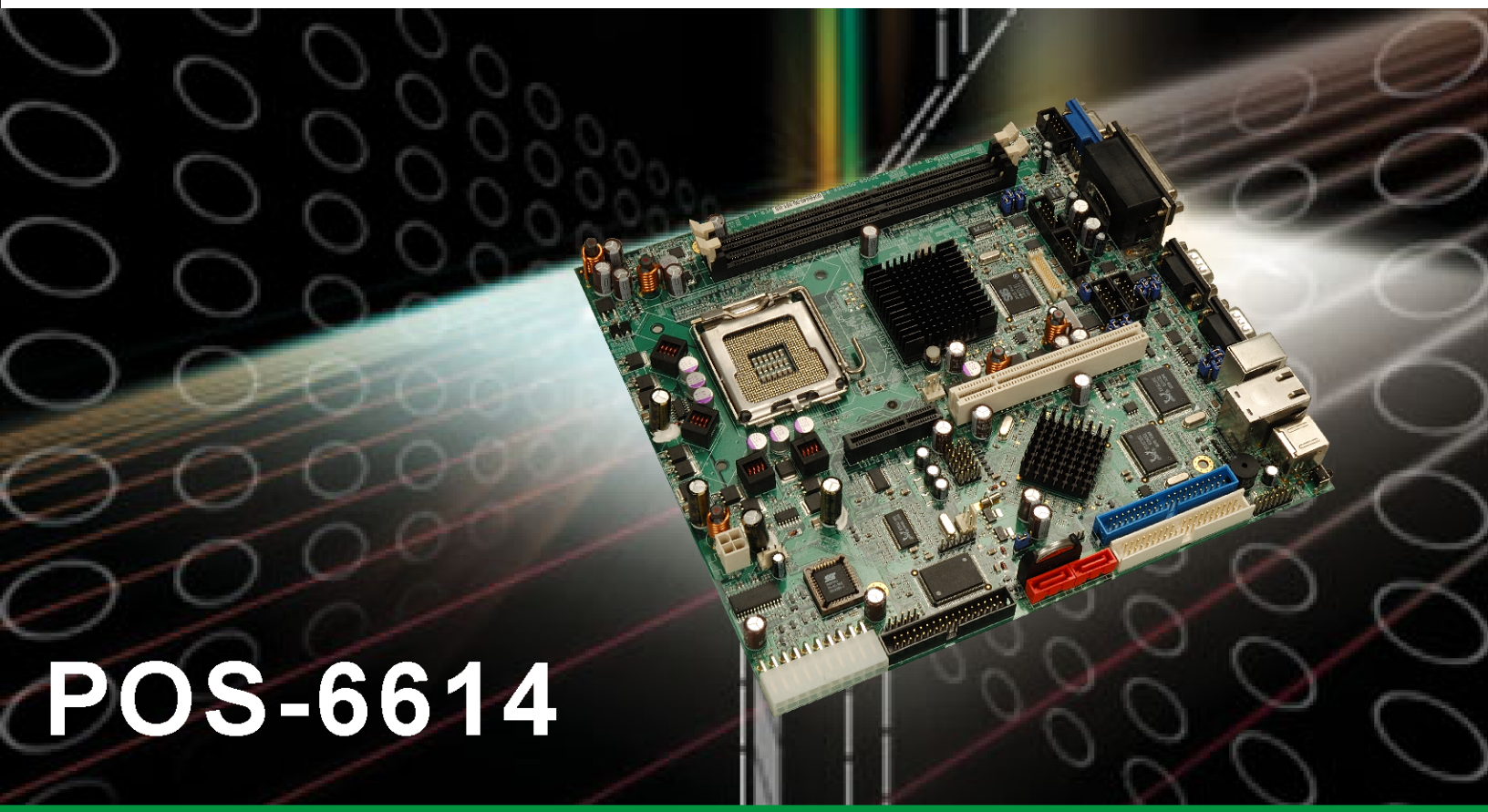
IEI Technology Corp.



POS-6614

LPX Form Factor Motherboard with Intel® Pentium® 4/ Celeron ® D LGA775 800MHz, Dual GbE, SATA, IDE, USB 2.0, 6 x COM and Audio

User Manual

Rev. 1.0 November, 2006

RoHS Lead Free

REVISION HISTORY

Title	POS-6614 Motherboard	
Revision Number	Description	Date of Issue
1.0	Initial release	November 2006

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TRADEMARKS

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Chapter

1

Introduction

1.1 POS-6614 Motherboard Overview

The POS form factor POS-6614 Intel® Pentium® 4/ Celeron® D LGA775 motherboard is fully equipped with advanced multi-mode I/Os. The POS-6614 supports a full range of functions for an ATX compatible industrial computer in a 220mm x 235mm profile. It also contains two DDR DIMM sockets that supports up to 2GB of memory size. The POS-6614 is designed for system manufacturers, integrators, and VARs that want performance, reliability, and quality at a reasonable price.

1.1.1 POS-6614 Motherboard Benefits

The POS form factor POS-6614 motherboard defines a new industry open standard for small form factor embedded computer boards. Some of the POS-6614 motherboard benefits are:

- Allowing additional space to support advanced processors and technologies
- Supporting complex I/O functions for industrial, medical, military, transportation, and commercial applications

1.1.2 POS-6614 Motherboard Features

The POS-6614 motherboard features are listed below:

- Complies with LPX form factor
- Complies with RoHS
- Supports LGA775 Intel® Pentium® 4/Celeron® D CPU
- Supports a maximum front side bus (FSB) speed up to 800MHz
- Supports up to 2GB of DDR-333/400MHz DDR DIMM socket memory
- Comes with dual high performance gigabit Ethernet (GbE) controllers
- Comes with one PCI + PCIe expansion slot
- Comes with AC'97 2.3 Realtek ALC655 codec
- Supports two SATA channels with transfer rates up to 1.5Gb/s
- Supports eight USB 2.0 connections
- Supports five RS-232 serial communication connections
- Supports one RS-232/422/485 serial communication connection
- Two ATA 100/133 IDE connectors support four devices
- One FDD connector supports one device
- One LPT connector supports one parallel device
- CRT/LCD VGA integrated in SIS661CX
- Dual challel24-bit LVDS integrated in SIS 302LV
- Supports CompactFlash Type II (CFII) solid state disk (SSD) plug and play (PnP) storage

1.2 POS-6614 Motherboard Overview

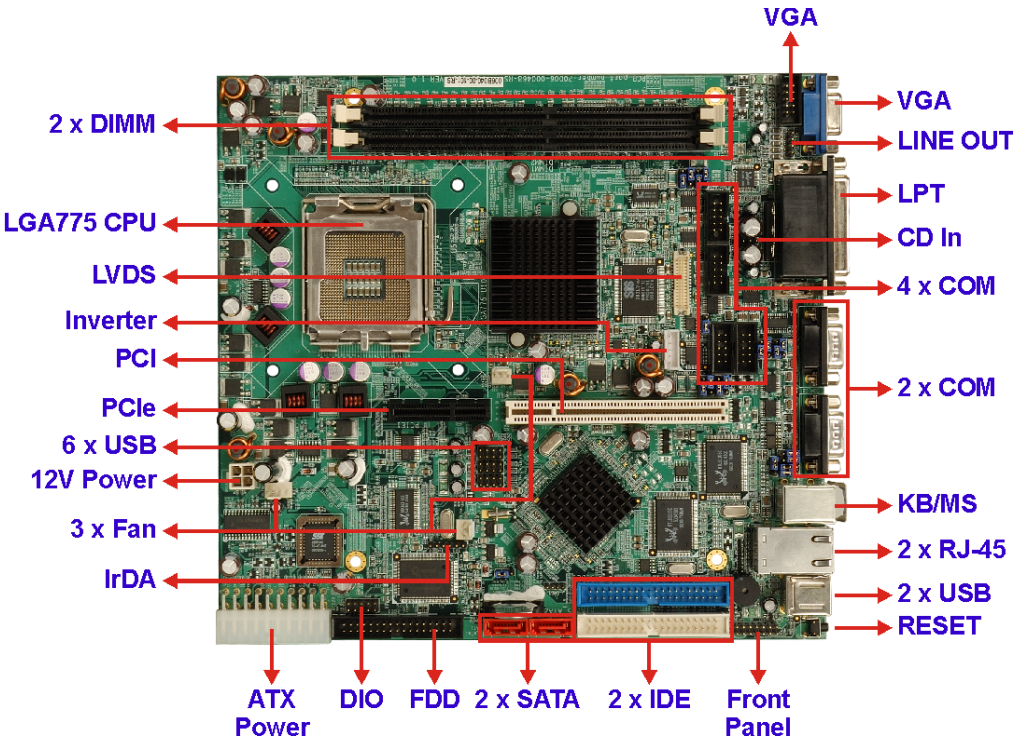

Figure 1-1: POS-6614 Motherboard Overview (Connector Side)

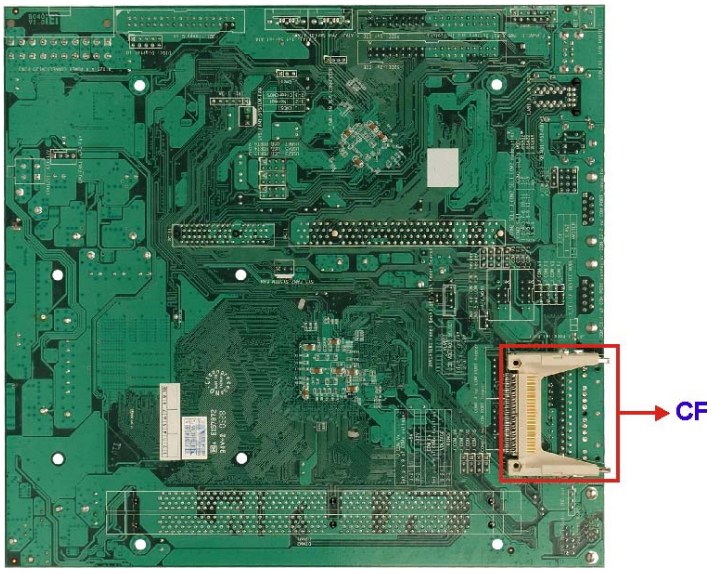

Figure 1-2: POS-6614 Motherboard Overview (Solder Side)

1.2.1 POS-6614 Motherboard Connectors

The POS-6614 motherboard has the following on-board connectors:

- 1 x ATX-12V power connector
- 1 x ATX-20 pin power connector
- 1 x Audio CD in connector
- 1 x Audio line out connector
- 1 x CompactFlash connector (solder side)
- 1 x Digital Input/Output connector
- 3 x Fan connectors
- 1 x Floppy disk drive connector
- 1 x Front panel connector
- 2 x IDE device connectors
- 1 x IrDA connector
- 1 x Inverter connector
- 1 x LVDS interface connector
- 1 x PCI + PCIe expansion slot
- 2 x SATA connectors
- 4 x Serial port connectors
- 3 x USB 2.0 connectors
- 1 x VGA connector

The POS-6614 motherboard has the following connectors on the board external interface:

- 1 x Dual USB connector
- 1 x Dual RJ-45 Ethernet connector
- 1 x PS/2 Keyboard/Mouse combo connector
- 2 x Serial connectors
- 1 x Parallel connector
- 1 x 3-Audio jacks
- 1 x VGA connector

The location of these connectors on the motherboard can be seen in **Figure 1-1** and **Figure 1-2**. These connectors are fully described in **Chapter 3**.

1.2.2 Technical Specifications

The POS-6614 motherboard technical specifications are listed in **Table 1-1**. Detailed descriptions of each specification can be found in **Chapter 2**.

SPECIFICATION	DESCRIPTION
CPU Supported	Intel® Pentium® 4 LGA775 Intel® Celeron ® D LGA775
Chipsets	Northbridge: SiS661CX Southbridge: SiS966
Graphics Support	SiS Mirage™ Graphic Engine
Memory	Two DDR memory modules (Max. 2GB)
PCI Bus Interface	33MHz, Revision 2.3
I/O Controller	SiS966
Super I/O	W83697HG
BIOS	AMI flash BIOS
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Ethernet	Realtek RTL8110SC GbE
Serial ATA (SATA)	Two SATA channels with 1.5Gb/s transfer rates
HDD Interface	Two IDE channels support four Ultra ATA133/100 devices
Serial Ports	Six COM ports (five RS-232 and one RS-232/422/485)
USB Interfaces	Eight USB 2.0 connectors supported
Infrared Support	One Infrared Data Association (IrDA) interface
Power Support	ATX power support
Power Consumption	+3.3V@3.48A; +5V@2.84A; +12V@7.12A (Intel® Pentium® 4 CPU, 3.0GHz, DDR 1GB x 2)

SPECIFICATION	DESCRIPTION
Power Management	Supports Advanced Configuration and Power Interface (ACPI) Specifications Revision 1.0
Hardware Monitoring	Cooling fan, temperature and system voltages
Operating Temperature	Minimum: 0ºC (32°F) Maximum: 60°C (140°F)
Physical Dimensions	220mm x 235mm (width x length)
Audio Interfaces	AC ‘97 2.3 Realtek ALC655

Table 1-1: Technical Specifications

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Chapter

2

Detailed Specifications

2.1 CPU Support

Table 2-1 lists the CPUs supported by the POS-6614 motherboard.

Mfg.	Model	Max. Speed	L2 Cache	Max. FSB	Socket
Intel®	Pentium® 4	3.40GHz	2MB	800MHz	LGA 775
Intel®	Celeron® D	3.33GHz	256KB	533MHz	LGA 775

Table 2-1: Supported CPUs

2.1.1 Intel® Pentium® 4

The Intel® Pentium® 4 CPU comes with the following features:

- Hyper-Threading Technology (HT Technology) ensures greater performance
- SpeedStep® Technology improves overall system power management
- Execute Disable Bit technology prevents certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system.

2.1.2 Intel® Celeron® D

The LGA 775 Intel® Celeron® D CPU comes with the following features:

- Advanced Dynamic Execution Technology keeps the execution units executing instructions
- Intel® Streaming SIMD Extensions accelerates 3D graphics performance
- Execute Disable Bit Technology prevents certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system.

2.2 Onboard Chipsets

2.2.1 Northbridge and Southbridge Chipsets

The following chipsets are preinstalled on the board:

- **Northbridge**: SiS661CX
- **Southbridge**: SiS966

The following two sections (**Section 2.2.2** and **Section 2.2.3**) list some of the features of the SiS661CX and the SiS966 chipsets. For more information on these two chipsets please refer to the SiS website.

2.2.2 SiS661CX Northbridge Chipset

The SiS661CX northbridge chipset comes with the following features:

- **Host Interface**
  - Intel® Pentium® 4 Hyper-Threading processor support
  - FSB 800MHz w/ 2X Address and 4X Data Rate
  - 12 Outstanding Transactions support
  - Quasi-Synchronous/Asynchronous Host/DRAM Timing support
  - Supports Dynamic Bus Inversion.
- **DRAM Controller**
  - DDR400/DDR333 supported
  - Up to two un-buffered DIMMs DDR400 supported
  - Up to 1GB per DIMM with 512Mb tech.
  - Dynamic Clock Enable (CKE) control placing the Memory into Suspend to DRAM state.
- **SiS MuTIOL® 1G Delivering 1GB/s Bandwidth**
  - Proprietary Interconnect between Northbridge and Southbridge
  - Bi-Directional 16 bit Data Bus at 133MHz x4 mode

2.2.3 SiS966 Southbridge Chipset

The SiS966 southbridge chipset comes with the following features:

- **SiS MuTIOL® 1G Delivering 1GB/s Bandwidth**
  - Proprietary Interconnect between SiS north bridge and SiS966
  - Bi-Directional 16 bit Data Bus at 133MHz x4 mode
- **Integrated PCI Express Controller**
  - Supports two PCI Express x1 ports
- **Integrated Serial Host Controller**
  - Provides 2 independent ports for SATA, compliant with Serial ATA 1.0 Specification with transfer rate 150MB/s
  - Provides hardware support for AHCI
  - Supports RAID 0, 1and JBOD
- **USB 2.0/1.1 Host Controller**
  - One EHCI USB 2.0 Controller and 2 OHCI USB 1.1 Controllers
  - Supports Total 8 USB 2.0/1.1 Ports
  - Supports USB 2.0 High-Speed Device @480 Mb/s Transfer Rates
- **Gigabit Ethernet/Home Networking Controller with RGMII / MII Interface**
  - Supports 10/100/1000 Base-T Ethernet
- **Audio - AC'97**
- **Advanced Power Management: ACPI 1.0b and APM 1.2 Compliant**
- **Dual IDE Channels with ATA 133/100**
- **Support Up to 6 PCI Masters**
- **LPC 1.1 Interface**
- **Integrated Keyboard/PS2 Mouse Controller**

2.3 Data Flow

Figure 2-1 shows the data flow between the two onboard chipsets and other components installed on the Motherboard and described in the following sections of this chapter.

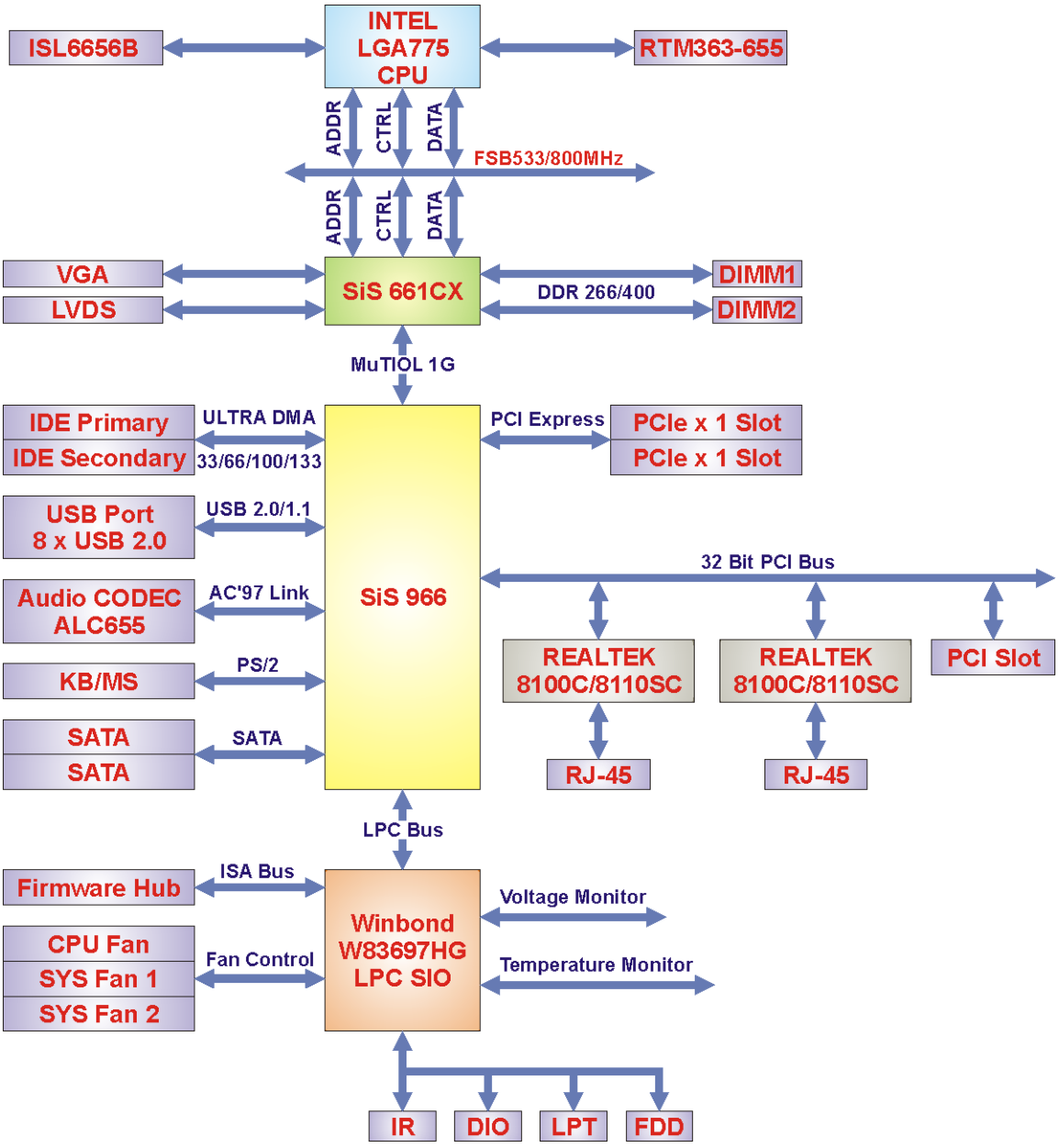


Figure 2-1: Data Flow Block Diagram

2.4 Graphics Support

The graphics features listed below are all integrated on the SiS661CX northbridge chipset.

- **DX9 S/W Compliant**
- **High performance 256Bit 3D/128Bit 2D Graphic Engine**
  - 2 pixel rendering pipelines and 4 texture units per cycle (2P4T)
  - Up to 200 MHz ECLK
- **SiS Ultra-AGPII™ Technology w/ up to 3.2GB/s Data Transfer Rate**
  - Successor of Ultra-AGPII™ Technology and doubles the bandwidth up to 3.2GB/s with DDR400
  - AGP 8X equivalent bandwidth for 3D/2D/Video
- **Advanced Hardware Acceleration for DVD playback**
- **Dual 12-bit DDR Digital Interface for Digital LCD support**
  - LCD Monitor
  - Dual view function support for LCD-CRT
- **Built-in high performance 333MHz RAMDAC**
- **Graphics support mode**
  - CRT highest resolution mode: 2048x1536x32@75NI
  - LCD highest resolution mode: 1600x1200x32@ 60NI

2.5 Memory Support

The POS-6614 CPU has two 184-pin dual inline memory module (DIMM) sockets and supports up to two un-buffered DDR DIMMs with the following specifications:

- **Maximum RAM**: 2GB (1GB module in each slot)
- **DIMM Transfer Rates**: 400MHz, 333MHz

2.6 PCI Bus Interface Support

The PCI bus on the POS-6614 Motherboard has the following features:

- 33MHz Revision 2.3 is implemented
- Up to six external bus masters are supported
- Maximum throughput: 133MB/sec
- Master devices: Maximum of six with three implemented
- One PCI REQ/GNT pair can be given higher arbitration priority 44-bit addressing using the DAC protocol supported

2.7 GbE Ethernet

The Realtek RTL8110SC GbE controller combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, 32-bit PCI bus controller, and embedded memory. The controller has state-of-the-art DSP technology and mixed-mode signal technology and it offers high-speed transmission over CAT 5 UTP cables or CAT 3 UTP (10Mbps only) cables. The GbE controller specifications are below.

- Integrated 10/100/1000 transceiver
- Auto-Negotiation with Next Page capability
- Supports PCI rev.2.3, 32-bit, 33/66MHz
- Supports pair swap/polarity/skew correction
- Crossover Detection & Auto-Correction
- Wake-on-LAN and remote wake-up support
- Microsoft® NDIS5 Checksum Offload (IP, TCP, UDP) and largesend offload support
- Supports Full Duplex flow control (IEEE 802.3x)
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- Supports IEEE 802.1P Layer 2 Priority Encoding
- Supports IEEE 802.1Q VLAN tagging
- Serial EEPROM
- 3.3V signaling, 5V PCI I/O tolerant
- Transmit/Receive FIFO (8K/64K) support
- Supports power down/link down power saving
- Supports PCI Message Signaled Interrupt (MSI)

2.8 Drive Interfaces

The POS-6614 can support the following drive interfaces.

- 1 x CFII device
- 1 x FDD device
- 4 x IDE devices
- 2 x SATA drives

2.8.1 CompactFlash Device

The POS-6614 motherboard has one Type II CompactFlash adapter used to adapt Type II CompactFlash and CF+ cards for use in Type II (5 mm thick) PCMCIA card slots.

2.8.2 FDD Interface

The POS-6614 motherboard supports one 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives through a standard 34-pin box header.

2.8.3 IDE HDD Interfaces

The POS-6614 motherboard southbridge chipset IDE controller supports up to four HDDs with the following specifications:

- **Ultra ATA/100**: DMA protocol that redefines signals on the IDE cable to allow both host and target throttling of data and transfer rates of up to 100 MB/s.
- **Ultra ATA/133**: DMA protocol that redefines signals on the IDE cable to allow both host and target throttling of data and transfer rates of up to 133 MB/s.

2.8.4 SATA Drives

The POS-6614 motherboard supports two first generation SATA drives with transfer rates up to 1.5Gb/s.

2.9 Serial Ports

The POS-6614 motherboard has six high-speed UART serial ports, configured as COM1 through COM6. The serial ports have the following specifications.

- 16C550 UART with 16-byte FIFO buffer
- 115.2Kbps transmission rate

2.10 Infrared Data Association (IrDA) Interface

The POS-6614 Motherboard IrDA supports the following interfaces.

- Serial Infrared (SIR)
- Shift Keyed Infrared (ASKIR)

If you want to use the IrDA port, you have to configure SIR or ASKIR mode in the BIOS under **Super IO devices**. Then the normal RS-232 COM 2 will be disabled.

2.11 USB Interfaces

The POS-6614 Motherboard has eight USB interfaces, six internal and two external. The USB interfaces support USB 2.0.

2.12 PCI Interfaces

The POS-6614 motherboard offers one PCI Slot Expansion Module for board expansion.

2.13 BIOS

The POS-6614 Motherboard uses a licensed copy of AMI BIOS. The features of the flash BIOS used are listed below:

- SMIBIOS (DMI) compliant
- Console redirection function support
- PXE (**P**re-Boot E**x**ecution **E**nvironment) support
- USB booting support

2.14 PXE: Pre-Boot Execution Environment

PXE is an open industry standard developed by a number of software and hardware vendors. IEI BIOS PXE feature allows a workstation to boot from a server on a network by receiving a pre-OS agent prior to booting the operating system on the local hard drive.

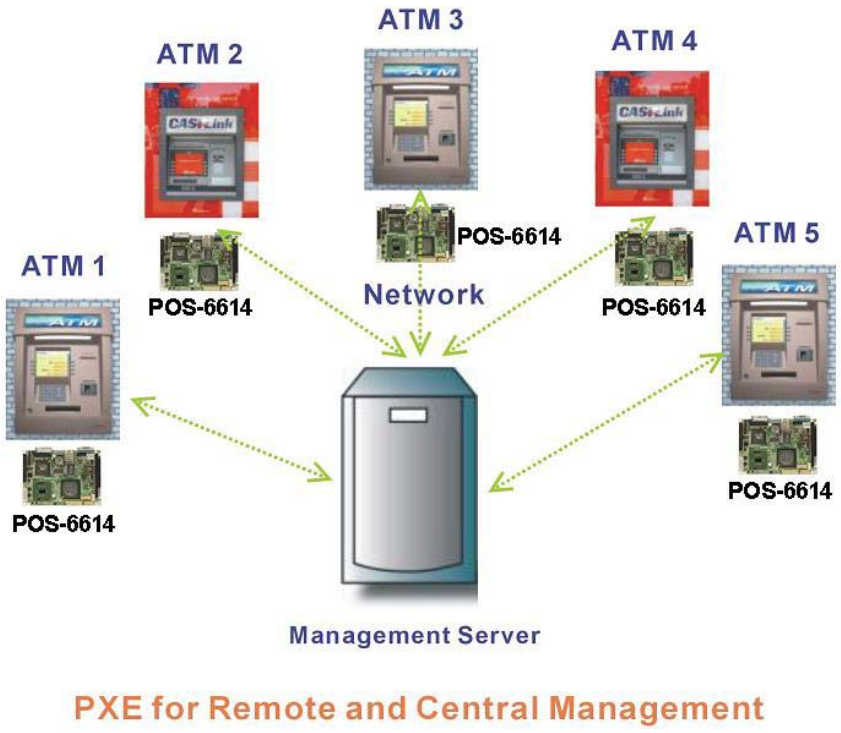


Figure 2-2: PXE: Pre-Boot Execution Environment

2.15 Super I/O

The W83697HG Super I/O features an LPC (Low Pin Count) interface that provides an economical implementation of I/O's interface with lower pin count and still maintains equivalent performance as its ISA interface counterpart. The W83697HG is made to fully comply with Microsoft PC98 and PC99 Hardware Design Guide, and meet the requirements of ACPI. The W83697HG supports hardware status monitoring for personal computers to monitor several critical hardware parameters of the system, including power supply voltages, fan speeds, and temperatures, which are very important for a high-end computer system to work stably and properly. Some features of the W83697HG Super are:

- General
  - Meet LPC Spec. 1.01
  - Support LDRQ#(LPC DMA), SERIRQ (serial IRQ)
  - Include all the features of Winbond I/O W83877TF
  - Integrate Hardware Monitor functions
  - Compliant with Microsoft PC98/PC99 Hardware Design Guide
  - Support DPM (Device Power Management), ACPI
  - Programmable configuration settings
- FDC
  - Compatible with IBM PC AT disk drive systems
  - Variable write pre-compensation with track selectable capability
  - Support vertical recording format
  - DMA enable logic
  - 16-byte data FIFOs
  - Support floppy disk drives and tape drives
  - Detects all overrun and under run conditions
  - Built-in address mark detection circuit to simplify the read electronics
  - FDD anti-virus functions with software write protect and FDD write enable signal (write data signal was forced to be inactive)
  - Completely compatible with industry standard 82077
  - 360K/720K/1.2M/1.44M/2.88M format; 250K, 300K, 500K, 1M, 2M bps data transfer rate
  - Support 3-mode FDD, and its Win95/98 driver
- UART
  - Two high-speed 16550 compatible UARTs with 16-byte send/receive FIFOs
  - MIDI compatible
  - Fully programmable serial-interface characteristics:
    - 5, 6, 7 or 8-bit characters
    - Even, odd or no parity bit generation/detection
    - 1, 1.5 or 2 stop bits generation
  - Internal diagnostic capabilities:
    - Loop-back controls for communications link fault isolation
    - Break, parity, overrun, framing error simulation
  - Programmable baud generator allows division of 1.8461 MHz and 24 MHz by 1 to (216-1)

- Maximum baud rate up to 921k bps for 14.769 MHz and 1.5M bps for 24 MHz

- Infrared
  - Support IrDA version 1.0 SIR protocol with maximum baud rate up to 115.2K bps
  - Support SHARP ASK-IR protocol with maximum baud rate up to 57,600 bps
  - Support Consumer IR with Wake-Up function.
- Parallel Port
  - Compatible with IBM parallel port
  - Support PS/2 compatible bi-directional parallel port
  - Support Enhanced Parallel Port (EPP) − Compatible with IEEE 1284 specification
  - Support Extended Capabilities Port (ECP) − Compatible with IEEE 1284 specification
  - Extension FDD mode supports disk drive B; and Extension 2FDD mode supports disk drives A and B through parallel port
  - Enhanced printer port back-drive current protection
- MIDI Port
  - The baud rate is 31.25 K baud rate
  - 16-byte input FIFO
  - 16-byte output FIFO
- General Purpose I/O Ports
  - 48 programmable general purpose I/O ports
  - General purpose I/O ports can serve as simple I/O ports, watch dog timer output, power LED output, infrared I/O pins, suspend LED output, Beep output
  - Functional in power down mode
- Hardware Monitor Functions
  - Smart fan control system, support thermal CruiseTM" and speed CruiseTM"
  - 2 thermal inputs from optionally remote thermistors or 2N3904 transistors or PentiumTM II/III thermal diode output
  - WATCHDOG comparison of all monitored values
  - Programmable hysteresis and setting points for all monitored items
  - Automatic Power On voltage detection Beep

- Issue SMI#, IRQ, OVT# to activate system protection
- Winbond Hardware DoctorTM Support
- Intel LDCMTM / Acer ADMTM compatible

- Package
  - 128-pin PQFP

2.16 Audio Codec

The POS-6614 has an integrated REALTEK ALC655 CODEC. The ALC655 CODEC is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR-based designs. Some of the features of the codec are listed below.

- Meets performance requirements for audio on PC99/2001 systems
- Meets Microsoft WHQL/WLP 2.0 audio requirements
- 16-bit Stereo full-duplex CODEC with 48KHz sampling rate
- Compliant with AC'97 Rev 2.3 specifications
- Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing
- 14.318MHz -> 24.576MHz PLL to eliminate crystal
- 12.288MHz BITCLK input
- Integrated PCBEEP generator to save buzzer
- Interrupt capability
- Three analog line-level stereo inputs with 5-bit volume control, LINE_IN, CD
- High-quality differential CD input
- Two analog line-level mono inputs: PCBEEP, PHONE-IN
- Boost preamplifier for MIC input
- LINE input shared with surround output; MIC input shared with Center and LFE output
- Built-in 50mW/20ohm amplifier for both Front-out and Surround-Out
- External Amplifier Power Down (EAPD) capability
- Power management and enhanced power saving features
- Supports Power-Off CD function
- Adjustable VREFOUT control
- Power support: Digital: 3.3V; Analog: 3.3V/5V
- Standard 48-pin LQFP package
- EAX™ 1.0 & 2.0 compatible

- Direct Sound 3D™ compatible
- A3D™ compatible
- I3DL2 compatible
- HRTF 3D positional audio
- 10-band software equalizer
- Voice cancellation and key shifting in Karaoke mode
- AVRack® Media Player
- Configuration Panel for improved user convenience

2.17 Real Time Clock

256-byte battery backed CMOS RAM

2.18 System Monitoring

The POS-6614 Motherboard is capable of self-monitoring various aspects of its operating status including:

- CPU, chipset, and battery voltage, +3.3V, +5V, and +12V
- RPM of cooling fans
- CPU and board temperatures (by the corresponding embedded sensors)

2.19 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the POS-6614 motherboard are listed below.

- Minimum Operating Temperature: 0ºC (32°F)
- Maximum Operating Temperature: 60°C (140°F)

A cooling fan and heat sink must be installed on the CPU. Thermal paste must be smeared on the lower side of the heat sink before it is mounted on the CPU. Heat sinks are also mounted on the northbridge and southbridge chipsets to ensure the operating temperature of these chips remain low.

2.20 Power Support

The POS-6614 motherboard is compatible with ATX-based power supplies.

2.21 Power Consumption

Table 2-2 shows the power consumption parameters for the POS-6614 motherboard when a Intel® Pentium® 4 processor with a clock speed of 3.0GHz, an L2 cache of 256MB and a FSB 800MHz is running with a 2GB DDR400 module.

Voltage	Current
+3.3V	3.48A
+5V	2.84A
+12V	7.12A

Table 2-2: Power Consumption

2.22 Power Management

The POS-6614 motherboard supports Advanced Configuration and Power Interface (ACPI) Specifications Revision 1.0. The ACPI specification, revision 1.0 reads:

The ACPI interface gives the operating system (OS) direct control over the power management and Plug and Play functions of a computer. When it starts, the ACPI OS takes over these functions from legacy BIOS interfaces such as the APM BIOS and the PNPBIOS. Having done this, the OS is responsible for handling Plug and Play events as well as controlling power and thermal states based on user settings and application requests. ACPI provides low-level controls so the OS can perform these functions. The functional areas covered by the ACPI specification are:

- System power management - ACPI defines mechanisms for putting the computer as a whole in and out of system sleeping states. It also provides a general mechanism for any device to wake the computer.
- Device power management - ACPI tables describe motherboard devices, their power states, the power planes the devices are connected to, and controls for putting devices into different power states. This enables the OS to put devices into low-power states based on application usage.
- Processor power management - While the OS is idle but not sleeping, it will use commands described by ACPI to put processors in low-power states.
- Plug and Play - ACPI specifies information used to enumerate and configure motherboard devices. This information is arranged hierarchically so when events such as docking and undocking take place, the OS has precise, a priori knowledge of which devices are affected by the event.
- System Events - ACPI provides a general event mechanism that can be used for system events such as thermal events, power management events, docking, device insertion and removal, etc. This mechanism is very flexible in that it does not define specifically how events are routed to the core logic chipset.
- Battery management - Battery management policy moves from the APM BIOS to the ACPI OS. The OS determines the Low battery and battery warning points, and the OS also calculates the battery remaining capacity and battery remaining life. An ACPI-compatible battery device needs either a Smart Battery subsystem interface, which is controlled by the OS directly through the embedded controller interface, or a Control Method Battery (CMBatt) interface. A CMBatt interface is completely

defined by AML control methods, allowing an OEM to choose any type of the battery and any kind of communication interface supported by ACPI.

- Thermal management - Since the OS controls the power states of devices and processors, ACPI also addresses system thermal management. It provides a simple, scaleable model that allows OEMs to define thermal zones, thermal indicators, and methods for cooling thermal zones.
- Embedded Controller - ACPI defines a standard hardware and software communications interface between an OS bus enumerator and an embedded controller. This allows any OS to provide a standard bus enumerator that can directly communicate with an embedded controller in the system, thus allowing other drivers within the system to communicate with and use the resources of system embedded controllers. This in turn enables the OEM to provide platform features that the OS and applications can use.
- System Management Bus Controller - ACPI defines a standard hardware and software communications interface between an OS bus driver and an SMBus Controller. This allows any OS to provide a standard bus driver that can directly communicate with SMBus Devices in the system. This in turn enables the OEM to provide platform features that the OS and applications can use.

2.23 Packaged Contents and Optional Accessory Items

2.23.1 Package Contents

When you unpack the POS-6614 Motherboard you should find the following components.

- 1 x POS-6614 Single Board Computer
- 1 x ATA66/100 Flat Cable
- 1 x Dual RS-232 Cable
- 2 x SATA Cable
- 1 x SATA Power Cable
- 1 x mini jumper pack
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)

2.23.2 Optional Accessory Items

The items shown in the list below are optional accessory items are purchased separately.

- CPU Cooler
- FDD cable
- USB cable
- PCI + PCIe riser card

Chapter

3

Connectors and Jumpers

3.1 Peripheral Interface Connectors

The locations of the peripheral interface connectors are shown in **Section 3.1.1**. A complete list of all the peripheral interface connectors can be seen in **Section 3.1.2**.

3.1.1 POS-6614 Motherboard Layout

Figure 3-1 shows the onboard peripheral connectors, external interface peripheral connectors and onboard jumpers on the front side of the card.

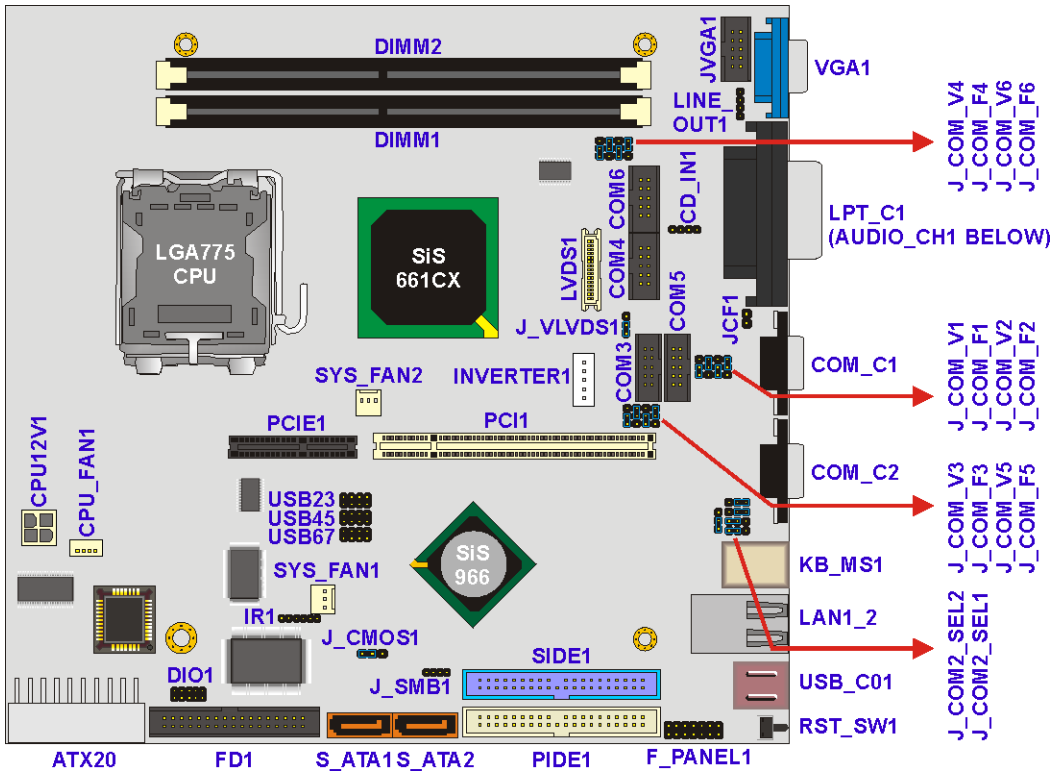


Figure 3-1: Connector and Jumper Locations (Front Side)

Figure 3-2 shows the onboard peripheral connectors on the solder side of the board.

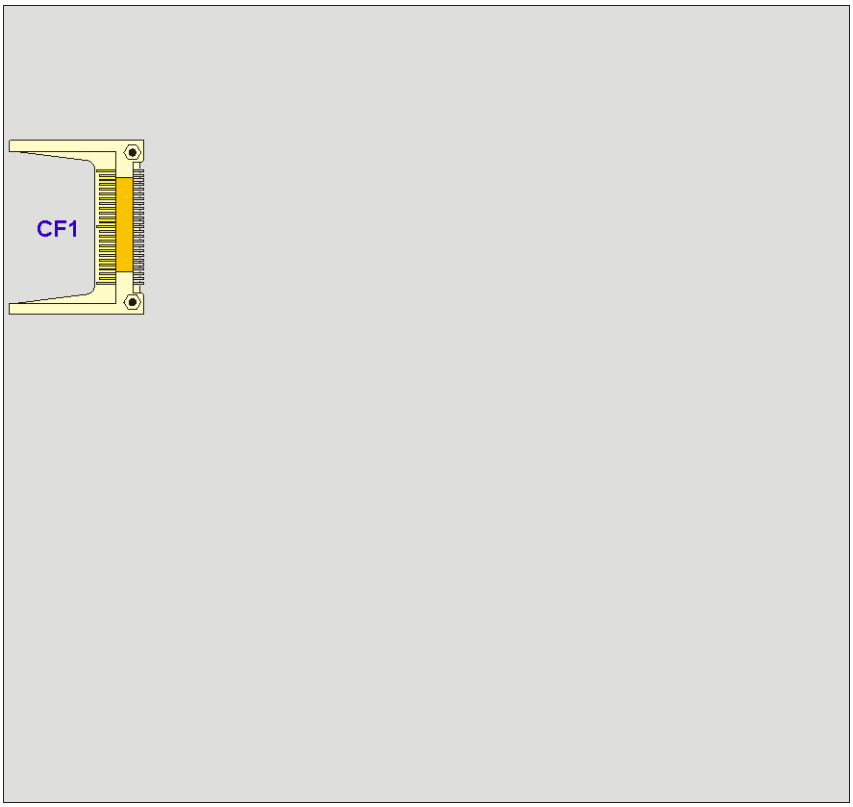


Figure 3-2: Connector and Jumper Locations (Solder Side)

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the POS-6614 motherboard. Detailed descriptions of these connectors can be found in **Section 3.2**.

Connector	Type	Label
ATX 12V Power connector	4-pin connector	CPU12V1
ATX Power connector	20-pin connector	ATX20
Audio CD In connector	4-pin header	CD_IN1
Audio Line Out connector	4-pin header	LINE_OUT1
CompactFlash Type II connector	50-pin socket	CF1
Cooling Fan connector	4-pin wafer connector	CPU_FAN1
Cooling Fan connector	3-pin wafer connector	SYS_FAN1,

Connector	Type	Label
		SYS_FAN2
Digital Input/Output connector	10-pin header	DIO1
FDD connector	34-pin header	FDD1
Front Panel connector	14-pin header	F_PANEL1
IDE Interface connector	40-pin box header	SIDE1, PIDE1
Inverter connector	5-pin wafer connector	INVERTER1
IrDA connector	6-pin header	IR1
LVDS connector	30-pin crimp connector	LVDS1
PCI connector	120-pin PCI socket	PCI1
PCIe x 4 connector	64-pin PCIe socket	PCIE1
SATA Drive Port (1.5Gb/s)	SATA disk drive port	S_ATA1, S_ATA2
Serial Communications connector	10-pin box header	COM3 thru COM6
SMBus connector	4-pin header	J_SMB1
USB connector	8-pin header	USB23, USB45, USB67
VGA connector	10-pin box header	JVGA1

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Connectors

Table 3-2 lists the external interface connectors on the POS-6614 motherboard. Detailed descriptions of the connectors can be found in **Section 3.3**.

Connector	Type	Label
Reset button	Pushbutton	RST_SW1
USB connector	Dual USB port	USB_C01
Ethernet connector	Dual RJ-45 Jack connector	LAN1_2
Keyboard/Mouse connector	PS/2 Female Combo connector	KB_MS1
Serial Communications connector	D-sub 9 Male connector	COM_C1, COM_C2
Parallel connector	DB-25 Female connector	LPT_C1
Audio connector	3 Audio Jack connector	AUDIO_CH1
VGA connector	HD-D-sub 15 Female connector	VGA1

Table 3-2: External Interface Connectors

3.1.4 Onboard Jumpers

Table 3-3 lists the onboard jumpers. Detailed descriptions of these jumpers can be found in **Section 4.6**.

Jumper	Type	Label
Clear CMOS Setup	3-pin header	J_CMOS1
COMx Signal Setup	3-pin header	J_COM_Fx
COMx Voltage Setup	3-pin header	J_COM_Vx
COM2 RS-232/422/485 Setup	12-pin header	J_COM2_SEL1
	3-pin header	J_COM2_SEL2
CompactFlash Card Setup	2-pin header	J_CF1
LVDS Voltage Select	3-pin header	J_VLVDS1

Table 3-3: Onboard Jumpers

3.2 Internal Peripheral Connectors

Internal peripheral connectors on the motherboard are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the POS-6614 motherboard.

3.2.1 ATX 12V Power Connector

CN Label: CPU12V1

CN Type: 4-pin connector

CN Location: See Figure 3-3

CN Pinouts: See Table 3-4

The ATX 12V Power connector connects 12V ATX power to the motherboard.

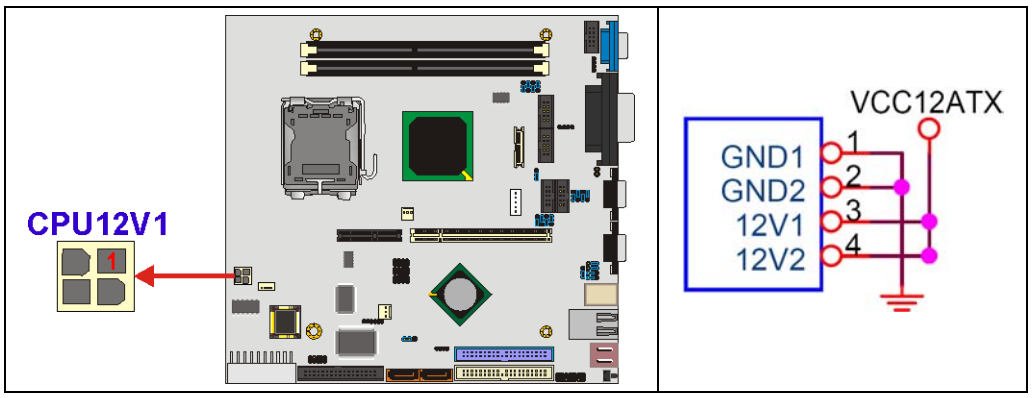


Figure 3-3: ATX 12V Power Connector Location

PIN	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 3-4: ATX 12V Power Connector Pinouts

3.2.2 ATX Power Connector

CN Label: **ATX20**

CN Type: **20-pin connector**

CN Location: **See Figure 3-4**

CN Pinouts: **See Table 3-5**

The ATX Power connector connects ATX power to the motherboard.

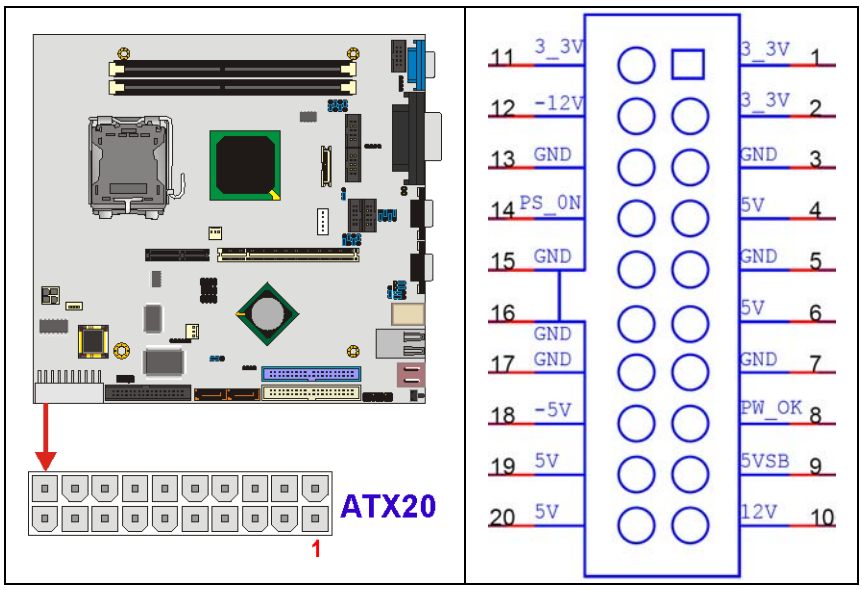


Figure 3-4: ATX Power Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+3.3Vdc	11	+3.3Vdc
2	+3.3Vdc	12	-12Vdc
3	GND	13	GND
4	+5Vdc	14	PS-ON
5	GND	15	GND
6	+5Vdc	16	GND
7	GND	17	GND
8	PWR-OK	18	-5Vdc
9	+5VSby	19	+5Vdc
10	+12Vdc	20	+5Vdc

Table 3-5: ATX Power Connector Pinouts

3.2.3 Audio CD In Connector

CN Label: CD_IN1

CN Type: 4-pin header

CN Location: See Figure 3-5

CN Pinouts: See Table 3-6

AC'97 Audio signals are interfaced through a 4-pin flat-cable connector to the CD drive.

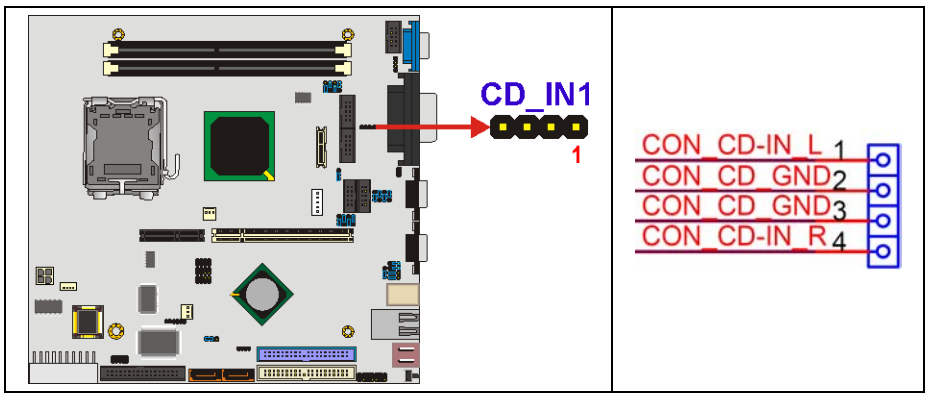


Figure 3-5: Audio CD In Connector Location

PIN	DESCRIPTION
1	CD IN_L
2	GND
3	GND
4	CD IN_R

Table 3-6: Audio CD In Connector Pinouts

3.2.4 Audio Line Out Connector

CN Label: **LINE_OUT1**

CN Type: **4-pin header**

CN Location: **See Figure 3-6**

CN Pinouts: **See Table 3-7**

AC'97 Audio signals are interfaced through a 4-pin flat-cable connector. An audio 4-pin-to-phone-jack adapter kit is required.

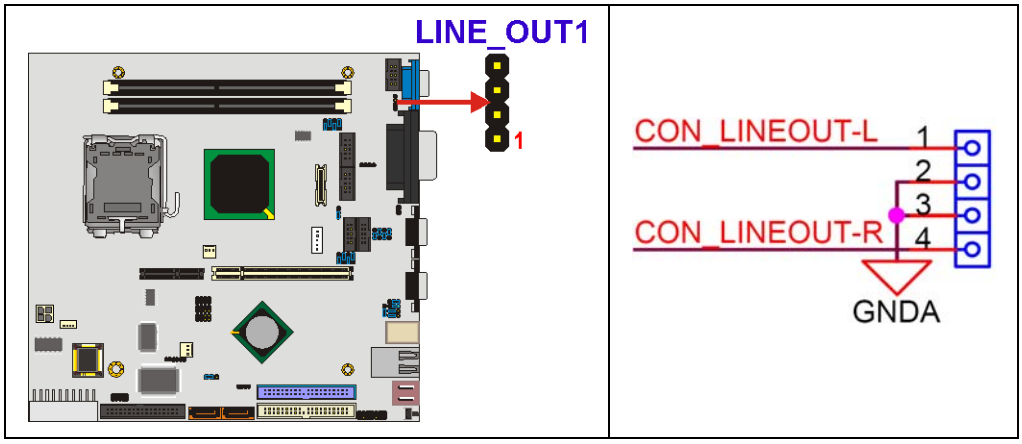


Figure 3-6: Audio Line Out Connector Location

PIN	DESCRIPTION
1	LINE OUT_L
2	GND
3	GND
4	LINE OUT _R

Table 3-7: Audio Line Out Connector Pinouts

3.2.5 CompactFlash Connector

CN Label: **CF1**

CN Type: **50-pin socket**

CN Location: **See Figure 3-7**

CN Pinouts: **See Table 3-8**

The CompactFlash connector is used to adapt Type II Compact Flash and CF+ cards for use in Type II (5 mm thick) PCMCIA card slots.

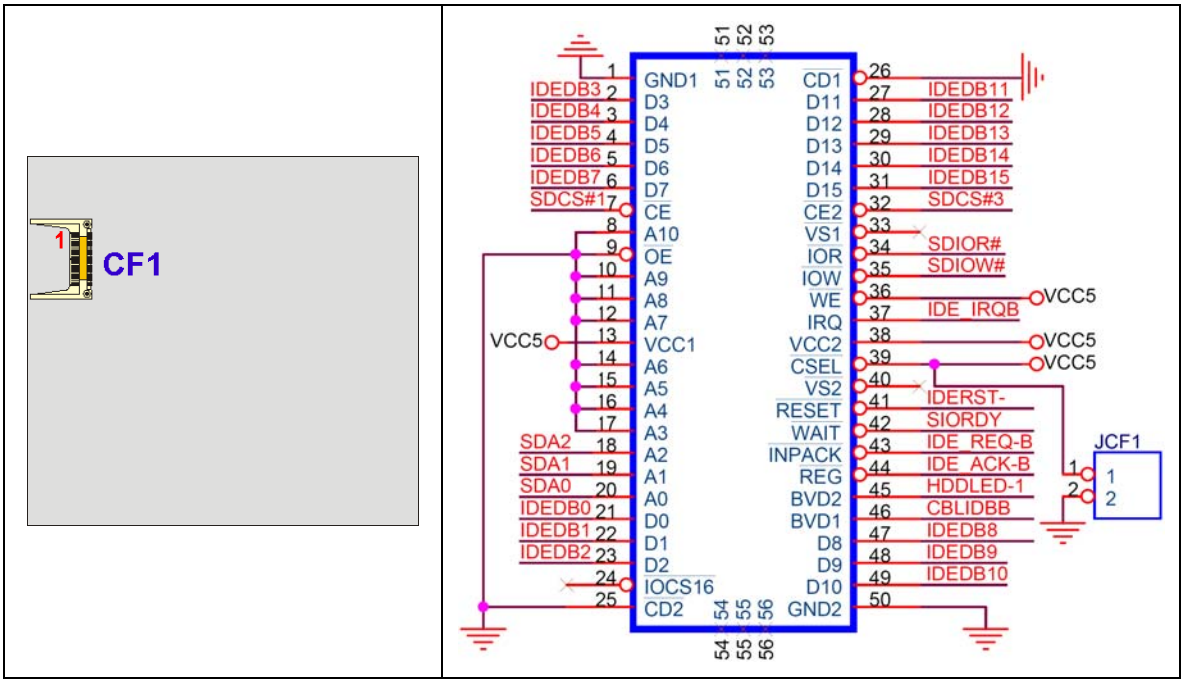


Figure 3-7: CompactFlash Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	N/C
12	N/C	37	INTERRUPT
13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	N/C
19	SA1	44	VCC_COM
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	N/C
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

Table 3-8: CompactFlash Connector Pinouts

3.2.6 Cooling Fan Connectors

CN Label:	**CPU_FAN1, SYS_FAN1, SYS_FAN2**
CN Type:	**CPU_FAN1: 4-pin wafer connector** **SYS_FAN1, SYS_FAN2: 3-pin wafer connector**
CN Location:	**See Figure 3-8**
CN Pinouts:	**See Table 3-9**

The CPU_FAN1, SYS_FAN1 and SYS_FAN2 cooling fan connectors provides a 12V current to the cooling fans. The connector has a "rotation" pin to get rotation signals from the fan and notify the system so the system BIOS can recognize the fan speed. Please note that only certain fans can issue the rotation signals.

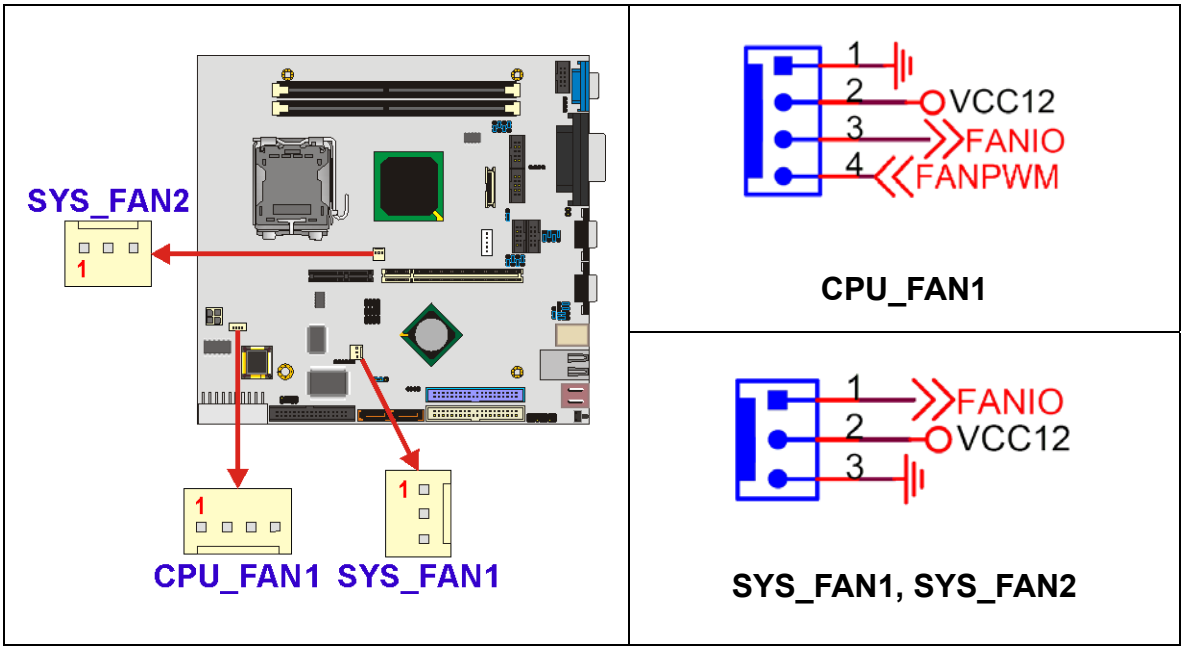


Figure 3-8: Cooling Fan Connectors Locations

PIN	CPU_FAN1	SYS_FAN1, SYS_FAN2
1	GND	Rotation Signal
2	+12V	+12V
3	Rotation Signal	GND
4	Control	

Table 3-9: Cooling Fan Connectors Pinouts

3.2.7 Digital Input/Output Connector

CN Label: DIO1

CN Type: 10-pin header (2x5 pins)

CN Location: See Figure 3-9

CN Pinouts: See Table 3-10

The digital input output (DIO) connector is managed through the Winbond W83697HG super I/O chip. The DIO connector pins are user programmable.

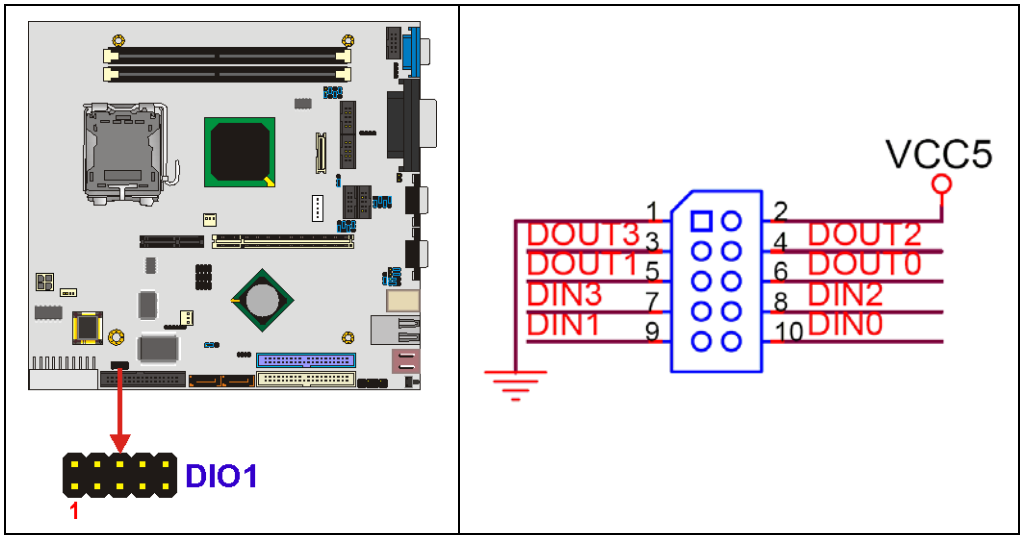


Figure 3-9: Digital Input/Output Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-10: Digital Input/Output Connector Pinouts

3.2.8 FDD Connector

CN Label: **FDD1**

CN Type: **34-pin box header (2x17 pins)**

CN Location: **See Figure 3-10**

CN Pinouts: **See Table 3-11**

The FDD connector connects to a floppy disk drive.

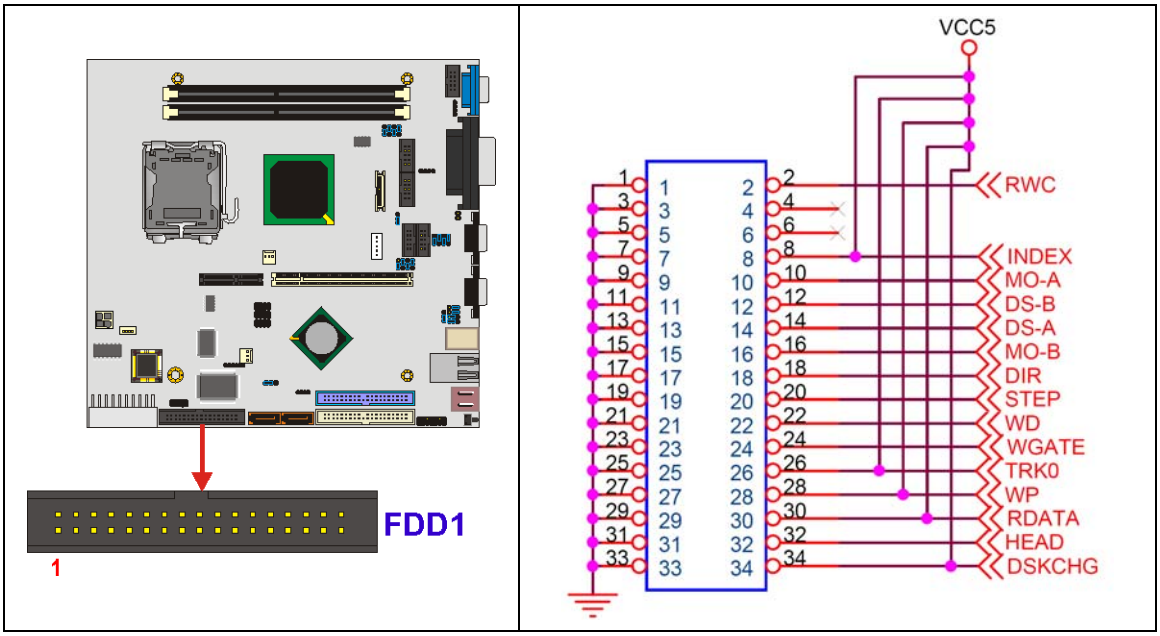


Figure 3-10: FDD Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

Table 3-11: FDD Connector Pinouts

3.2.9 Front Panel Connector

CN Label: **F_PANEL1**

CN Type: **14-pin header (2x7 pins)**

CN Location: **See Figure 3-11**

CN Pinouts: **See Table 3-12**

The Multi-panel connector provides connectivity to several external switches and indicators for monitoring and controlling the CPU board.

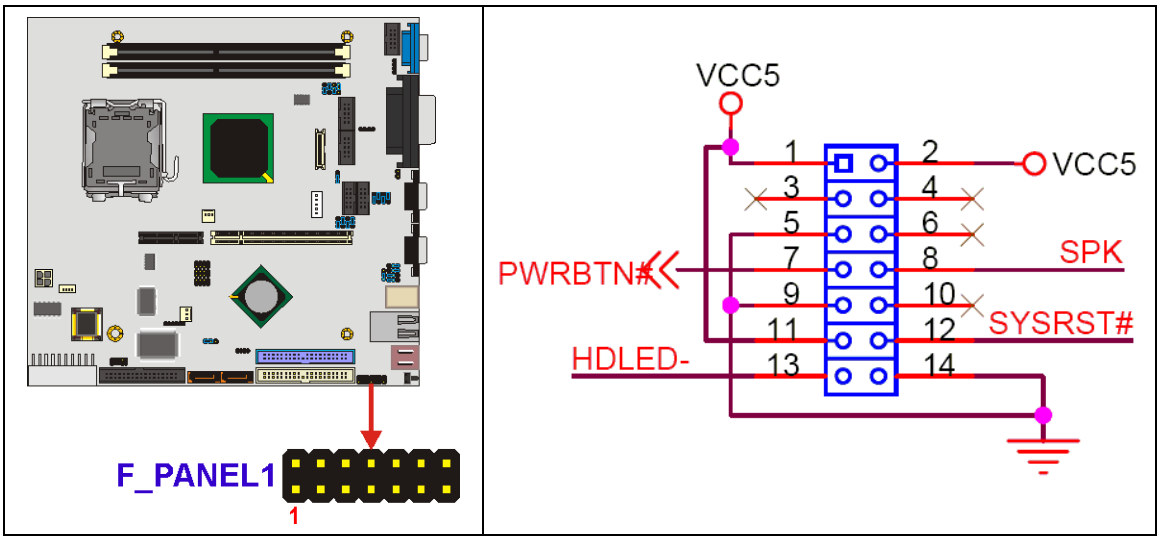


Figure 3-11: Front Panel Connector Location

	PIN	DESCRIPTION	PIN	DESCRIPTION	
Power LED	1	+5V	2	+5V	Speaker
	3	N/C	4	N/C	
	5	GROUND	6	N/C	
PWRBTN	7	PWRBTN-	8	Speaker	
	9	GND	10	N/C	RESET
HDDLED	11	+5V	12	Reset-	
	13	HDLED-	14	GND	

Table 3-12: Front Panel Connector Pinouts

3.2.10 IDE Interface Connectors

CN Label: **PIDE1 (Primary), SIDE2 (Secondary)**

CN Type: **40-pin box header (2x20 pins)**

CN Location: **See Figure 3-12**

CN Pinouts: **See Table 3-13**

The IDE Interface connectors provide connectivity for four IDE devices.

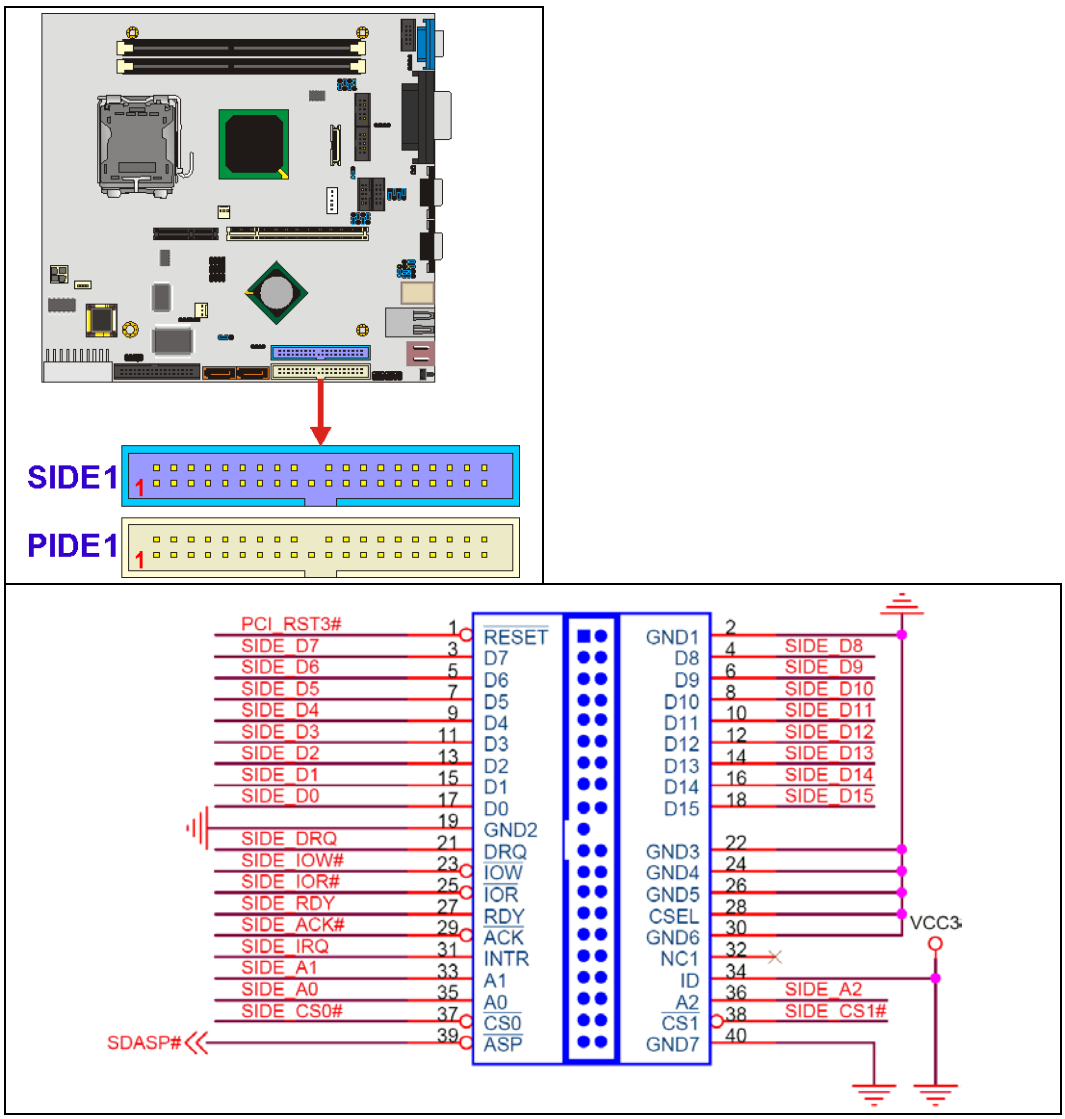


Figure 3-12: IDE Interface Connectors Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RESET#	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	GND
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA 1	34	N/C
35	SA 0	36	SA 2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

Table 3-13: IDE Interface Connectors Pinouts

3.2.11 Inverter Connector

CN Label: **INVERTER1**

CN Type: **5-pin header**

CN Location: **See Figure 3-13**

CN Pinouts: **See Table 3-14**

The Inverter connector connects to the LCD backlight.

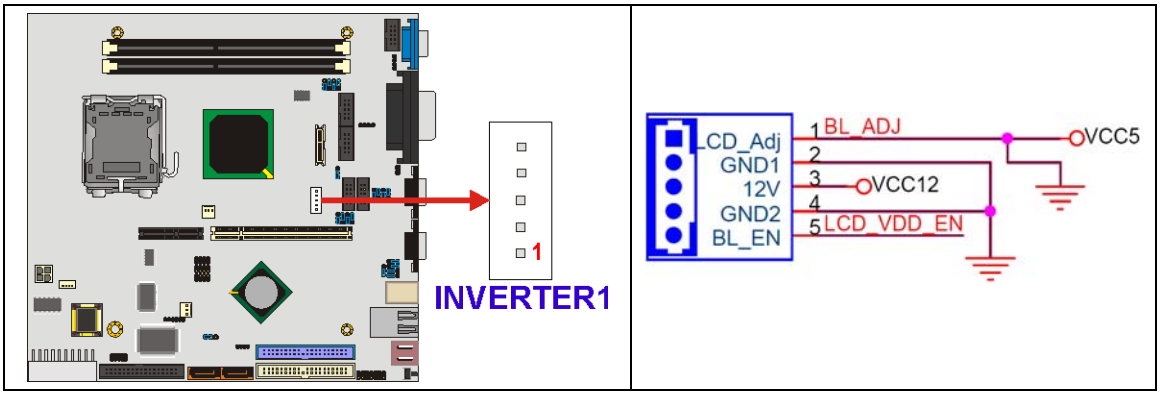


Figure 3-13: Inverter Connector Location

PIN	DESCRIPTION
1	LCD_ADJ
2	GND
3	+12V
4	GND
5	BL_EN

Table 3-14: Inverter Connector Pinouts

3.2.12 IrDA Connector

CN Label: **IR1**

CN Type: **6-pin header**

CN Location: **See Figure 3-14**

CN Pinouts: **See Table 3-15**

POS-6614 has a built-in IrDA port which supports Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. To use the IrDA port, configure the FIR or ASKIR model in the Peripheral Setup COM2 in BIOS. The normal RS-232 COM2 will be disabled.

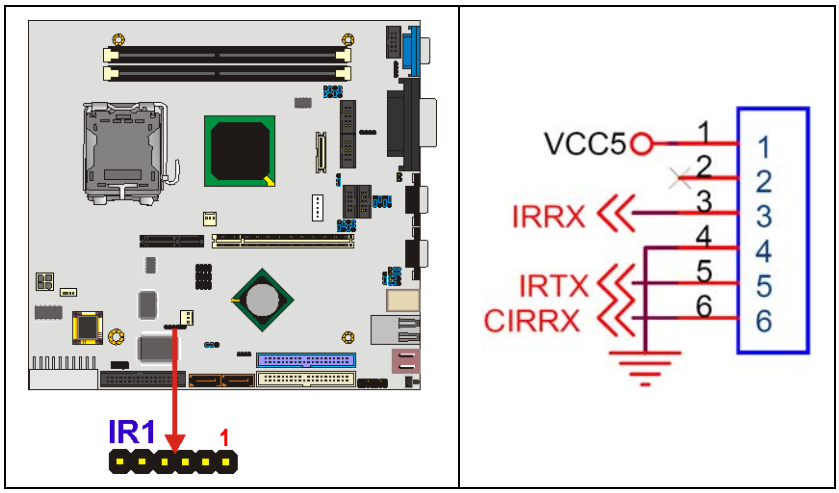


Figure 3-14: IrDA Connector Location

PIN	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX
6	CIR-RX

Table 3-15: IrDA Connector Pinouts

3.2.13 LVDS Connector

CN Label: **LVDS1**

CN Type: **30-pin crimp connector**

CN Location: **See Figure 3-15**

CN Pinouts: **See Table 3-16**

The LVDS connector connects to a one or two channel (18-bit or 24-bit) LVDS panel.

NOTE:

The supplied voltage can be selected via the **J_VLVDS1** jumper.

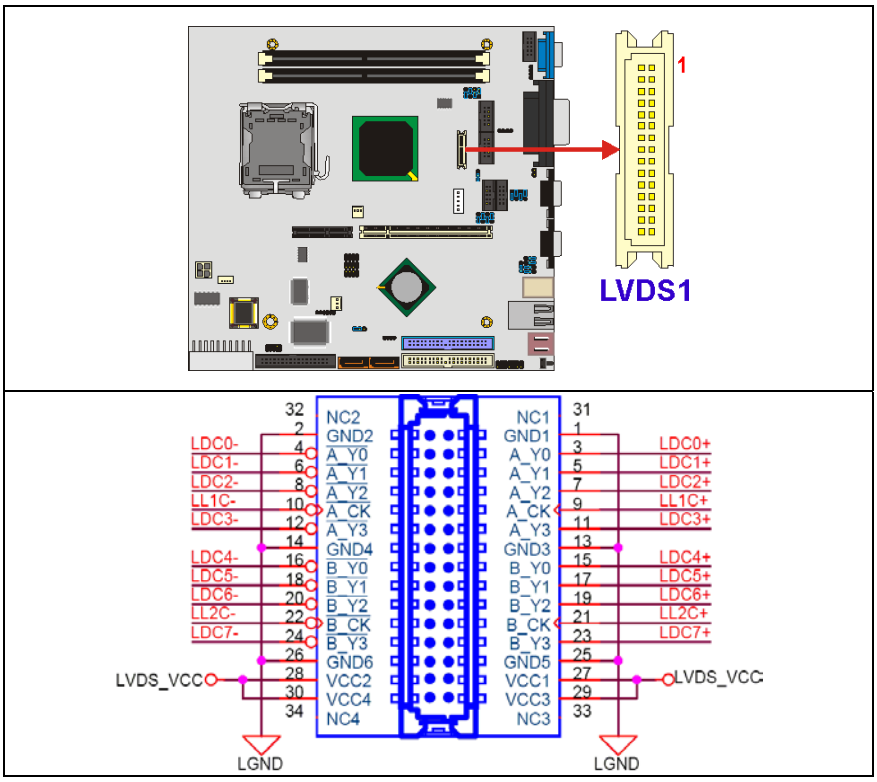


Figure 3-15: LVDS Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND1	2	GND2
3	A_Y0	4	A_Y0#
5	A_Y1	6	A_Y1#
7	A_Y2	8	A_Y2#
9	A_CK	10	A_CK#
11	A_Y3	12	A_Y3#
13	GND3	14	GND4
15	B_Y0	16	B_Y0#
17	B_Y1	18	B_Y1#
19	B_Y2	20	B_Y2#
21	B_CK	22	B_CK#
23	B_Y3	24	B_Y3#
25	GND5	26	GND6
27	VCC1	28	VCC2
29	VCC3	30	VCC4

Table 3-16: LVDS Connector Pinouts

3.2.14 PCI Connector

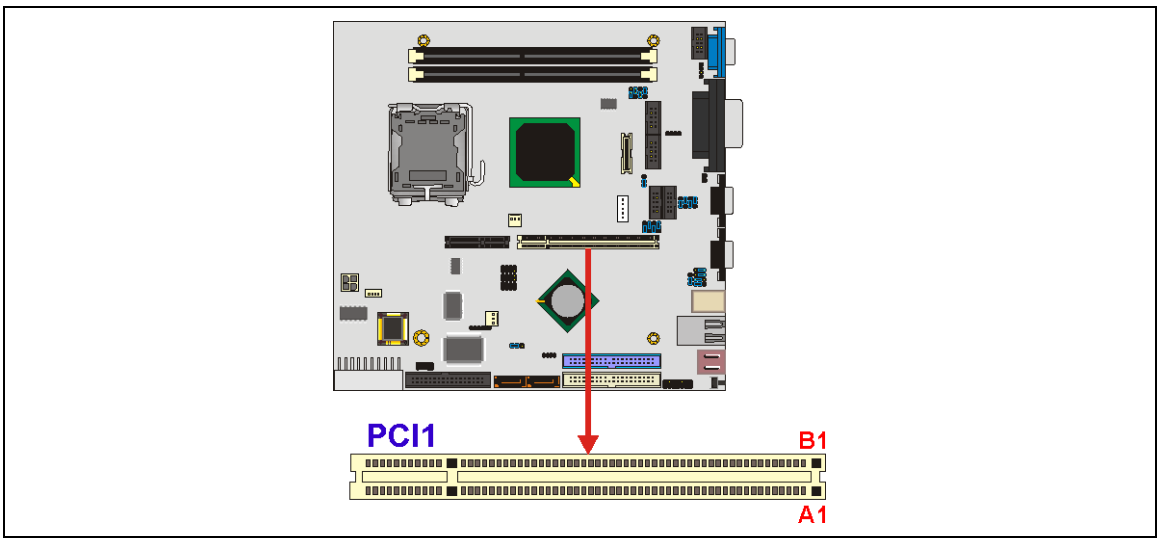
CN Label: **PCI1**

CN Type: **120-pin PCI socket**

CN Location: **See Figure 3-16**

CN Pinouts: **See** Error! Reference source not found.

Use the PCI slot connector to add auxiliary boards.



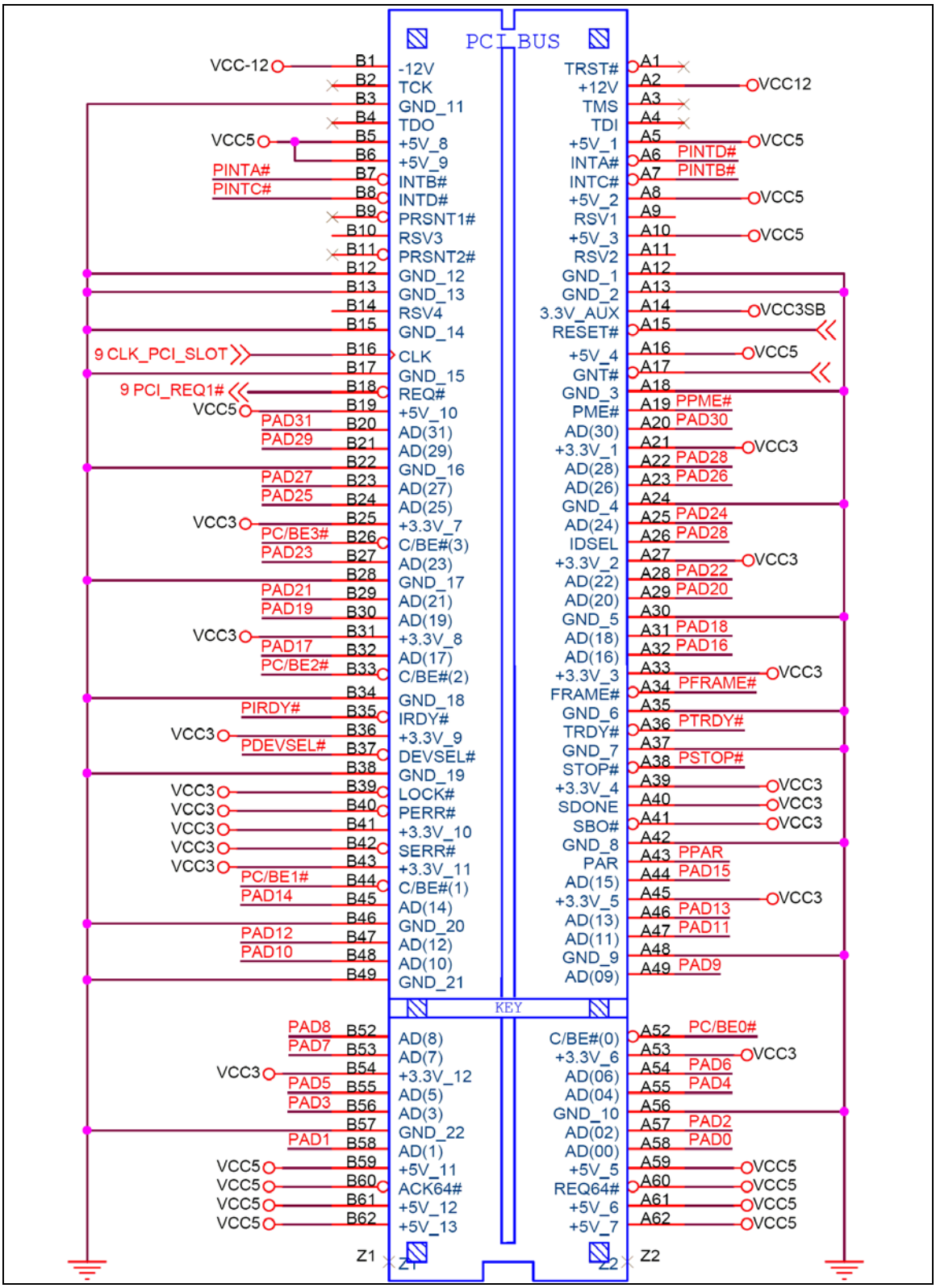


Figure 3-16: PCI Connector Location

Pin	Side B	Side A	Pin	Side B	Side A
1	Reserved	Ground	32	AD[17]	AD[16]
2	TCK	+12V	33	C/BE[2]#	+3.3V
3	Ground	TMS	34	Ground	FRAME#
4	TDO	TDI	35	IRDY#	Ground
5	+5V	+5V	36	+3.3V	TRDY#
6	+5V	INTA#	37	DEVSEL#	Ground
7	INTB#	INTC#	38	PCIXCAP	STOP#
8	INTD#	+5V	39	LOCK#	+3.3V
9	PRSNT1#	Reserved	40	PERR#	SMBCLK
10	Reserved	+5V	41	+3.3V	SMBDAT
11	PRSNT2#	Reserved	42	SERR#	Ground
12	Ground	Ground	43	+3.3V	PAR
13	Ground	Ground	44	C/BE[1]#	AD[15]
14	Reserved	3.3Vaux	45	AD[14]	+3.3V
15	Ground	RST#	46	Ground	AD[13]
16	CLK	+5V	47	AD[12]	AD[11]
17	Ground	GNT#	48	AD[10]	Ground
18	REQ#	Ground	49	M66EN	AD[09]
19	+5V	PME#	50	KEYWAY	
20	AD[31]	AD[30]	51	KEYWAY	
21	AD[29]	+3.3V	52	AD[08]	C/BE[0]#
22	Ground	AD[28]	53	AD[07]	+3.3V
23	AD[27]	AD[26]	54	+3.3V	AD[06]
24	AD[25]	Ground	55	AD[05]	AD[04]
25	+3.3V	AD[24]	56	AD[03]	Ground
26	C/BE[3]#	IDSEL	57	Ground	AD[02]
27	AD[23]	+3.3V	58	AD[01]	AD[00]
28	Ground	AD[22]	59	+5V	+5V
29	AD[21]	AD[20]	60	ACK64#	REQ64#
30	AD[19]	Ground	61	+5V	+5V
31	+3.3V	AD[18]	62	+5V	+5V

Table 3-17: PCI Connector Pinouts

3.2.15 PCIe Connector

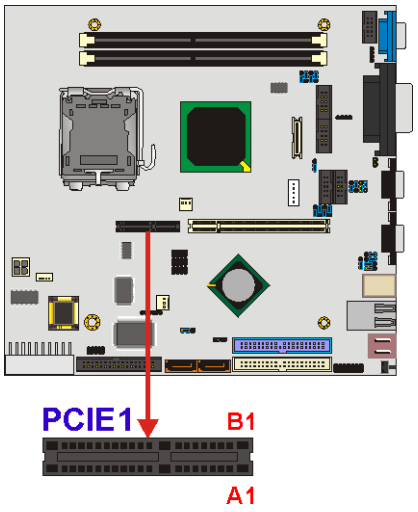
CN Label: **PCIE1**

CN Type: **64-pin PCIe socket**

CN Location: **See Figure 3-17**

CN Pinouts: **See Table 3-18**

Use the PCIe slot connector to add auxiliary boards.



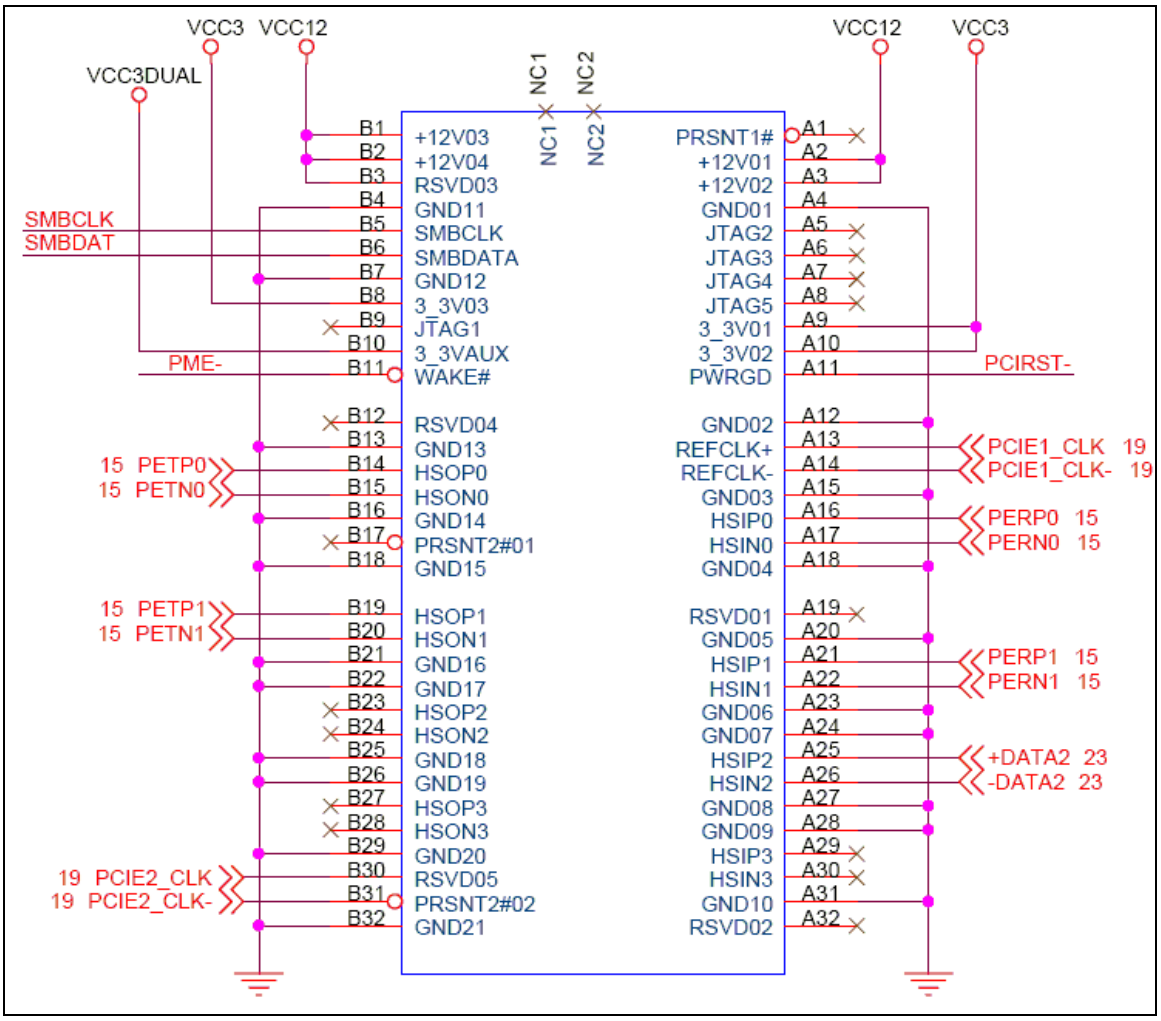


Figure 3-17: PCIe Connector Location

	Side B Connector		Side A Connector	
Pin	**Name**	**Description**	**Name**	**Description**
1	**+12v**	**+12 volt power**	**PRSNT#1**	**Hot plug presence detect**
2	**+12v**	**+12 volt power**	**+12v**	**+12 volt power**
3	**RSVD**	**Reserved**	**+12v**	**+12 volt power**
4	**GND**	**Ground**	**GND**	**Ground**
5	**SMCLK**	**SMBus clock**	**JTAG2**	**TCK**
6	**SMDAT**	**SMBus data**	**JTAG3**	**TDI**
7	**GND**	**Ground**	**JTAG4**	**TDO**
8	**+3.3v**	**+3.3 volt power**	**JTAG5**	**TMS**

	Side B Connector		Side A Connector	
Pin	Name	Description	Name	Description
9	JTAG1	+TRST#	+3.3v	+3.3 volt power
10	3.3Vaux	3.3v volt power	+3.3v	+3.3 volt power
11	WAKE#	Link Reactivation	PWRGD	Power Good
12	RSVD	Reserved	GND	Ground
13	GND	Ground	REFCLK+	Reference Clock
14	HSOp(0)	Transmitter Lane	REFCLK-	Differential pair
15	HSOn(0)	0,Differential pair	GND	Ground
16	GND	Ground	HSIp(0)	Receiver Lane 0,
17	PRSNT#2	Hotplug detect	HSIn(0)	Differential pair
18	GND	Ground	GND	Ground
19	HSOp(1)	Transmitter Lane 1,Differential pair	RSVD	Reserved
20	HSOn(1)		GND	Ground
21	GND	Ground	HSIp(1)	Receiver Lane 1,
22	GND	Ground	HSIn(1)	Differential pair
23	HSOp(2)	Transmitter Lane 2, Differential pair	GND	Ground
24	HSOn(2)		GND	Ground
25	GND	Ground	HSIp(2)	Receiver Lane 2,
26	GND	Ground	HSIn(2)	Differential pair
27	HSOp(3)	Transmitter Lane 3,	GND	Ground
28	HSOn(0)	Differential pair	GND	Ground
29	GND	Ground	HSIp(3)	Receiver Lane 3,
30	RSVD	Reserved	HSIn(3)	Differential pair
31	PRSNT#2	Hot plug detect	GND	Ground
32	GND	Ground	RSVD	Reserved

Table 3-18: PCIe Connector Pinouts

3.2.16 SATA Drive Port

CN Label: **S_ATA1, S_ATA2**

CN Type: **SATA disk drive port**

CN Location: **See Figure 3-18**

CN Pinouts: **See Table 3-19**

The SATA drive ports provide connectivity to SATA drives with a maximum data transfer rate of 1.5Gb/s.

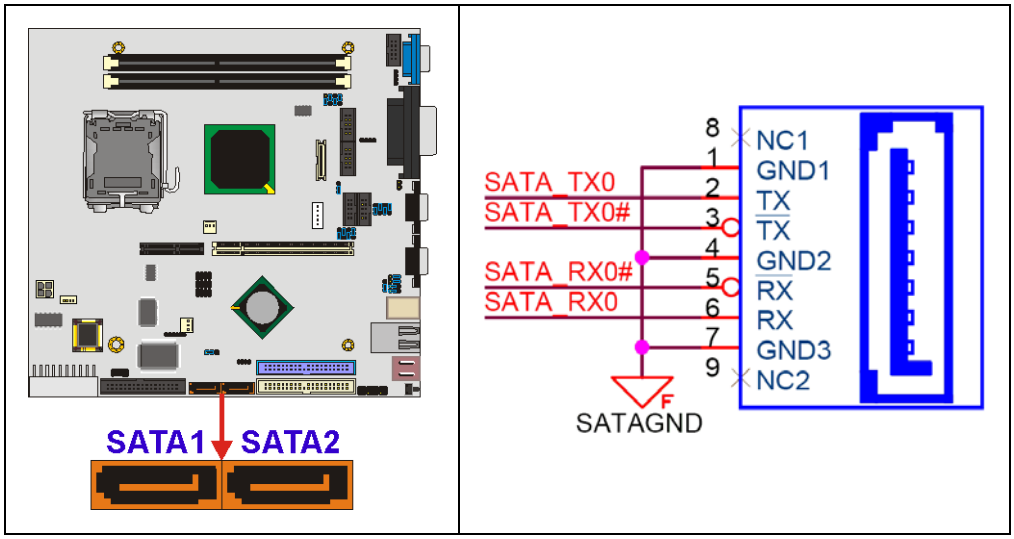


Figure 3-18: SATA Drive Port Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

Table 3-19: SATA Drive Port Pinouts

CAUTION!

SATA hard drives may come with both a 4P power connector and a SATA power interface. Attach either the 4P connector or the SATA power cable to the SATA hard drives. ***DO NOT*** attach both the power connectors to your SATA hard drives at the same time! Doing so will cause damage.

NOTE:

1. SATA is supported by:
   - Windows 2000 SP4
   - Windows XP SP1
   - Windows 2003, or later versions.
2. Older OSes, such as Windows 98SE or ME, do not support the SATA interface.

3.2.17 Serial Communications Connector

CN Label:	**COM3, COM4, COM5, COM6**
CN Type:	**10-pin box headers (2x5 pins)**
CN Location:	**See Figure 3-19**
CN Pinouts:	**See Table 3-20**

The POS-6614 offers four ten-pin box headers for RS-232 serial connections.

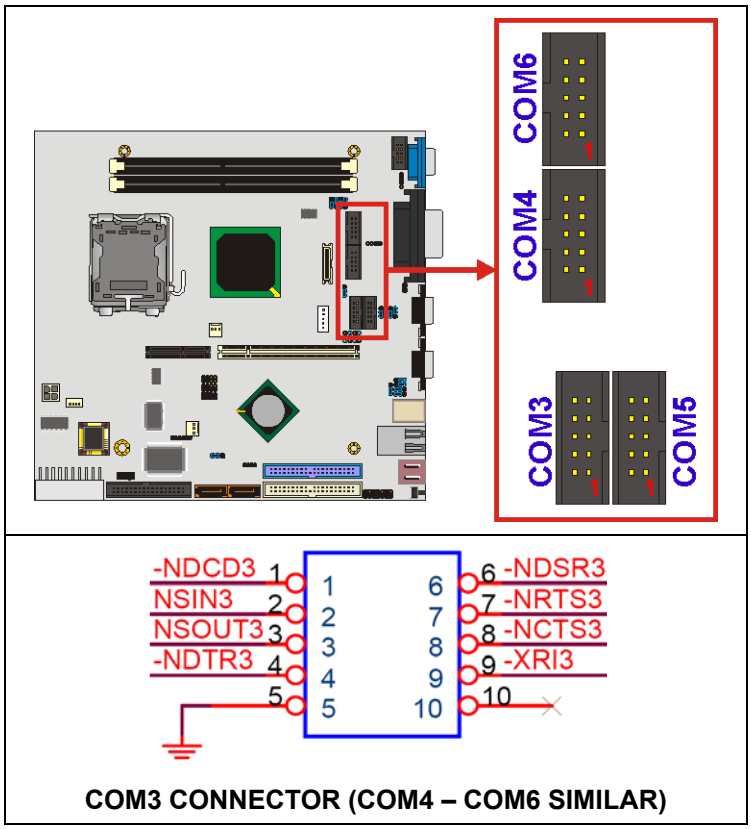


Figure 3-19 Serial Communications Connector Locations

All COM connectors provide RS-232 serial connections with the following pinouts.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	NC

Table 3-20: RS-232 Serial Communications Connector Pinouts

3.2.18 SMBus Connector

CN Label: **J_SMB1**

CN Type: **4-pin headers**

CN Location: **See Figure 3-20**

CN Pinouts: **See Table 3-21**

The SMBus is a two-wire bus used for communication with low-bandwidth devices on a motherboard such as power related chips and temperature sensors.

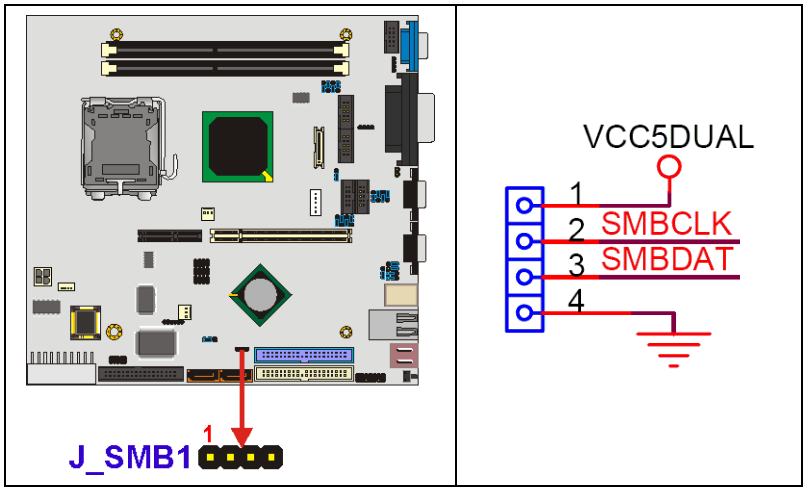


Figure 3-20 SMBus Connector Locations

PIN	DESCRIPTION
1	5V
2	SMBCLK
3	SMBDATA
4	GND

Table 3-21: SMBus Connector Pinouts

3.2.19 USB Connectors

CN Label: **USB23, USB45, USB67**

CN Type: **8-pin header (2x4 pins)**

CN Location: **See Figure 3-21**

CN Pinouts: **See Table 3-22**

In addition to the dual USB connector on the external interface panel, the POS-6614 has three on-board 8-pin headers that provide connectivity to six USB 2.0 ports. The USB ports are used for I/O bus expansion.

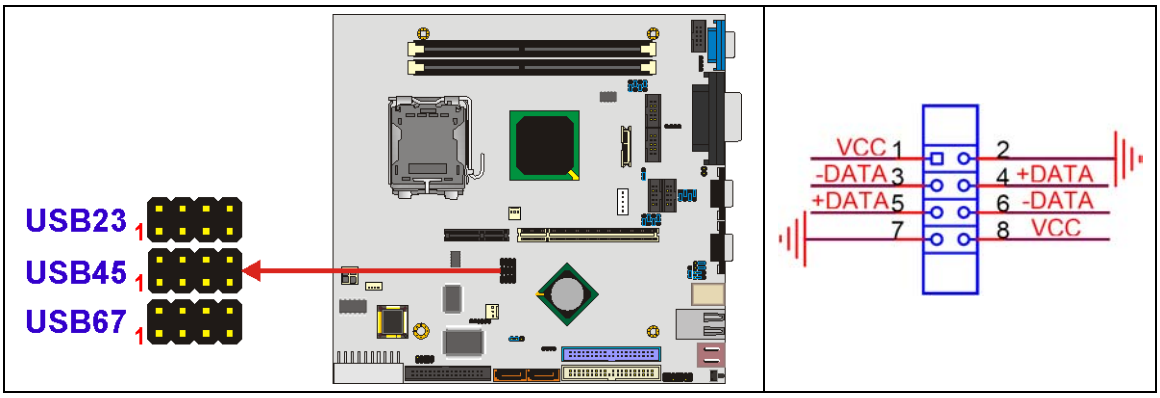


Figure 3-21 USB Connector Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	8	VCC
3	USBD0-	6	USBD0-
5	USBD0+	4	USBD0+
7	GND	2	GND

Table 3-22: USB Connector Pinouts

3.2.20 VGA Connector

CN Label: JVGA1

CN Type: 10-pin box header (2x5 pins)

CN Location: See Figure 3-22

CN Pinouts: See Table 3-23

The VGA connector is an internal VGA connector.

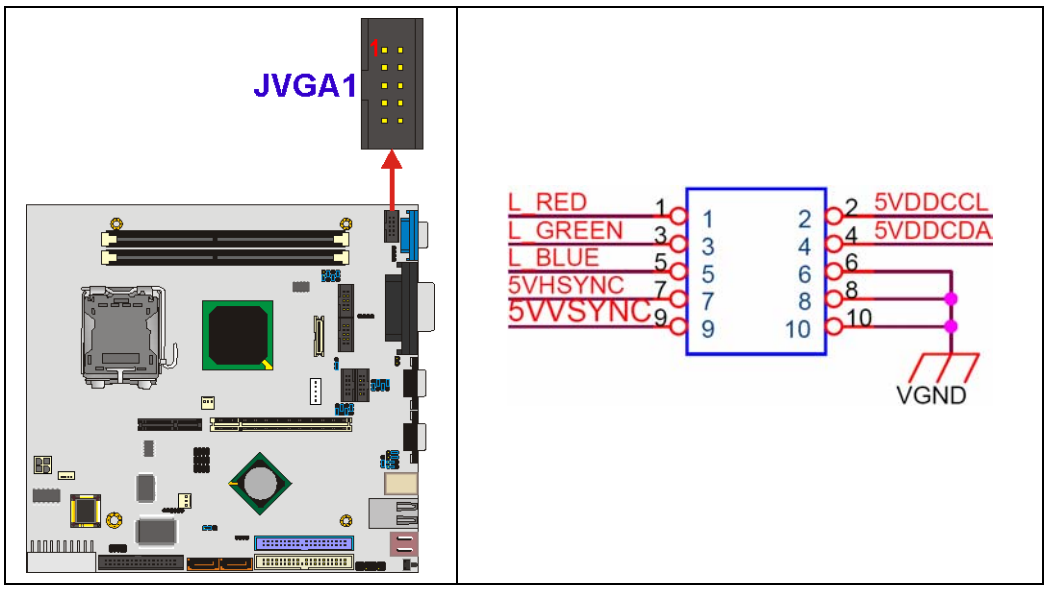


Figure 3-22 VGA Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	SMCLK
3	GREEN	4	SMDATA
5	BLUE	6	GND
7	H-SYNC	8	GND
9	V-SYNC	10	GND

Table 3-23: VGA Connector Pinouts

3.3 External Peripheral Interface Connectors

Figure 3-23 shows the POS-6614 Motherboard external peripheral connector panel. The peripheral connectors on the panel can be connected to devices externally when the motherboard is installed in a chassis. The external peripheral connectors are:

- 1 x Reset button (labeled 1)
- 2 x USB 2.0 ports (labeled 2)
- 2 x RJ-45 GbE connectors (labeled 3)
- 1 x Keyboard/Mouse connector (labeled 4)
- 2 x Serial port connectors (labeled 5 and 6)
- 1 x Parallel port connector (labeled 7)
- 1 x 3-jack audio connector (labeled 8)
- 1 x VGA connector (labeled 9

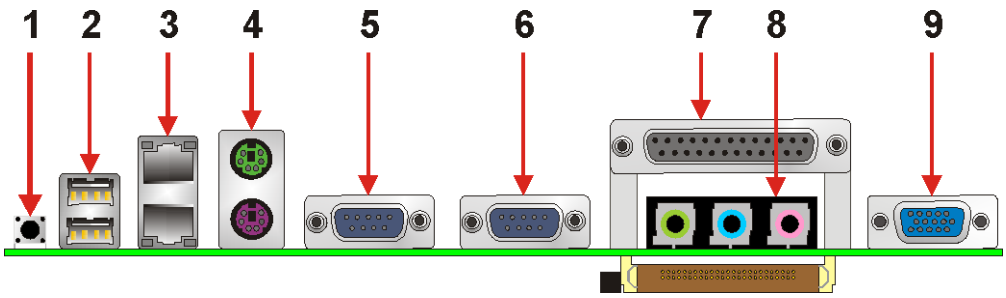


Figure 3-23: POS-6614 Motherboard External Peripheral Connector Panel

3.3.1 Reset Button

CN Label: **RST_SW1**

CN Type: **Reset button**

CN Location: **See Figure 3-23 (labeled 1)**

CN Pinouts: **See Table 3-24**

Use the reset button to reset the system.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Reset	2	GND

Table 3-24: Reset Button Pinouts

3.3.2 USB Connectors

CN Label: **USB_C01**

CN Type: **Dual USB port**

CN Location: **See Figure 3-23 (labeled 2)**

CN Pinouts: **See Table 3-25**

USB devices connect directly to the USB connectors on the external peripheral connector panel.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	5	VCC
2	USBD0-	6	USBD0-
3	USBD0+	7	USBD0+
4	GND	8	GND

Table 3-25: USB Connector Pinouts

3.3.3 Ethernet Connector

CN Label: **LAN_2**

CN Type: **Dual RJ-45 Jack connector**

CN Location: **See Figure 3-23 (labeled 3)**

CN Pinouts: **See Table 3-26 and Figure 3-24**

A 1Gb connection can be made between the Ethernet connectors and a Local Area Network (LAN) through a network hub.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX+ (or MDX0+)	5	N/C (or MDX2-)
2	TX- (or MDX0-)	6	RX- (or MDX1-)
3	RX+ (or MDX1+)	7	N/C (or MDX3+)
4	N/C (or MDX2+)	8	N/C (or MDX3-)
13	MDX0+	17	MDX2-
14	MDX0-	18	MDX1-
15	MDX1+	19	MDX3+
16	MDX2+	20	MDX3-
1	TX+ (or MDX0+)	5	N/C (or MDX2-)
2	TX- (or MDX0-)	6	RX- (or MDX1-)

Table 3-26: Ethernet Connector Pinouts

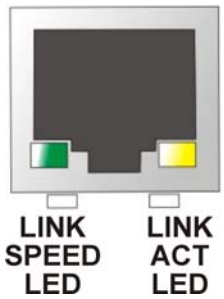


Figure 3-24: Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green / orange and one yellow. The green / orange LED indicates the speed and the yellow LED indicates activity or is linked on the port (**Table 3-27**).

SPEED LED		LINK LED	
Status	**Description**	**Status**	**Description**
ORANGE GREEN	ON: 1000Mb ON: 100Mb OFF: 10Mb	YELLOW	ON: Linked Flashing: Activity

Table 3-27: Ethernet Connector LEDs

3.3.4 Keyboard/Mouse Connector

CN Label: **KB_MS1**

CN Type: **Dual PS/2**

CN Location: **See Figure 3-23 (labeled 4)**

CN Pinouts: **See Figure 3-25, Table 3-28 and Table 3-29**

The POS-6614 motherboard keyboard and mouse connectors are standard PS/2 connectors.

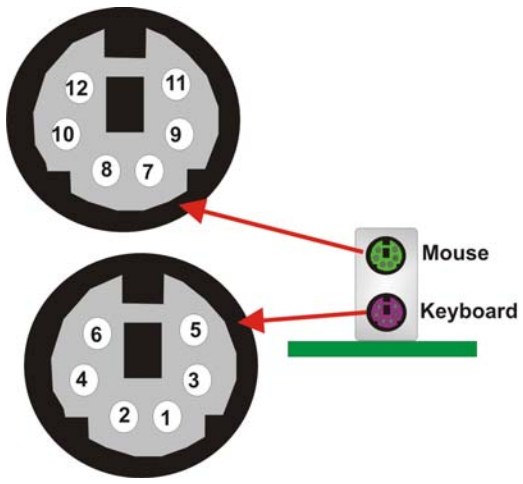


Figure 3-25: Dual PS/2 Pinouts and Configuration

PIN	DESCRIPTION
1	KB DATA
2	NC
3	GND
4	VCC
5	KB CLOCK
6	NC

Table 3-28: Keyboard Connector Pinouts

PIN	DESCRIPTION
7	MS DATA
8	NC
9	GND
10	VCC
11	MS CLOCK
12	NC

Table 3-29: Mouse Connector Pinouts

3.3.5 Serial Communications Connector

CN Label: COM_C1, COM_C2

CN Type: D-sub 9 Male connector

CN Location: See Figure 3-23 (labeled 5 and 6)

CN Pinouts: See Figure 3-26, Table 3-30, Table 3-31 and Table 3-32

The serial connectors on the external interface panel provide serial connection in the RS-232/422/485 modes. Refer to the following tables as well as the jumper settings section for more information.

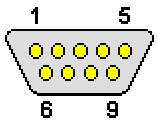


Figure 3-26: Serial Communications Connector Pinout Locations

PIN	Description	PIN	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTX
4	DTR	9	RI
5	GND		

Table 3-30: RS-232 Mode COM1, COM2 Connector Pinouts

PIN	Description	PIN	Description
1	TXD-	6	RX-
2	TXD+	7	RX+
3	NC	8	NC
4	NC	9	Voltage
5	NC		

Table 3-31: COM2 RS-422 Mode Connector Pinouts

PIN	Description	PIN	Description
1	RTX-	6	NC
2	RTX+	7	NC
3	NC	8	NC
4	NC	9	Voltage
5	NC		

Table 3-32: COM2 RS-485 Mode Connector Pinouts

3.3.6 Parallel Connector

CN Label: LPT_C1

CN Type: DB-25 Female connector

CN Location: See Figure 3-23 (labeled 7)

CN Pinouts: See Figure 3-27 and Table 3-33

The POS-6614 motherboard includes one external parallel port, accessed through 25-pin D-type female connector LPT1. These ports are usually connected to a printer.

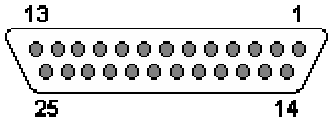


Figure 3-27: Parallel Connector Pinout Locations

PIN	Description	PIN	Description
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND		

Table 3-33: Parallel Connector Pinouts

3.3.7 Audio Connector

CN Label: **AUDIO_CH1**

CN Type: **3 Phone Jack connector**

CN Location: **See Figure 3-23 (labeled 8)**

CN Pinouts: **See Figure 3-28 and Table 3-34**

The POS-6614 motherboard includes three external audio jacks for mic in, line in and speaker out functions.

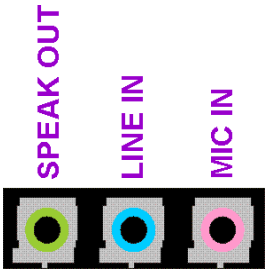


Figure 3-28: Audio Connector Locations

Color	Description
RED	MIC IN
BLUE	LINE IN
GREEN	SPEAK OUT

Table 3-34: Audio Connector Jacks

3.3.8 VGA Connector

CN Label: VGA1

CN Type: HD-D-sub 15 Female connector

CN Location: See Figure 3-23 (labeled 9)

CN Pinouts: See Figure 3-29 and Table 3-35

The standard HD-D-sub 15 female connector connects to a CRT or LCD monitor.

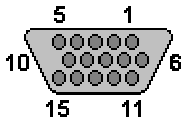


Figure 3-29: VGA Connector

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDC CLK		

Table 3-35: VGA Connector Pinouts

3.4 On-board Jumpers

The POS-6614 has several on-board jumpers. Refer to **Section 4.6** for jumper configuration settings.

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Chapter

4

Installation and Configuration

4.1 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the motherboard is installed. All installation notices pertaining to the installation of the motherboard should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the motherboard and injury to the person installing the motherboard.

4.1.1 Anti-static Precautions

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the POS-6614 motherboard. (Dry climates are especially susceptible to ESD.) It is therefore critical that whenever the POS-6614 motherboard (or any other electrical component) is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***: Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.

4.1.2 Installation Notices

Before and during the installation please DO the following:

- **Read the user manual**:
  - The user manual provides a complete description of the POS-6614 motherboard installation instructions and configuration options.
- **Wear an electrostatic discharge cuff (ESD)**:
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.

- **Place the motherboard on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power to the POS-6614 motherboard off**:
  - When working with the POS-6614 motherboard, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the POS-6614 motherboard DO NOT:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.2 Unpacking

NOTE:

If any of the items listed below are missing when the POS-6614 motherboard is unpacked, do not proceed with the installation. Contact the POS-6614 motherboard reseller or vendor.

4.2.1 Unpacking Precautions

Some components on POS-6614 motherboard are very sensitive to static electricity and can be damaged by a sudden rush of power. To protect the POS-6614 motherboard from being damaged, by ESD follow these precautions:

- Any person handling the POS-6614 motherboard should be grounded. This removes static charge before the POS-6614 motherboard is touched. To remove static electricity, wear a grounded wrist strap at all times or frequently touch any conductive materials that are connected to the ground.

- Handle the POS-6614 motherboard by its edges. Do not touch the IC chips, leads or circuitry unnecessarily.
- Do not place the PCB on top of the anti-static bag. Only the inside of the bag is safe from static discharge.

4.2.2 Checklist

When unpacking the POS-6614 motherboard, please make sure that the package contains the following items.

- 1 x POS-6614 Single Board Computer
- 1 x ATA66/100 Flat Cable
- 1 x Dual RS-232 Cable
- 2 x SATA Cable
- 1 x SATA Power Cable
- 1 x mini jumper pack
- 1 x Utility CD
- 1 x QIG (Quick Installation Guide)

If one or more of these items are missing, please contact the reseller or vendor the POS-6614 motherboard was purchased from. Do not proceed any further with the installation.

4.3 POS-6614 Motherboard Installation

WARNING:

Never run the motherboard without the appropriate heat sinks and coolers. Heat sinks and coolers can be ordered from IEI Technology or purchased separately.

WARNING:

Please note that the installation instructions described in this manual should be carefully followed in order to prevent damage to the POS-6614 motherboard components and injury to the user.

WARNING:

When installing electronic components onto the POS-6614 motherboard always take anti-static precautions in order to prevent ESD damage to the motherboard and other electronic components like the CPU and DIMM modules.

The following components must be installed onto the POS-6614 motherboard or connected to the POS-6614 motherboard during the installation process.

- CPU
- CPU cooling kit
- DIMM modules
- Peripheral device connection

4.4 Socket LGA775 CPU Installation

4.4.1 CPU Selection:

All of the platform requirements listed below:

- **CPU**: An Intel® Pentium 4 Processor must be installed
- **OS**: An operating system that has optimizations for HT Technology

4.4.1.1 CPU Installation

WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure that a heat sink and CPU cooling fan are properly installed before the POS-6614 motherboard is run.

If a heat sink and cooling fan are not properly installed both the CPU and the board may be damaged.

The LGA775 socket is shown in **Figure 4-1**.

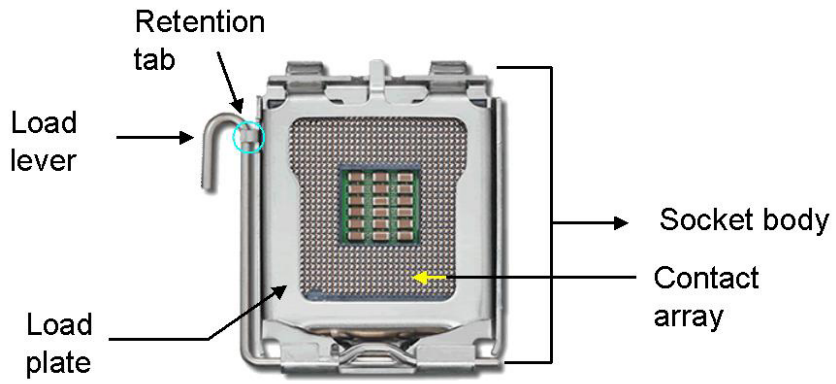

Figure 4-1: Intel LGA775 Socket

WARNING:

When handling the CPU, only hold it on the sides. DO NOT touch the pins at the bottom of the CPU.

To install a socket LGA775 CPU onto the POS-6614 motherboard, follow the steps below:

Step 1: **Remove the protective cover.** Remove the black protective cover by prying it off the load plate. To remove the protective cover, locate the "**REMOVE**" sign and use your fingernail to pry the protective cover off. (See **Figure 4-2**)

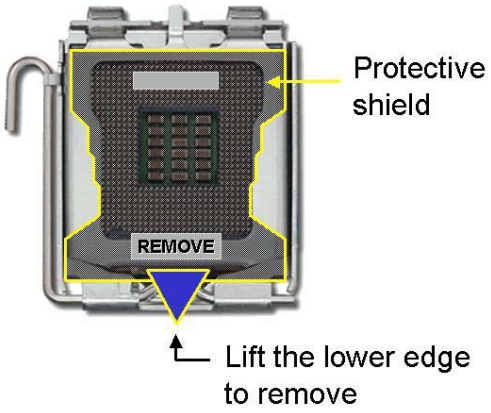

Figure 4-2: Remove the CPU Socket Protective Shield

Step 2: **Open the socket**. Disengage the load lever by pressing the lever down and slightly outward to clear the retention tab. Rotate the load lever to a fully open position. Then rotate the load plate towards the opposite direction. (See **Figure 4-3**)

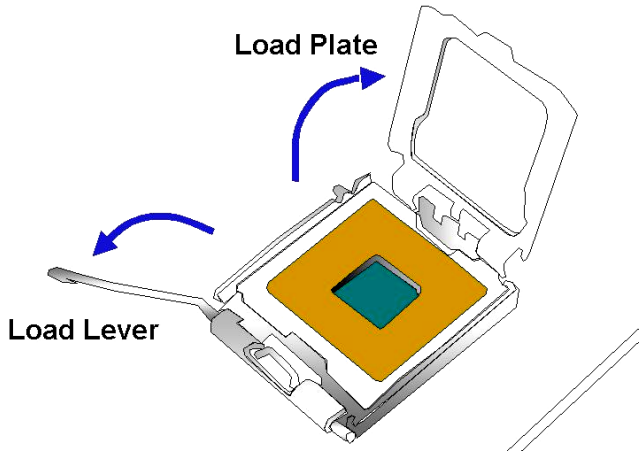

Figure 4-3: Open the CPU Socket Load Plate

Step 3: **Inspect the CPU socket** Make sure there are no bent pins and make sure the socket contacts are free of foreign materials. If any debris is found, remove it with compressed air.

Step 4: **Orientate the CPU properly**. Make sure the IHS (Integrated Heat Sink) side is facing upward.

Step 5: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.

Step 6: **Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 7: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 4-4**.

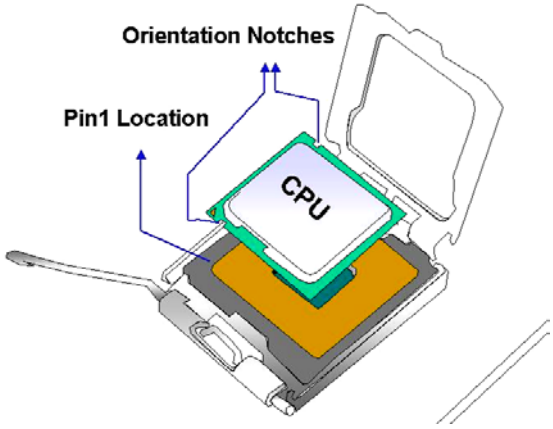

Figure 4-4: Insert the Socket LGA775 CPU

Step 8: **Close the CPU socket.** Close the load plate and engage the load lever by pushing it back to its original position. Secure the load lever under the retention tab on the side of CPU socket.

Step 9: **Connect the CPU 12V cable.** After the cooling kit is installed, connect the CPU cable to the CPU 12V power connector.

4.4.2 Socket LGA775 Cooling Kit Installation

WARNING:

It is strongly recommended that you DO NOT use the original heat sink and cooler provided by Intel on the POS-6614 motherboard.

The POS-6614 motherboard is vertically mounted on a horizontal backplane and Intel's heat sink does not come with a support bracket on the soldering side, so the PCB may be bent by the weight of the cooling kit.

IEI's CF-520 cooling kit includes a support bracket that is combined with the heat sink mounted on the CPU to counter-balance the load on both sides of the PCB.

CF-520-RS

Figure 4-5: IEI LGA-775 Cooling Kit

The IEI LGA775 CPU cooling kit shown in **Figure 4-5** comprises a CPU heat sink and a cooling fan.

NOTE:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the CF-520 heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, follow the instructions below.

Step 1: **Place the cooling kit onto the socket LGA775 CPU**. Make sure the CPU cable can be properly routed when the cooling kit is installed.

Step 2: **Properly align the cooling kit**. Make sure the four spring screw fasteners can pass through the pre-drilled holes on the PCB.

Step 3: **Mount the cooling kit**. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the predrilled holes on the bottom of the PCB.

Step 4: **Secure the cooling kit**. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 4-6**)

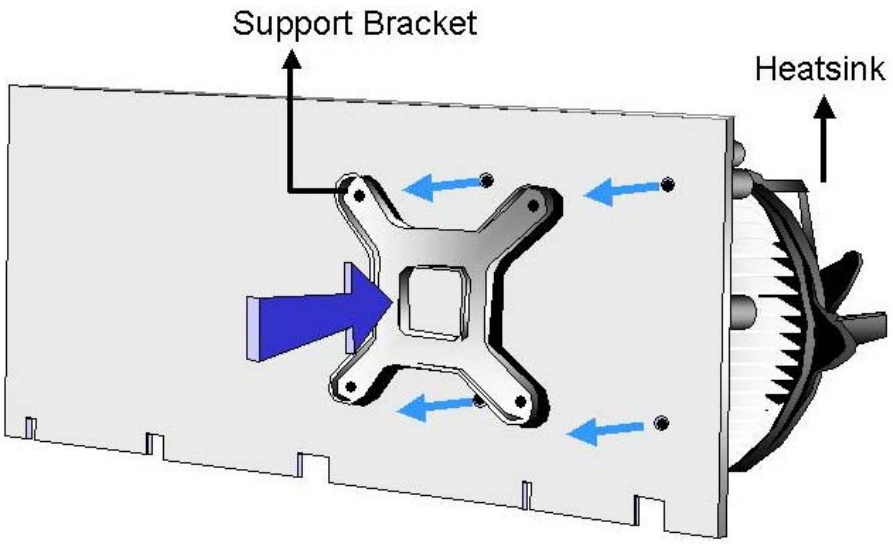

Figure 4-6: Securing the Heat sink to the PCB Board

Step 5: **Tighten the screws**. Use a screwdriver to tighten the four screws. Tighten each nut a few turns at a time and do not over-tighten the screws.

Step 6: **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the POS-6614 motherboard. Carefully route the cable and avoid heat generating chips and fan blades.

4.4.3 DIMM Module Installation

4.4.3.1 Purchasing the Memory Module

When purchasing DIMM modules, the following considerations should be taken into account:

- Each DIMM module can support a memory chip with a maximum size of 1GB
- It is recommended that memory modules of identical brand, size, chips, and speed be used.
- DIMMs must use the same density memory chips.
- Both DIMMs must use the same DRAM bus width.
- Both DIMMs must be either single-sided or dual-sided.

4.4.3.2 DIMM Module Installation

The POS-6614 motherboard has two DDR SDRAM DIMM sockets. Follow the steps below to install the DIMM modules.

Step 1: Make sure the two handles of the DIMM socket are in the "open" position, leaning outward (**Figure 4-7**).

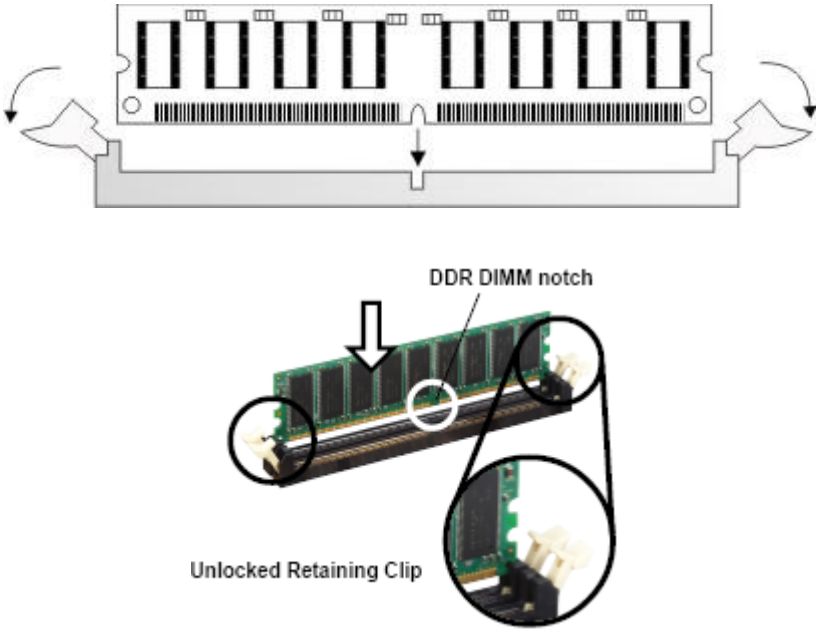

Figure 4-7: Installing the DIMM Module

Step 2: Slowly slide the DIMM module along the plastic guides on both ends of the socket. Press the DIMM module down into the socket until it clicks into position and the two handles have automatically locked the memory module into place (**Figure 4-8**).

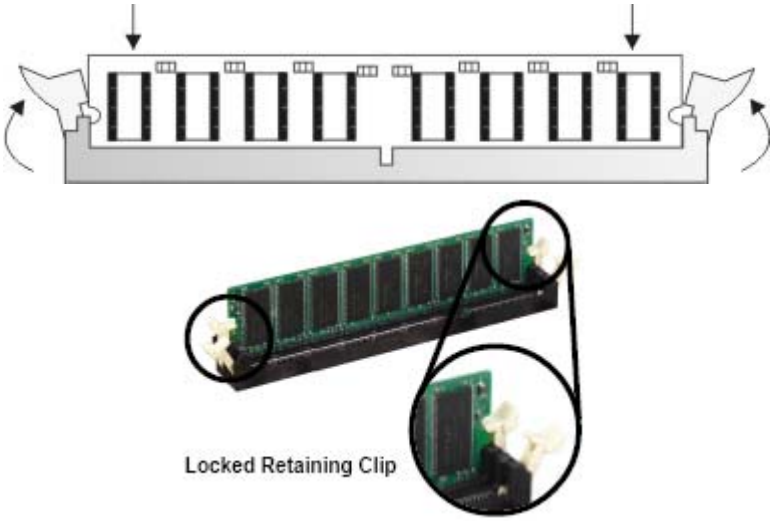

Figure 4-8: Locking the DIMM Module

Step 3: To remove the memory module, push both handles outward, and the memory module is ejected by the mechanism in the socket.

4.5 Peripheral Device Connection

Cables provided by IEI that connect peripheral devices to the motherboard are listed in **Table 4-1**. Cables not included in the kit must be separately purchased.

Quantity	Type
1	ATA66/100 Flat Cable
1	Dual RS-232 Cable
2	SATA Cables
1	SATA Power Cable
1	Mini jumper pack

Table 4-1: IEI Provided Cables

4.5.1 ATX 12V Power Connection

To connect the motherboard to an ATX 12V power supply, follow the instructions below.

Step 1: Connect the 4-pin connector end of the cable to the **CPU12V1** connector on the motherboard. Keyed pins on the connector prevent it from being connected incorrectly.

Step 2: Connect the other end of the cable to a power supply.

4.5.2 ATX Power Connection

To connect the motherboard to an ATX power supply, follow the instructions below.

Step 1: Connect the 20-pin connector end of the cable to the **ATX20** connector on the motherboard. Keyed pins on the connector prevent it from being connected incorrectly.

Step 2: Connect the other end of the cable to a power supply.

4.5.3 Audio CD In Installation

To connect an audio CD to the motherboard for sound, follow the instructions below.

Step 1: Connect the 4-pin connector end of the cable to the **CD_IN1** pin header on the motherboard. Be sure to align pin 1 on the header with pin 1 on the connector.

Step 2: Connect the other end of the cable to a CD's audio connector.

4.5.4 Audio Line Out Installation

AC'97 Audio signals are interfaced through a 4-pin flat-cable connector. An audio 4-pin-to-phone-jack adapter kit is required. To connect an audio CD to the motherboard for sound, follow the instructions below.

Step 1: Connect the 4-pin connector end of the cable to the **LINE_OUT1** pin header on the motherboard. Be sure to align pin 1 on the header with pin 1 on the connector.

Step 2: Connect the other end of the cable to a phone jack plug.

4.5.5 CompactFlash Installation

When appropriately formatted, a CompactFlash disk can serve as a bootable hard drive in applications where installation space is limited. The Compact Flash card occupies a secondary IDE channel. The compact flash connector is located on the bottom of the motherboard. To install a CompactFlash card onto the motherboard, follow the instructions below.

Step 1: Turn the motherboard over so that the CompactFlash socket is facing up.

Step 2: Gently insert the CompactFlash chip into the socket until it clicks into place.

Step 3: To release the CompactFlash chip from the socket, push the release button located next to the socket.

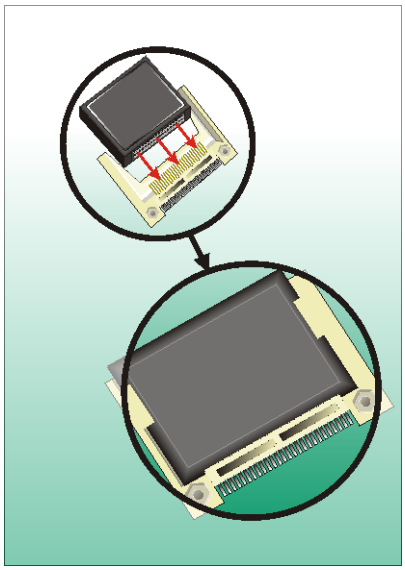

Figure 4-9: Inserting a CompactFlash Card

4.5.6 Cooling Fan Power Connections

There are cooling fan connectors on the POS-6614 motherboard labeled **SYS_FAN1**, **SYS_FAN2**, and **CPU_FAN1**. The four pin **CPU_FAN1** connector should be used to connect the CPU cooling fan. To install a CPU cooling fan onto the motherboard, see **Section 4.4.2**. To power a cooling fan, follow the instructions below.

Step 1: Connect the power cable from the cooling fan to the nearest fan connector. Keyed pins on the connector prevent it from being connected incorrectly.

4.5.7 COM# RS-232 Serial Port Installation

To connect an RS-232 serial port to the motherboard, follow the instructions below.

Step 1: Find the RS-232 cables in the kit that came with the motherboard.

Step 2: Connect the 10-pin connector end of the cables to the **COM3** – **COM6** box headers on the motherboard. Be sure to align the red wire on the connector to pin 1 on the box header.

Step 3: Connect the other end of the cables to standard female D-sub 9 connectors.

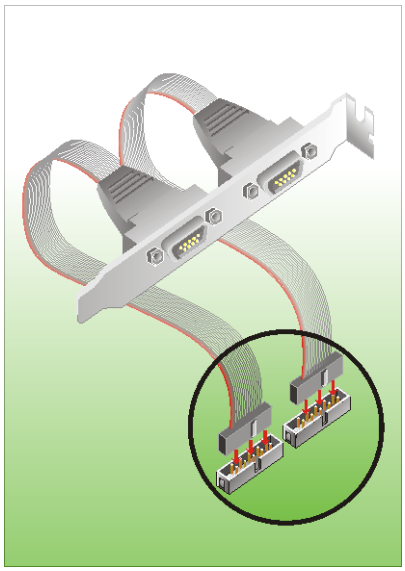

Figure 4-10: Connection of a COM Connector

4.5.8 COM2 RS-422/485 Serial Port Installation

Connectivity to the COM2 RS-422/485 serial port can be made through the D-Sub 9 male connector on the motherboard's external peripheral connector panel.

NOTE:

Be sure to configure the **J_COM2_SEL1** and **J_COM2_SEL2** COM2 RS422/RS485 jumpers for either an RS-422 or RS-485 connection. Refer to **Section 4.6.4** for more information.

4.5.9 Floppy Disk Drive (FDD) Installation

The floppy drive connector provides access to one (1) externally mounted floppy drive.

A 34-pin FDD connector cable is required for the connection to the floppy drive. The cable should come with a 34-pin FDD-cable connector and floppy disk drive connector on the other end. Follow the instructions below to connect a FDD to the motherboard.

Step 1: Plug the 34-pin FPC-cable connector into **FDD1**. Make sure that the red wire corresponds to pin one on the connector.

Step 2: Attach the appropriate connector on the other end of the cable to the floppy drive. Only one connector in the set can be used.

4.5.10 IDE Disk Drive Connector

The cable used to connect the motherboard to the IDE HDD is a standard 40-pin ATA/100/66/33 flat cable. To connect an IDE HDD to the motherboard, follow the instructions below.

Step 1: Find the ATA 66/100 flat cable in the kit that came with the motherboard.

Step 2: Connect one end of the cable to either the **PIDE1** (primary IDE) or **SIDE1** (secondary IDE) connector on the motherboard. A keyed pin on the IDE connectors prevents it from being connected incorrectly.

Step 3: Locate the red wire on the other side of the cable that corresponds to the pin 1 connector.

Step 4: Connect the other side of the cable to the HDD making sure that the pin 1 cable corresponds to pin 1 on the connector.

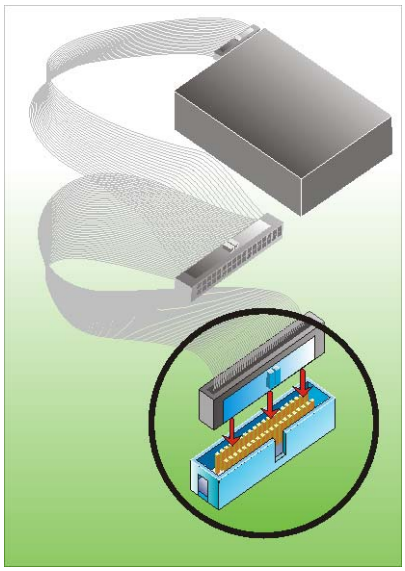

Figure 4-11: Connection of IDE Connector

NOTE:

When two IDE disk drives are connected together, back-end jumpers on the drives must be used to configure one drive as a master and the other as a slave.

4.5.11 Inverter (LCD Backlight) Installation

To connect an Inverter (LCD Backlight) to the motherboard, follow the instructions below.

Step 1: Connect the 5-pin connector end of the LCD backlight cable to the **INVERTER1** wafer connector on the motherboard. A keyed pin on the connector prevents it from being connected incorrectly.

4.5.12 IrDA (Infrared Data Association) Device Installation

To connect an IrDA device to the motherboard, follow the instructions below.

Step 1: Connect the 6-pin connector end of an IrDA cable to the **IR1** header on the motherboard. Be sure to align pin 1 on the connector to pin 1 on the header.

4.5.13 LVDS Device Installation

To connect an LVDS device to the motherboard, follow the instructions below.

Step 1: Connect the 30-pin connector end of a LVDS cable to the **LVDS1** miniature crimping connector on the motherboard. A keyed pin on the connector prevents it from being connected incorrectly.

4.5.14 Front Panel Connection

The front panel connector provides connectivity to several external switches and indicators for monitoring and controlling the CPU board. See **Section 3.2.9** for the connector pinouts.

4.5.15 PCI + PCIe Expansion

The POS motherboard comes with one PCI +PCIe expansion slot. To connect an expansion card to the motherboard, follow the instructions below.

Step 1: Fit the PCI +PCIe card-edge of a PCI expansion card into the slot. The expansion card is keyed to prevent it from being inserted incorrectly.

4.5.16 SATA (Serial ATA) Connection

The POS motherboard comes with two 7-pin SATA connectors. To connect a SATA device to the motherboard, follow the instructions below.

Step 1: Find the SATA and SATA power cables in the kit that came with the motherboard.

Step 2: Connect one end of a 7-pin SATA connector to a SATA connector on the motherboard. The SATA connector is keyed to prevent it from being inserted incorrectly.

Step 3: Connect the other end of the cable to a SATA drive.

Step 4: Connect the 15-pin end of the SATA power connector to a SATA drive power connector.

Step 5: Connect the 4P end of the of the SATA power connector to a power supply.

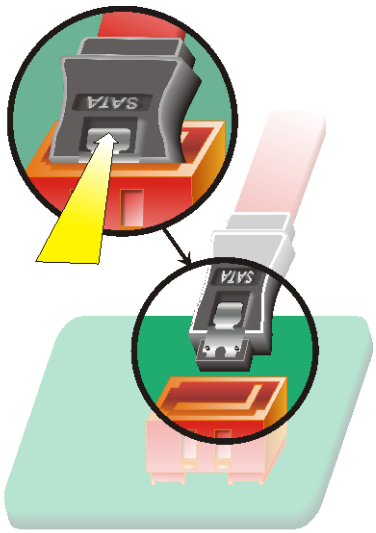

Figure 4-12: Connection of SATA Connector

4.5.17 USB Port Installation

To connect a USB port to the motherboard, follow the instructions below.

Step 1: Connect the 8-pin connector end of a USB port to pin header cable to the **USB23**, **USB45** or **USB67** header on the motherboard. Be sure to align pin 1 on the connector to pin 1 on the header.

Step 2: Connect the other end of the cable to a standard USB connector.

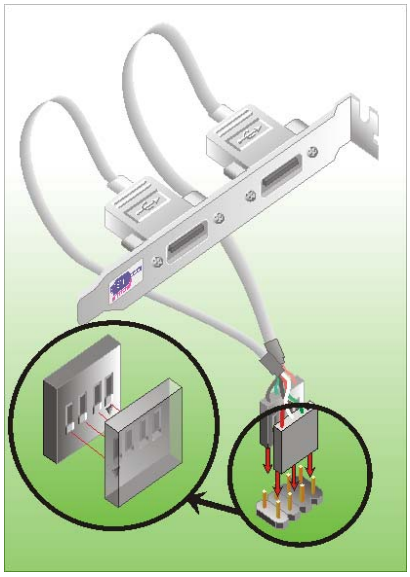

Figure 4-13: Connection of a USB Connector

4.5.18 VGA Port Installation

The cable used to connect the motherboard to a VGA port is a 10-pin box header to female HD-D-sub 15 connector. To connect a VGA port to the motherboard, follow the instructions below.

Step 1: Connect the 10-pin connector end of the cable to the **VGA1** box header on the motherboard. A keyed pin on the connector prevents it from being connected incorrectly.

Step 2: Connect the other end of the cable to standard male HD-D-sub 15 VGA connector.

4.6 Jumper Configuration

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

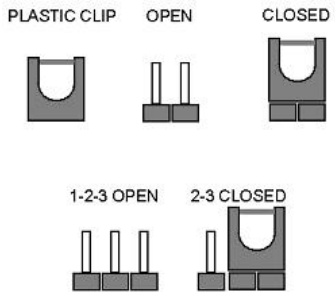

Figure 4-14: Jumper Locations

The POS-6614 CPU Board has several onboard jumpers (**Figure 4-15**).

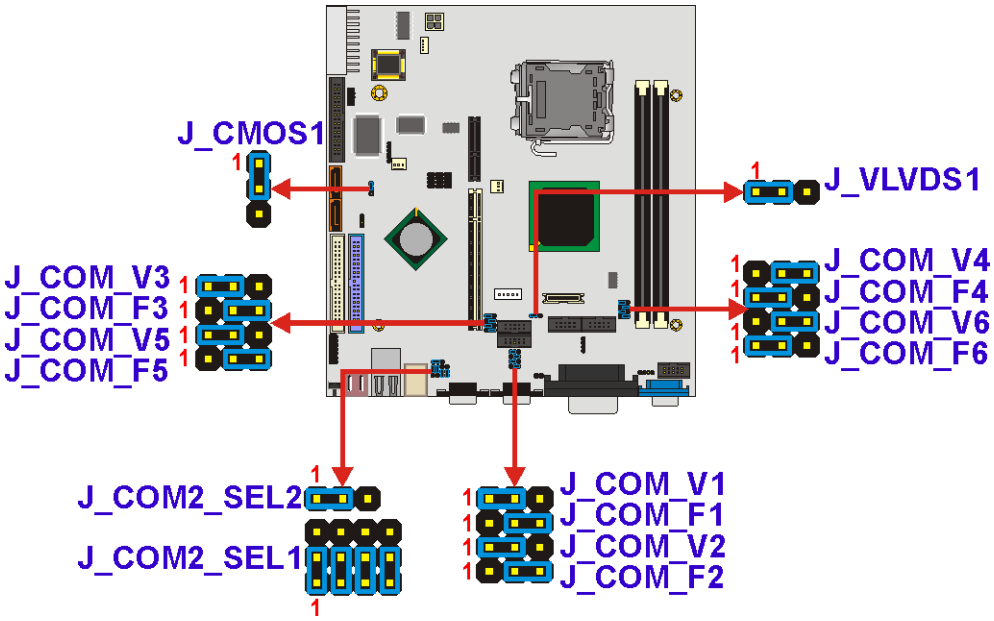

Figure 4-15: Jumper Locations

4.6.1 Clear CMOS Setup Jumper

Jumper Label: **J_CMOS1**

Jumper Type: **3-pin header**

Jumper Location: **See Figure 4-15**

Jumper Settings: **See Table 4-2**

If the CPU card fails to boot due to improper BIOS settings, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the CMOS Settings Wrong message displays during the boot up process, press F1 to enter the CMOS Setup menu, then do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

Save the changes and exit the CMOS Setup menu.

J_CMOS1	CLEAR CMOS
1-2 closed	Normal Operation (Default)
2-3 closed	Clear CMOS Setup

Table 4-2: Clear CMOS Setup Jumper Settings

4.6.2 COMx RI Selection Jumper

Jumper Label: **J_COM_Fx**

Jumper Type: **3-pin header**

Jumper Location: **See Figure 4-15**

Jumper Settings: **See Table 4-3**

The following jumper sets pin9 of COMx as signal or voltage.

J_COM_Fx	Description
2-3 closed	COMx RI PIN Use RI
1-2 closed	COMx RI PIN Use Voltage

Table 4-3: COMx RI Selection Settings

4.6.3 COMx Voltage Selection Jumpers

Jumper Label: J_COM_Vx

Jumper Type: 3-pin header

Jumper Location: See Figure 4-15

Jumper Settings: See Table 4-3

The following jumper sets the pin 9 voltage for COMx.

J_COM_Vx	Description
2-3 closed	COMx RI PIN Use Voltage +12V
1-2 closed	COMx RI PIN Use Voltage +5V

Table 4-4: COMx Voltage Selection Settings

4.6.4 COM2 RS-232/422/485 Setup Jumper

Jumper Label: J_COM2_SEL1, J_COM2_SEL2

Jumper Type: 12-pin and 3-pin headers

Jumper Location: See Figure 4-15

Jumper Settings: See Table 4-5

The J_COM2_SEL1 jumper, when used with jumper J_COM2_SEL2, sets the COM2 mode to RS-232/22/485.

J_COM2_SEL1	J_COM2_SEL2	COM2 mode
1–2, 4–5, 7–8, 10-11	1 - 2	RS-232
2–3, 5–6, 8–9, 11-12	2 - 3	RS-422
2–3, 5–6, 7–8, 10-11	2 - 3	RS-485

Table 4-5: COM2 RS-232/422/485 Setup Jumper Settings

4.6.5 CompactFlash Card Setup Jumper

Jumper Label: **J_CF1**

Jumper Type: **2-pin header**

Jumper Location: **See Figure 4-15**

Jumper Settings: **See Table 4-6**

The CompactFlash Card Setup jumper sets the CompactFlash card to "Master" or "Slave" on the IDE bus.

J_CF1	Description
Closed	Master
Open	Slave (Default)

Table 4-6: CompactFlash Card Setup Jumper Settings

4.6.6 LVDS Voltage Select Jumper

Jumper Label: **J_VLVDS1**

Jumper Type: **6-pin header**

Jumper Location: **See Figure 4-15**

Jumper Settings: **See Table 4-7**

This jumper allows the user to set the voltage for the LCD panel. Before setting this jumper please refer to the LCD panel user guide to determine the required voltage.

WARNING:

Selecting the wrong voltage will burn the LCD. Please check LCD technical documents provided by the vendor for the correct voltage.

J_LVDS1	DESCRIPTION
1-2 (default)*	Set The Voltage Level Of Panel To VCC3
Short 2-3	Set The Voltage Level Of Panel To VCC

Table 4-7: LCD Voltage Select Jumper Settings

4.7 Chassis Installation

After the CPU, the cooling kit, and the DIMM modules have been installed and after the internal peripheral connectors have been connected to the peripheral devices and the jumpers have been configured, the motherboard can be mounted into chassis.

To mount the motherboard into a chassis please refer to the chassis user guide that came with the product.

4.8 External Peripheral Interface Panel Connectors

4.8.1 Reset Button

Use the reset button to reset the system.

4.8.2 USB Connection

The external USB connectors provide easier and quicker access to external USB devices. The external USB connector is a standard connector and can easily be connected to other USB devices.

4.8.3 Ethernet Connection

The external RJ-45 connectors can be connected to an external LAN and communicate with data transfer rates up to 1Gb/s.

4.8.4 Keyboard and Mouse Connection

A PS/2 keyboard and a PS/2 mouse can be connected to the appropriate PS/2 connector on the external peripheral interface panel.

4.8.5 Serial Connection

The external serial connectors provide easy and quick access to external serial devices.

4.8.6 Parallel Connector

The external parallel port connector connects to a printer. The parallel port interface can be re-assigned to LPT2 or LPT3 through the BIOS configuration utility. The default interrupt channel is IRQ7. Select ECP or EPP DMA mode using the BIOS configuration utility.

4.8.7 Audio Interface

AC'97 Audio signals are interfaced through three phone jack connections. The red phone jack is for Mic In, blue is for Line In and green is for Speaker Out.

4.8.8 VGA Connection

The conventional CRT monitor connector, VGA1, is an HD-D-sub 15 female connector.

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Chapter

5

BIOS Settings

5.1 Introduction

A licensed copy of AMI BIOS is preprogrammed into the ROM BIOS. The BIOS setup program allows users to modify the basic system configuration. This chapter describes how to access the BIOS setup program and the configuration options that may be changed.

5.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

If the message disappears before the DELETE key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press ENTER to select, use the "+" and "-" keys to change entries, press F1 for help and press ESC to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
"+" key	Increase the numeric value or make changes
"-" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward.

Key	Function
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When F1 is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press ESC or the F1 key again.

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes are made to the system configuration, use the jumper described in **Section 0** to reset the CMOS defaults.

5.1.5 BIOS Menu Bar

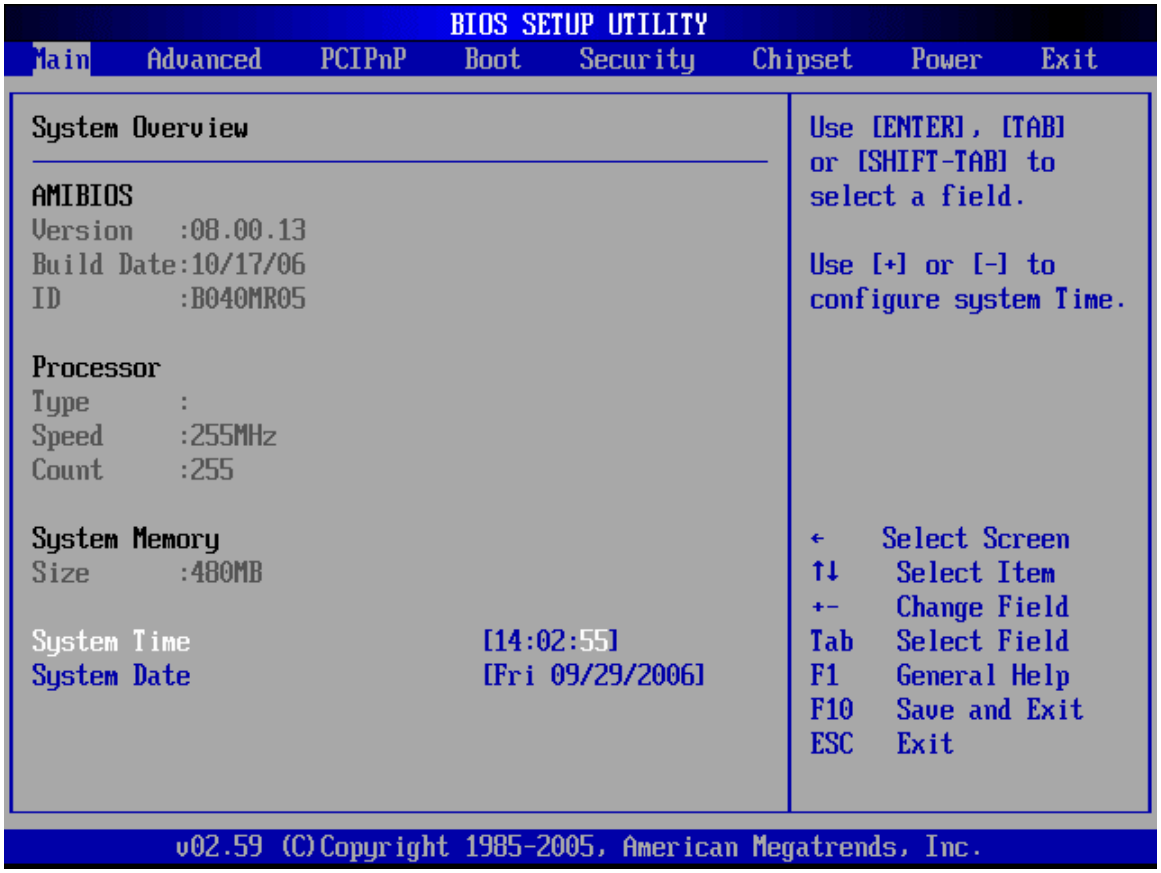
The menu bar on top of the BIOS screen has the following main items:

- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **Power** Changes power management settings.
- **Exit** Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The Main BIOS menu (**BIOS Menu 1**) appears when the BIOS Setup program is entered. The Main menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ **System Overview**

The System Overview lists a brief summary of different system components. The fields in System Overview cannot be changed. The items shown in the system overview include:

- **AMI BIOS**: Displays auto-detected BIOS information
  - **Version**: Current BIOS version
  - **Build Date**: Date the current BIOS version was made
  - **ID**: Installed BIOS ID
- **Processor**: Displays auto-detected CPU specifications
  - **Type**: Names the currently installed processor

- **Speed**: Lists the processor speed
- **Count**: The number of CPUs on the motherboard

- **System Memory**: Displays the auto-detected system memory.
  - **Size**: Lists memory size

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

Use the System Time option to set the system time. Manually enter the hours, minutes and seconds.

➔ **System Date [xx/xx/xx]**

Use the System Date option to set the system date. Manually enter the day, month and year.

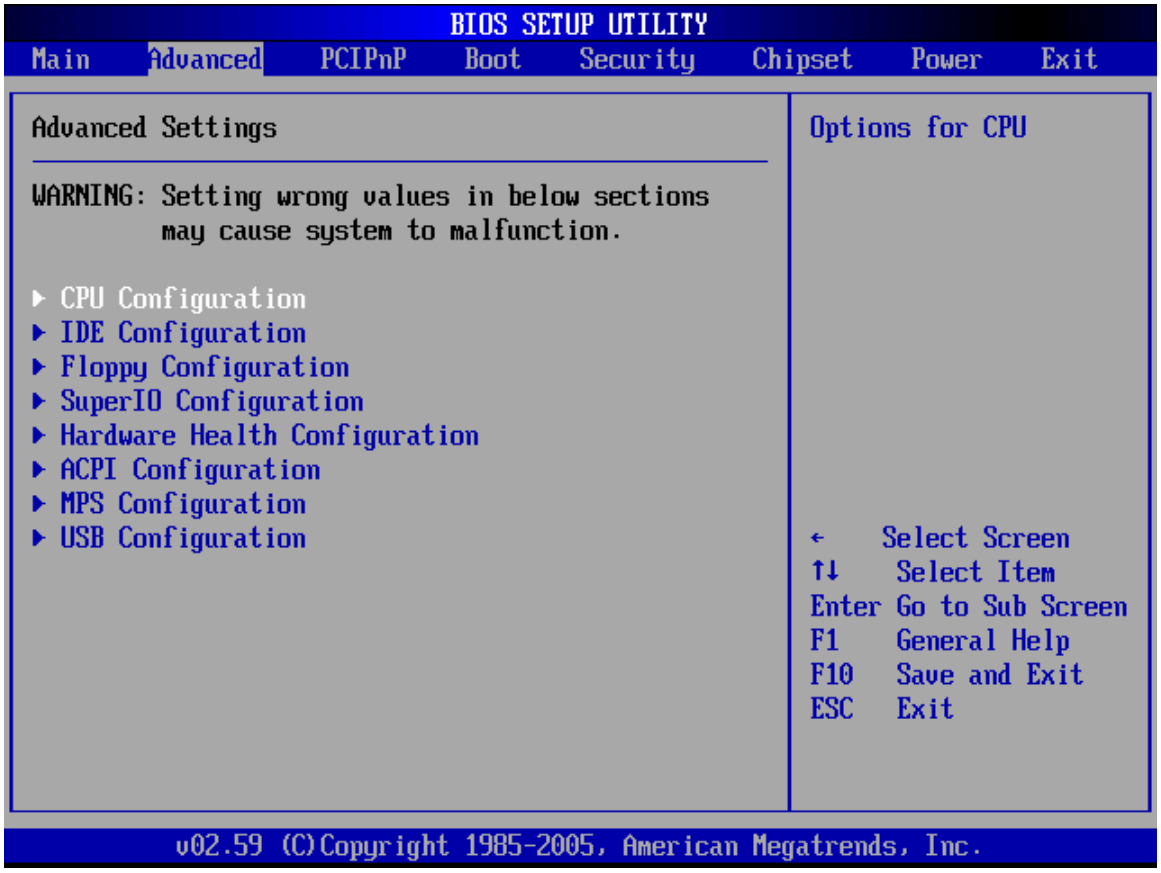
5.3 Advanced

Use the Advanced menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

 **WARNING:**

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

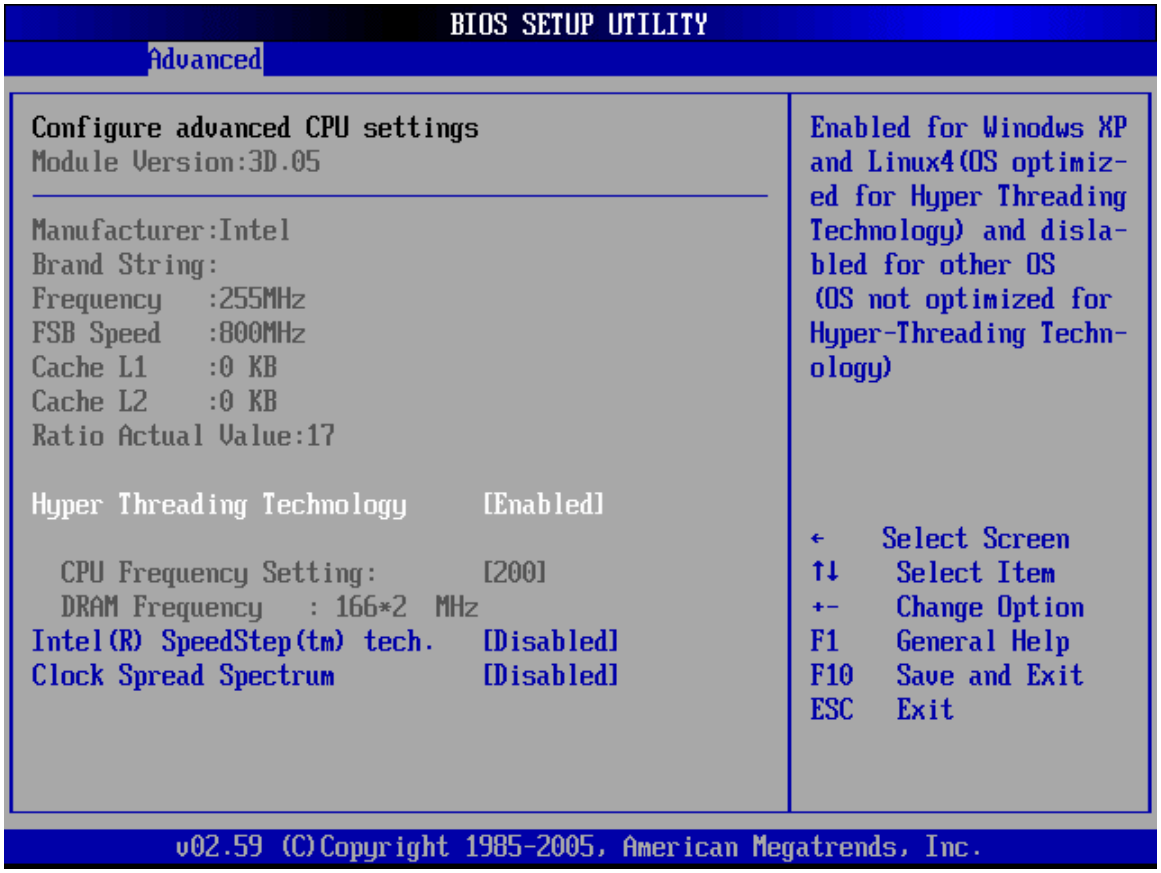
- CPU Configuration (see **Section 5.3.1**)
- IDE Configuration (see **Section 5.3.2**
- Floppy Configuration (see **Section 5.3.3**)
- SuperIO Configuration (see **Section 5.3.4**)
- Hardware Health Configuration (see **Section 5.3.5**)
- ACPI Configuration (see **Section 5.3.6**)
- MPS Configuration (see **Section 5.3.7**)
- USB Configuration (see **Section 5.3.8**)



BIOS Menu 2: Advanced

5.3.1 CPU Configuration

Use the CPU Configuration menu (**BIOS Menu 3**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 3: CPU Configuration

The CPU Configuration menu (**BIOS Menu 3**) lists the following CPU details:

- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size
- **Ratio Actual Value**: Displays the ratio at which the CPU is actually operating
- **DRAM Frequency**: displays the frequency at which the DRAM is operating

The following CPU Configuration menu items can be configured.

➔ **Single Logical Processor Mode [Disabled]**

Use the **Single Logical Processor Mode** option to improve power consumption

➔ **Disabled** (Default) All logical processors remains active when enabled.

➔ **Enabled** Only CORE0, logical processor 0 remains active when enabled.

➔ **Clock Spread Spectrum [Disabled]**

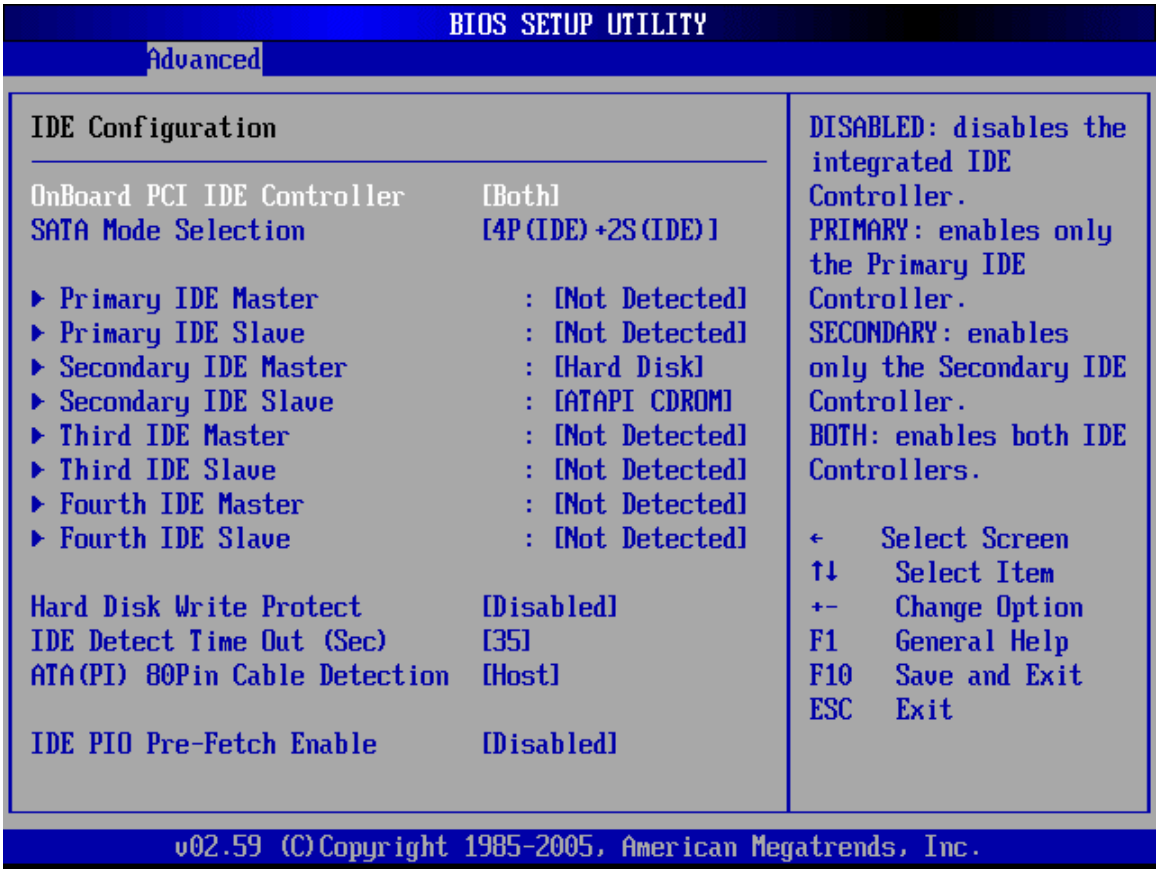
Use the **Clock Spread Spectrum** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔ **Disabled** (Default) EMI not reduced

➔ **Enabled** EMI reduced

5.3.2 IDE Configuration

Use the IDE Configuration menu (**BIOS Menu 4**) to change and/or set the configuration of the IDE devices installed in the system.



BIOS Menu 4: IDE Configuration

➔ **OnBoard PCI IDE Controller [Both]**

Use the **OnBoard PCI IDE Controller** BIOS option to specify the IDE channels used by the onboard PCI IDE controller. The following configuration options are available.

➔ **Disabled** Prevents the system from using the onboard IDE controller

➔ **Primary** Only allows the system to detect the Primary IDE channel, including both the Primary Master and the

Primary Slave

➔ **Secondary** Only allows the system to detect the Secondary IDE channel, including both the Secondary Master and Secondary Slave

➔ **Both** **DEFAULT** Allows the system to detect both the Primary and Secondary IDE channels including the Primary Master, Primary Slave, Secondary Master and Secondary Slave.

➔ **SATA Mode Selection [4P(IDE) + 2S(IDE)]**

Use the **SATA Mode Selection** option to specify the maximum number of drives that can be used on the system.

- Disabled
- 4P(IDE) + 2S(IDE) DEFAULT
- 4P(IDE) + 2S(RAID)
- 4P(IDE) + 2S(AHCI)

➔ **IDE Master and IDE Slave**

When entering setup, BIOS auto detects the presence of IDE devices. This displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

➔ **Hard Disk Write Protect [Disabled]**

Use the **Hard Disk Write Protect** BIOS option to protect the hard disks from being overwritten. This menu item is only effective if the device is accessed through the BIOS.

➔	**Disabled**	**DEFAULT**	Allows hard disks to be overwritten
➔	**Enabled**		Prevents hard disks from being overwritten

➔ **IDE Detect Time Out (Sec) [35]**

Use the **IDE Detect Time Out (Sec)** BIOS to specify the maximum time (in seconds) the AMI BIOS can search for IDE devices. This allows fine-tuning of the settings to allow for faster boot times. The following configuration options are available.

- 0 seconds
- 5 seconds (Default)
- 10 seconds
- 15 seconds
- 20 seconds
- 25 seconds
- 30 seconds
- 35 seconds

The best setting to use if the onboard IDE controllers are set to a specific IDE disk drive in the AMIBIOS is “0 seconds” and a large majority of ultra ATA hard disk drives can be detected well within “5 seconds”.

➔ **ATA (PI) 80Pin Cable Detection [Host & Device]**

Use the **ATA (PI) 80Pin Cable Detection** option to enable the system to detect the correct cable. When an Ultra ATA/66, an Ultra ATA/100 or an Ultra ATA/133 IDE hard disk drive is used, an 80-conductor ATA cable must be used. The 80-conductor ATA cable is plug compatible with the standard 40-conductor ATA cable. The system must detect the presence of correct cable so that the AMIBIOS can instruct the drive to run at the correct speed for the cable type detected.

➔ **Host & Device**	**DEFAULT**	Both the motherboard onboard IDE controller and IDE disk drive are used to detect the type of IDE cable used.
➔ **Host**		The motherboard onboard IDE controller detects the type of IDE cable used.
➔ **Device**		The IDE disk drive to detects the type of IDE cable used.

➔ **IDE PIO Pre-Fetch Enable [Disabled]**

Use the **IDE PIO PreFetch Enable** Option to enable the IDE controller to pre-fetch IDE data.

➔ **Disabled**	**DEFAULT**	IDE controller cannot pre-fetch data
➔ **Enabled**		IDE controller can pre-fetch data

➔ **IDE Master and IDE Slave**

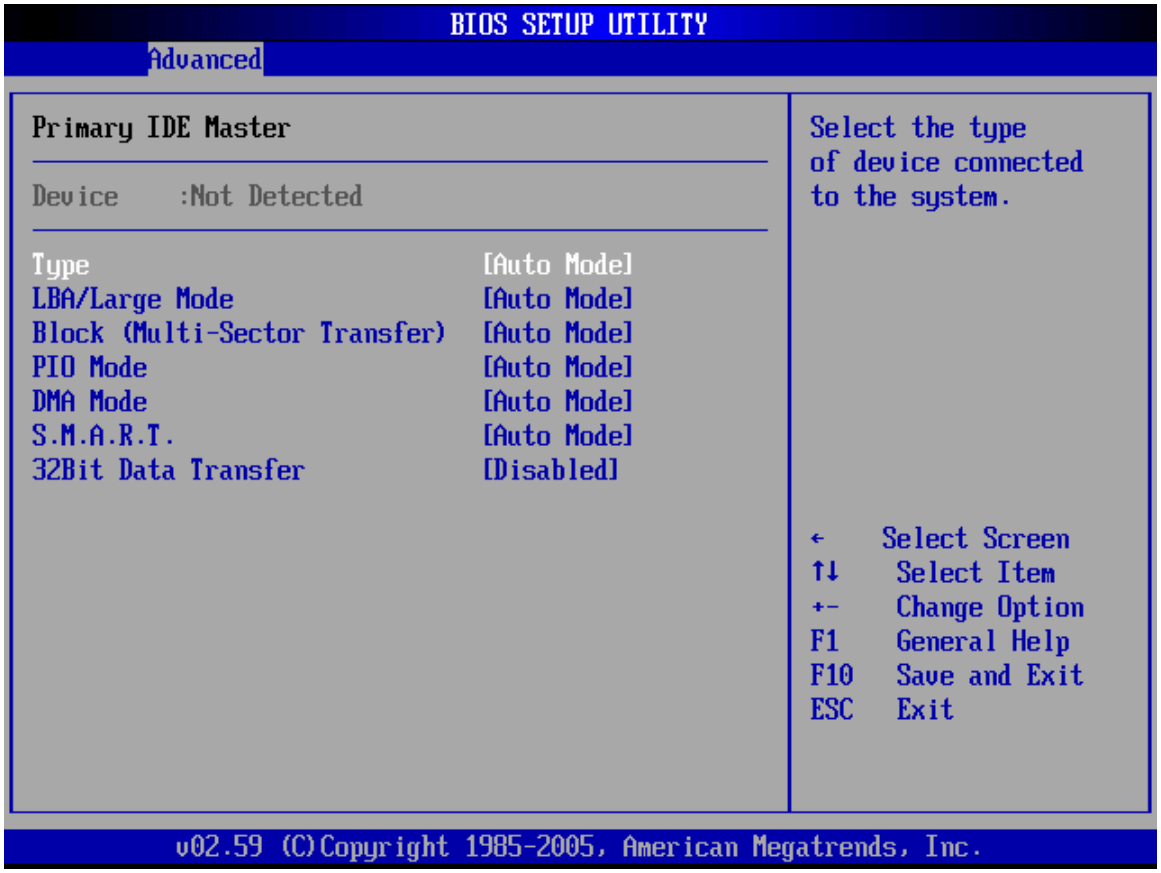
When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the IDE Configuration menu:

- Primary IDE Master
- Primary IDE Slave
- Secondary IDE Master
- Secondary IDE Slave
- Third IDE Master
- Fourth IDE Master

The IDE Configuration menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

5.3.2.1 IDE Master, IDE Slave

Use the IDE Master and IDE Slave configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **LBA/Large Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block (Multi-Sector Transfer)**: Block mode boosts IDE drive performance by

increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.

- **PIO Mode**: Indicates the PIO mode of the installed device.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- **32Bit Data Transfer**: Enables 32-bit data transfer.

➔ **Type [Auto]**

Use the Type BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.
➔ **ARMD**		This option specifies an ATAPI Removable Media Device. These include, but are not limited to: ➔ **ZIP** ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

Use the LBA/Large Mode option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled** BIOS is prevented from using the LBA mode control on the specified channel.

➔ **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

➔ **Block (Multi Sector Transfer) [Auto]**

Use the Block (Multi Sector Transfer) to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

➔ **Auto** **DEFAULT** BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

➔ **PIO Mode [Auto]**

Use the PIO Mode option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

➔ **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.

- ➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- ➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- ➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- ➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- ➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps

  (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- ➔ **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.

➔ **S.M.A.R.T [Auto]**

Use the S.M.A.R.T option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. S.M.A.R.T predicts impending drive failures. The S.M.A.R.T BIOS option enables or disables this function.

- ➔ **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- ➔ **Disabled** Prevents BIOS from using the HDD SMART feature.
- ➔ **Enabled** Allows BIOS to use the HDD SMART feature

➔ **32Bit Data Transfer [Disabled]**

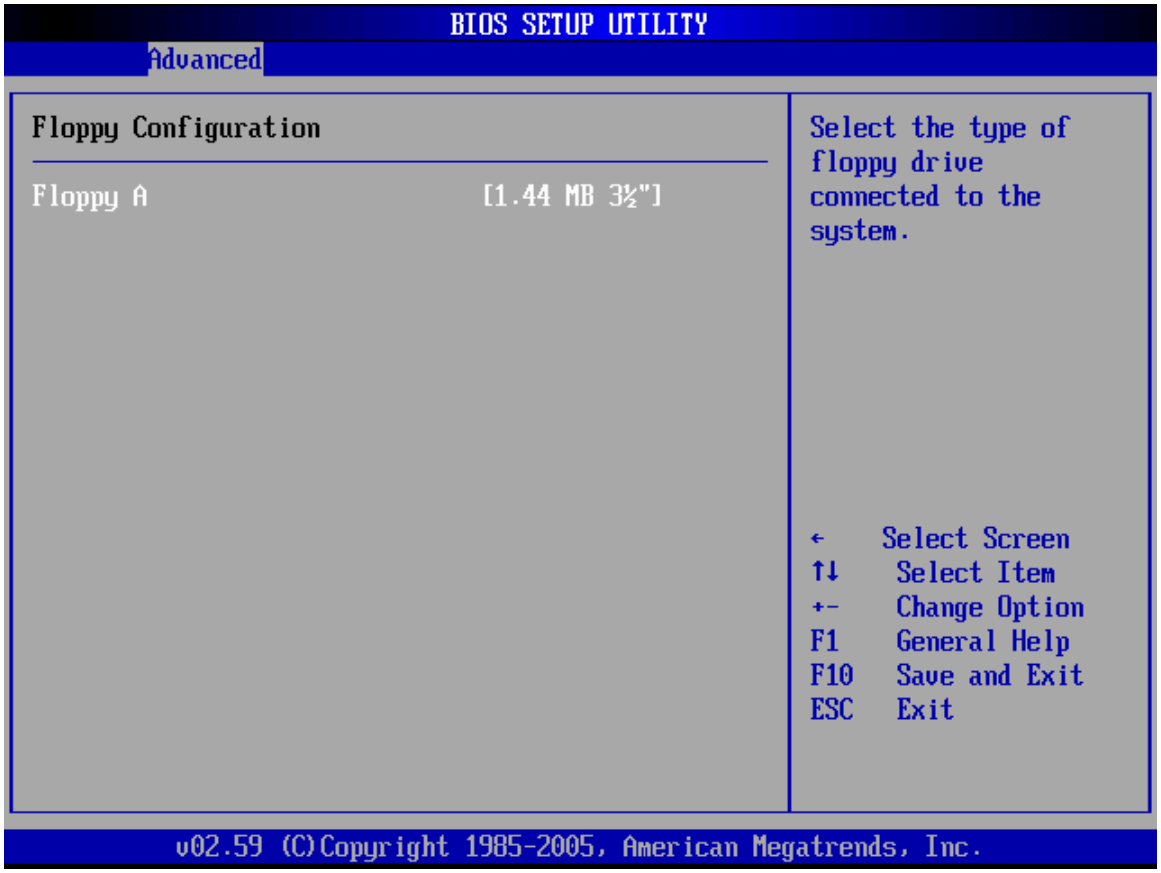
Use the 32Bit Data Transfer BIOS option to enables or disable 32-bit data transfers.

- ➔ **Disabled** **DEFAULT** Prevents the BIOS from using 32-bit data transfers.

➔ **Enabled** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

5.3.3 Floppy Configuration

Use the Floppy Configuration menu (**BIOS Menu 6**) to set or change the configurations for floppy disk drives.



BIOS Menu 6: Floppy Configuration

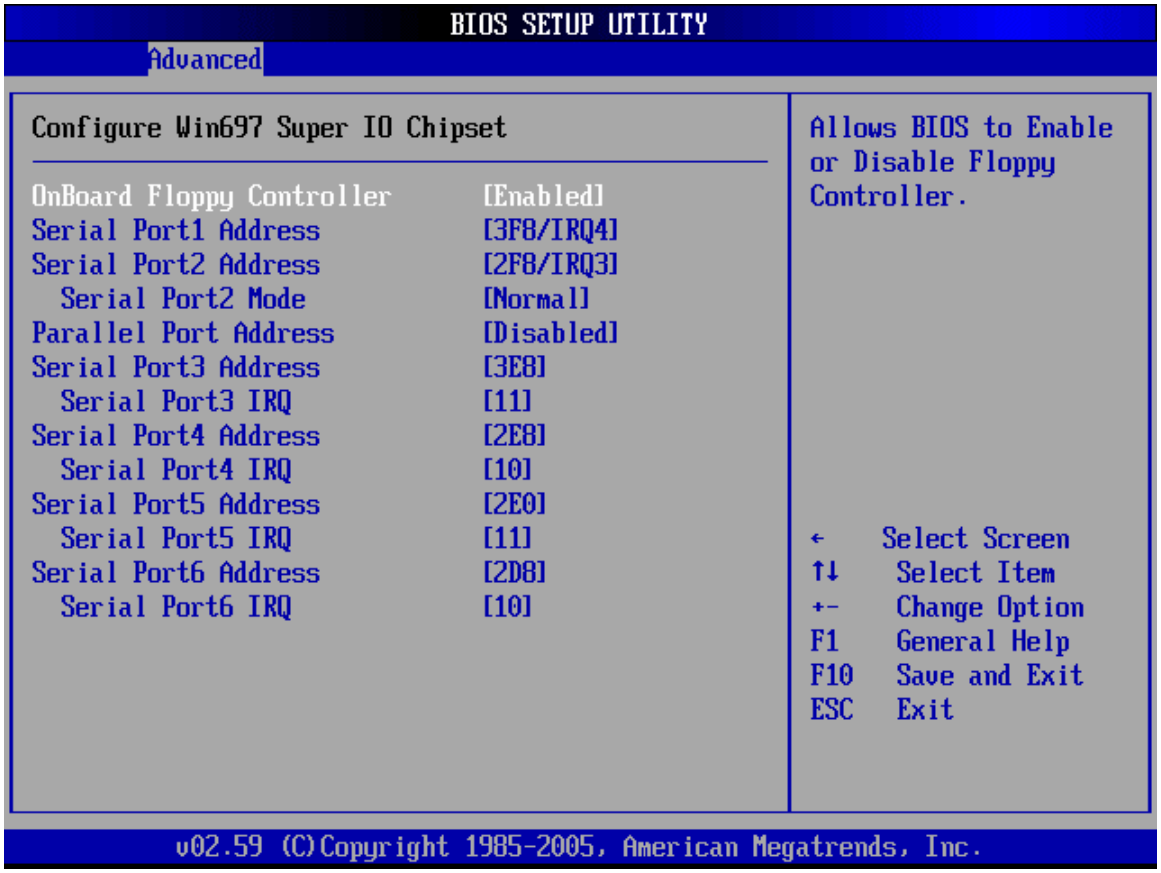
➔ **Floppy A [1.44 MB 3½"]**

The Floppy A configuration option determines the types of the floppy drive installed in the system. The following configuration options are available.

- Disabled (default)
- 360 KB 5¼"
- 1.2 MB 5¼"
- 720 KB 3 ½"
- 1.44 MB 3½"
- 2.88 MB 3½"

5.3.4 Super IO Configuration

Use the Super IO Configuration menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 7: Super IO Configuration

➔ **On Board Floppy Controller [Enabled]**

➔ **Disabled** Allows BIOS to disable the floppy controller

➔ **Enabled** **DEFAULT** Allows BIOS to enable the floppy controller

➔ **Serial Port1 Address [3F8/IRQ4]**

Use the Serial Port1 Address option to select the Serial Port 1 base address.

➔ **Disabled** No base address is assigned to Serial Port 1

- ➔ **3F8/IRQ4** **DEFAULT** Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- ➔ **3E8/IRQ4** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- ➔ **2E8/IRQ3** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Address [2F8/IRQ3]**

Use the Serial Port2 Address option to select the Serial Port 2 base address.

- ➔ **Disabled** No base address is assigned to Serial Port 2
- ➔ **2F8/IRQ3** **DEFAULT** Serial Port 2 I/O port address is 3F8 and the interrupt address is IRQ3
- ➔ **3E8/IRQ4** Serial Port 2 I/O port address is 3E8 and the interrupt address is IRQ4
- ➔ **2E8/IRQ3** Serial Port 2 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Mode [Normal]**

Use the Serial Port2 Mode option to select the Serial Port2 operational mode.

- ➔ **Normal** **DEFAULT** Serial Port 2 mode is normal
- ➔ **IrDA** Serial Port 2 mode is IrDA
- ➔ **ASK IR** Serial Port 2 mode is ASK IR

➔ **Parallel Port Address [378]**

Use the Parallel Port Address option to select the parallel port base address.

➔ **Disabled**		No base address is assigned to the Parallel Port
➔ **378**	**DEFAULT**	Parallel Port I/O port address is 378
➔ **278**		Parallel Port I/O port address is 278
➔ **3BC**		Parallel Port I/O port address is 3BC

➔ **Parallel Port Mode [Normal]**

Use the Parallel Port Mode option to select the mode the parallel port operates in.

➔ **Normal**	**DEFAULT**	The normal parallel port mode is the standard mode for parallel port operation.
➔ **EPP**		The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
➔ **ECP**		The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode
➔ **EPP+ECP**		The parallel port is also be compatible with EPP and ECP devices

➔ **Parallel Port IRQ [IRQ7]**

Use the Parallel Port IRQ selection to set the parallel port interrupt address.

- ➔ **IRQ5** IRQ5 is assigned as the parallel port interrupt address
- ➔ **IRQ7** **DEFAULT** IRQ7 is assigned as the parallel port interrupt address

➔ **Serial Port3 Address [3E8]**

Use the Serial Port3 Address option to select the base addresses for serial port 3

- ➔ **Disabled** No base address is assigned to serial port 3
- ➔ **3E8** **DEFAULT** Serial port 3 I/O port address is 3E8
- ➔ **2E8** Serial port 3 I/O port address is 2E8
- ➔ **2F0** Serial port 3 I/O port address is 2F0
- ➔ **2E0** Serial port 3 I/O port address is 2E0

➔ **Serial Port3 IRQ [11]**

Use the Serial Port3 IRQ option to select the interrupt address for serial port 3.

- ➔ **4** Serial port 3 IRQ address is 4
- ➔ **9** Serial port 3 IRQ address is 9
- ➔ **10** Serial port 3 IRQ address is 10
- ➔ **11** **DEFAULT** Serial port 3 IRQ address is 11

➔ **Serial Port4 Address [2E8]**

Use the Serial Port4 IRQ option to select the interrupt address for serial port 4.

- ➔ **Disabled** No base address is assigned to serial port 4
- ➔ **3E8** Serial port 4 I/O port address is 3E8

- ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8
- ➔ **2F0** Serial port 4 I/O port address is 2F0
- ➔ **2E0** Serial port 4 I/O port address is 2E0

➔ **Serial Port4 IRQ [10]**

Use the Serial Port4 IRQ option to select the interrupt address for serial port 4.

- ➔ **3** Serial port 4 IRQ address is 3
- ➔ **9** Serial port 4 IRQ address is 9
- ➔ **10** **DEFAULT** Serial port 4 IRQ address is 10
- ➔ **11** Serial port 4 IRQ address is 11

➔ **Serial Port5 Address [2F0]**

Use the Serial Port5 IRQ option to select the interrupt address for serial port 5.

- ➔ **Disabled** No base address is assigned to serial port 5
- ➔ **3E8** Serial port 5 I/O port address is 3E8
- ➔ **2E8** Serial port 5 I/O port address is 2E8
- ➔ **2F0** **DEFAULT** Serial port 5 I/O port address is 2F0
- ➔ **2E0** Serial port 5 I/O port address is 2E0

➔ **Serial Port5 IRQ [11]**

Use the Serial Port5 IRQ option to select the interrupt address for serial port 5.

➔ **4**		Serial port 5 IRQ address is 4
➔ **9**		Serial port 5 IRQ address is 9
➔ **10**		Serial port 5 IRQ address is 10
➔ **11**	**DEFAULT**	Serial port 5 IRQ address is 11

➔ **Serial Port6 Address [2E0]**

Use the Serial Port6 IRQ option to select the interrupt address for serial port 6.

➔ **Disabled**		No base address is assigned to serial port 6
➔ **3E8**		Serial port 6 I/O port address is 3E8
➔ **2E8**		Serial port 6 I/O port address is 2E8
➔ **2F0**		Serial port 6 I/O port address is 2F0
➔ **2E0**	**DEFAULT**	Serial port 6I/O port address is 2E0

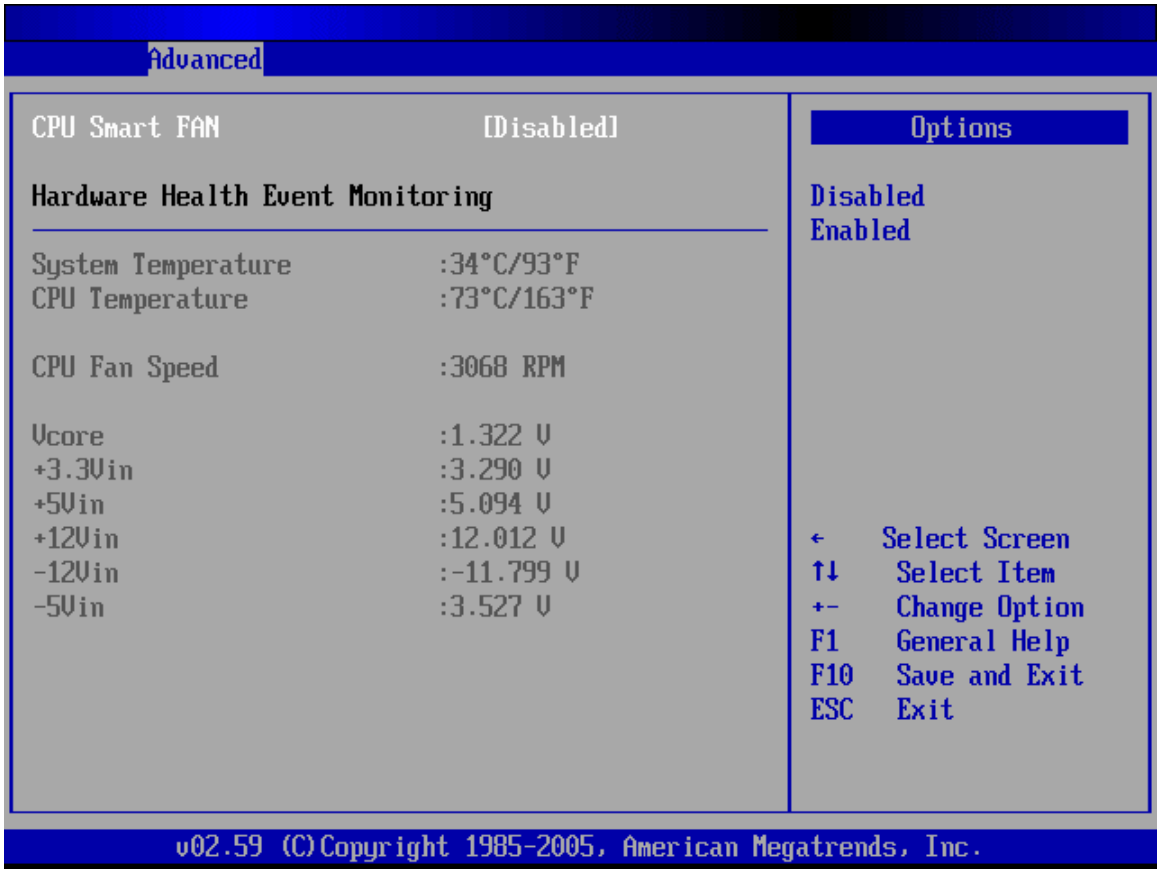
➔ **Serial Port6 IRQ [10]**

Use the Serial Port6 IRQ option to select the interrupt address for serial port 6.

➔ **3**		Serial port 6 IRQ address is 3
➔ **9**		Serial port 6 IRQ address is 9
➔ **10**	**DEFAULT**	Serial port 6 IRQ address is 10
➔ **11**		Serial port 6 IRQ address is 11

5.3.5 Hardware Health Configuration

The Hardware Health Configuration menu (**BIOS Menu 8**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 8: Hardware Health Configuration

➔ **CPU Smart FAN [Enabled]**

Use the **CPU Smart FAN** option to change the speed of the CPU fan.

➔ **Disabled** The CPU fan will operate at top speed at all times.

➔ **Enabled** **DEFAULT** The CPU fan will throttle up or down depending on the CPU temperature.

➔ **Target Temperature of CPU [075]**

The **Target Temperature of CPU** option is only available when the CPU Smart FAN option is enabled. This option is not user configurable.

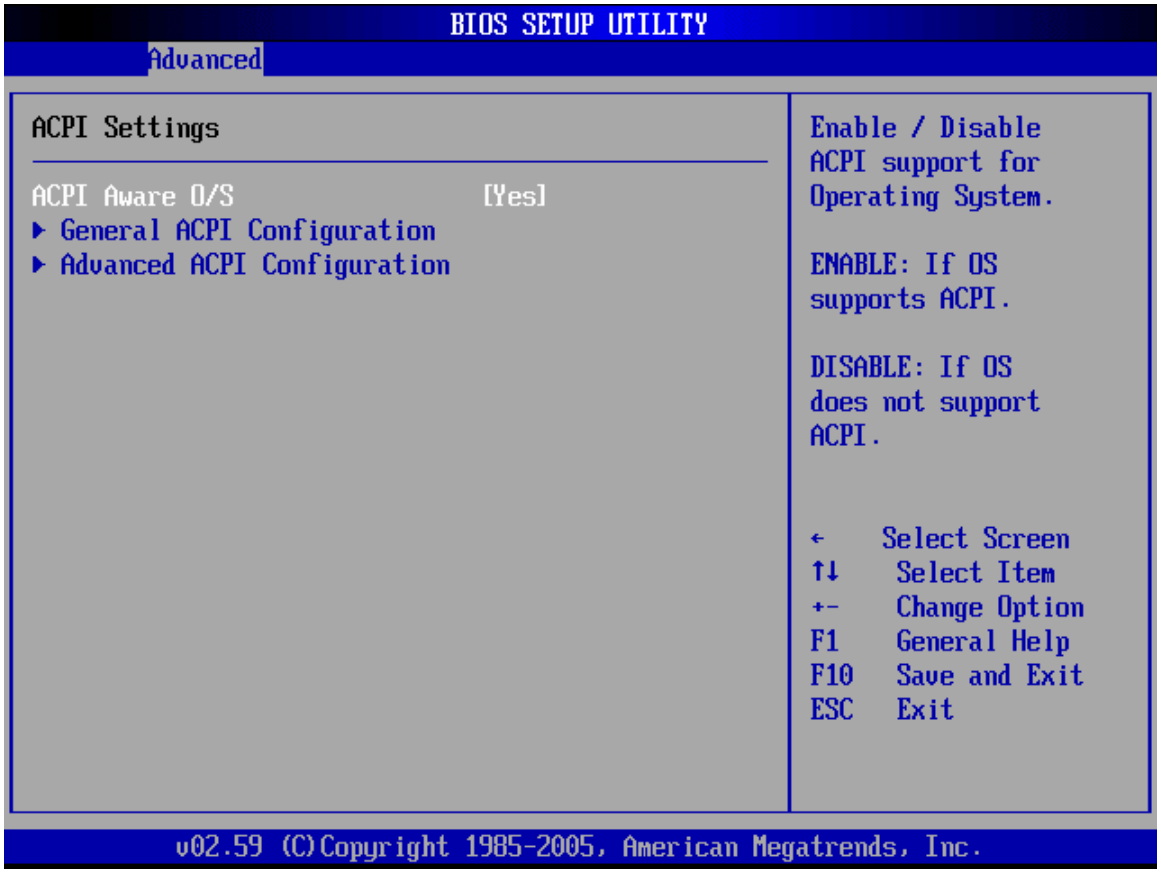
➔ **075** **DEFAULT** The default target temperature setting for the CPU fan.

The system parameters that are monitored are:

- **System Temperatures**: The following system temperatures are monitored:
  - System Temperature
  - CPU Temperature
- **Fan Speeds**: The CPU cooling fan speed is monitored:
  - CPU Fan Speed
  - Fan2 Speed
  - Fan3 Speed
- **Voltages**: The following system voltages are monitored:
  - Vcore
  - +3.3Vin
  - +5Vin
  - +12Vin
  - -12Vin
  - -5Vin

5.3.6 ACPI Configuration

The ACPI Configuration menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.



BIOS Menu 9: ACPI Configuration

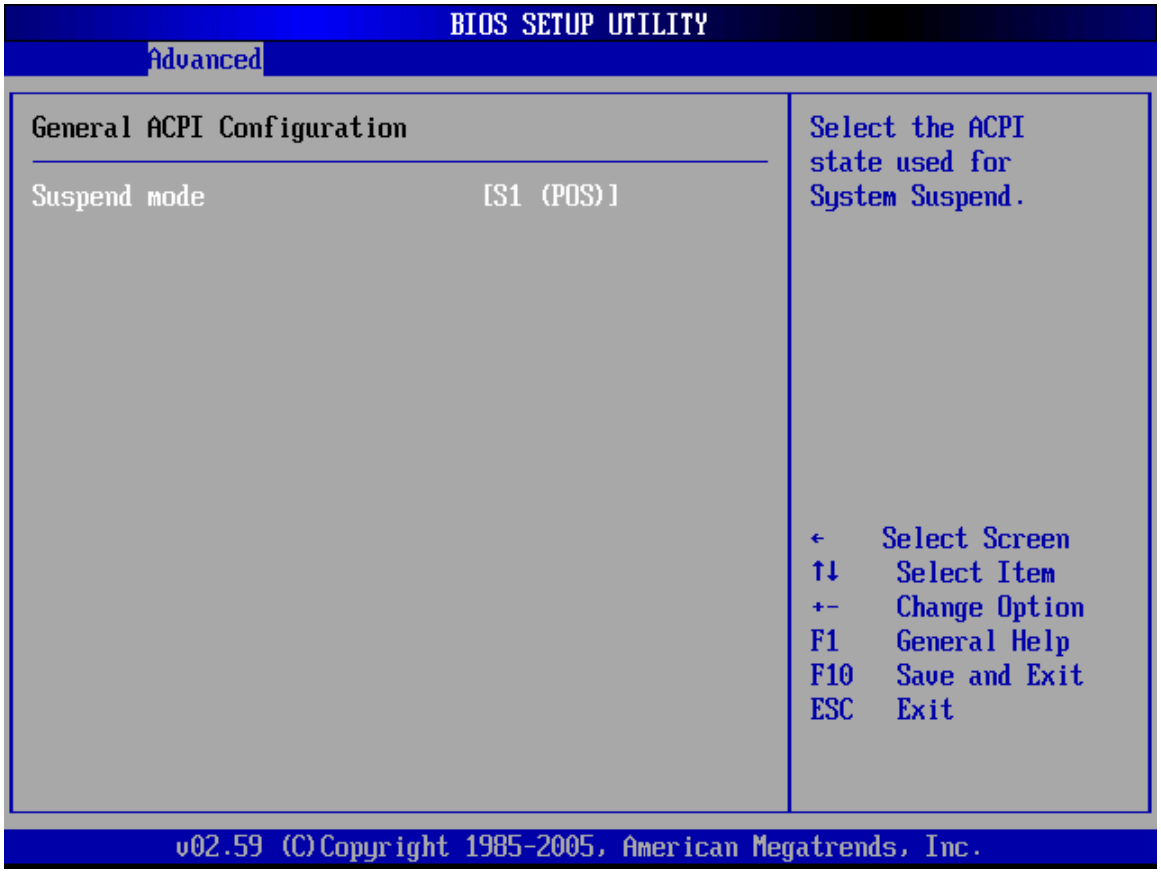
➔ **ACPI Aware O/S [Yes]**

Use the **ACPI Aware O/S** option to enable the system to configure ACPI power saving options. ACPI can only be implemented if the system OS complies with the ACPI standard. Windows 98, Windows 2000, and Windows XP all comply with ACPI.

➔	**No**	Disables the ACPI support for the OS. This selection should be disabled if the OS does not support ACPI
➔	**Yes** **DEFAULT**	Enables the ACPI support for the operating system. This selection should be enabled if the OS does support ACPI

5.3.6.1 General ACPI Configuration

Use the General ACPI Configuration menu (**BIOS Menu 10**) to select the ACPI state when the system is suspended.



BIOS Menu 10: General ACPI Configuration [Advanced\ ACPI Configuration]

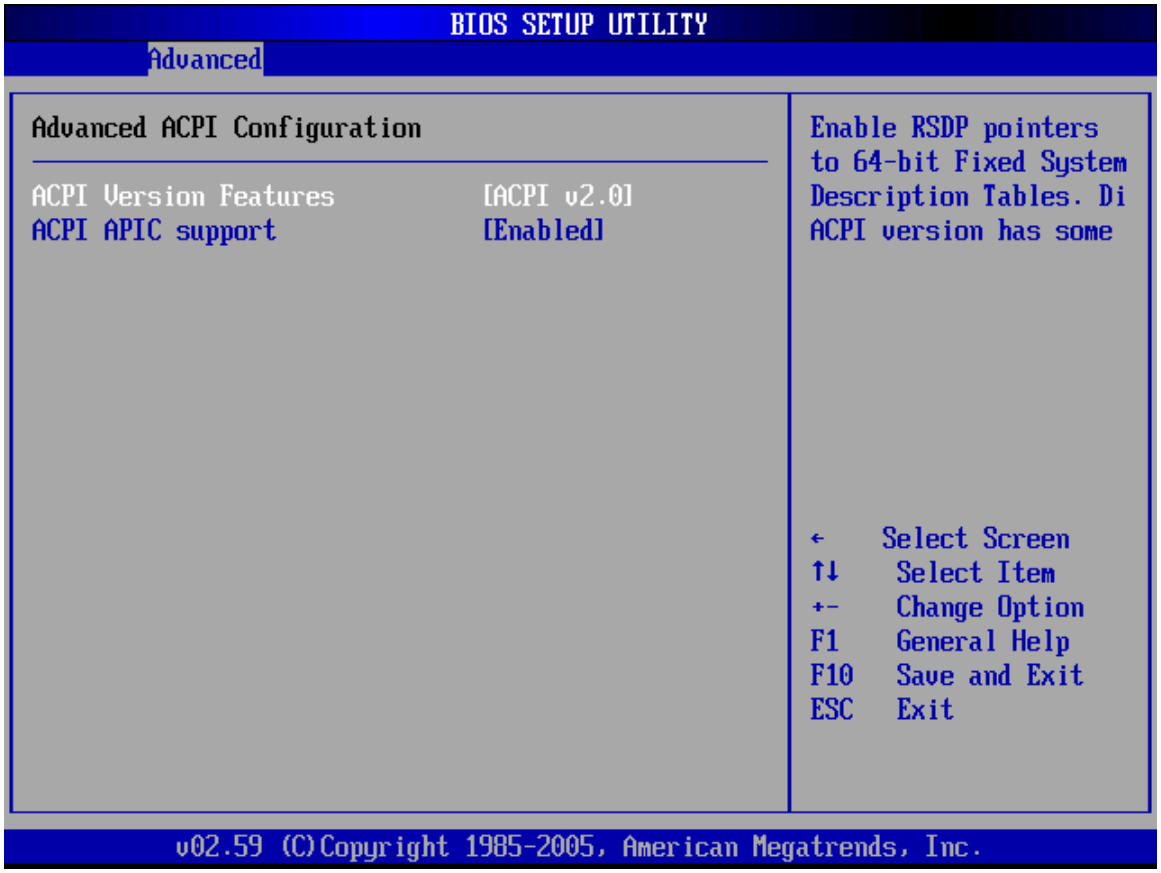
➔ **Suspend Mode [S1 (POS)]**

Use the Suspend Mode option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

5.3.6.2 Advanced ACPI Configuration

Use the Advanced ACPI Configuration menu (**BIOS Menu 11**) to select the ACPI state when the system is suspended.



BIOS Menu 11: Advanced ACPI Configuration [Advanced\ ACPI Configuration]

➔ **ACPI Version Features [No]**

Use the ACPI Version Features option to enable the ACPI (Advanced Configuration and Power Interface) features. By enabling this feature the system RSDP (Root System Description Pointer) is able to obtain physical addresses for other 64-bit fixed system description tables.

➔ **No** **DEFAULT** RSDP pointers to 64-bit fixed systems are not provided to the system

➔ **Yes** RSDP pointers to 64-bit fixed systems are provided to the system

➔ **ACPI APIC Support [Enabled]**

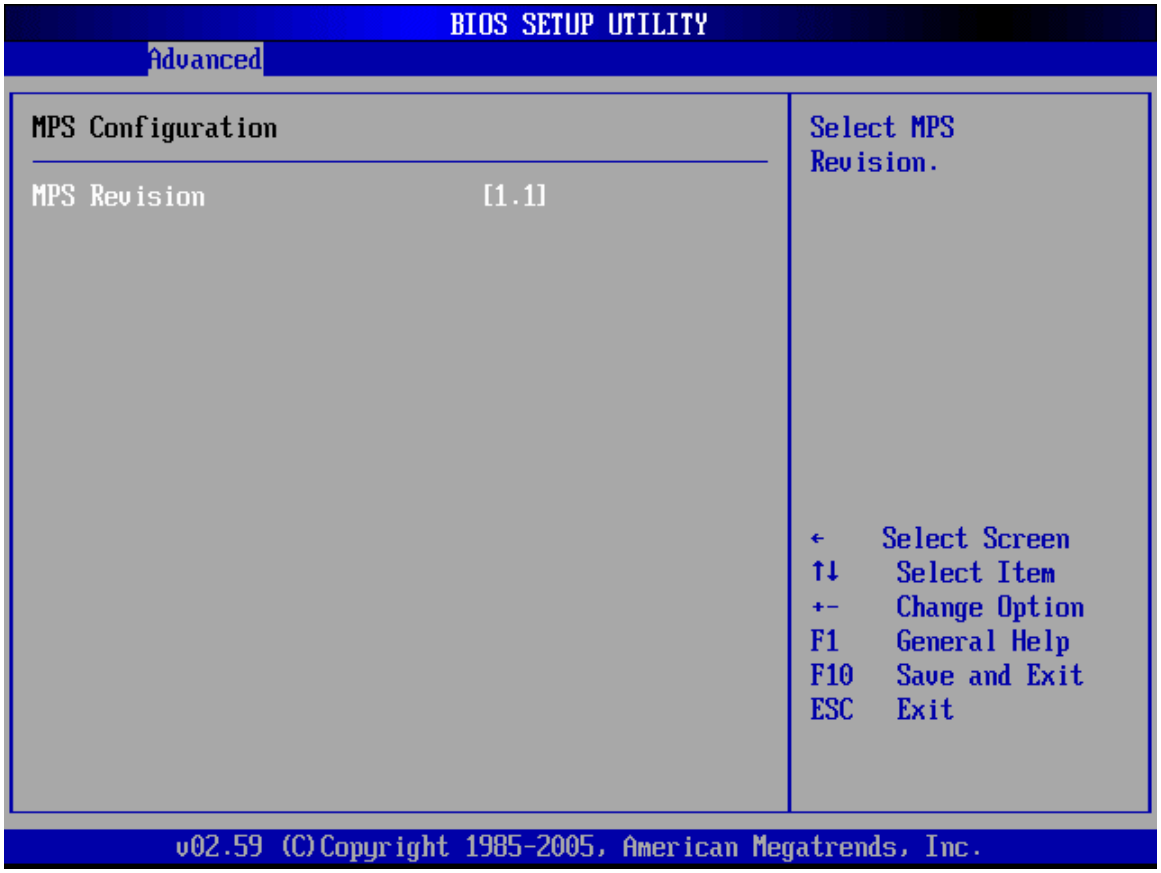
Use the ACPI APIC Support option to add a pointer to an ACPI APIC table in the RSDT (Root System Description Table). The RSDT is an array of pointers that direct the system to the physical addresses of other description tables. The RSDT is the main ACPI table. The RSDP is located in low memory space of the system and provides the physical address of the RSDT. The RSDT itself is identified in memory because it starts with the signature "RSDT."

➔ **Disabled** Pointers to the APIC APIC table are not be provided in the RSDT

➔ **Enabled** **DEFAULT** Pointers to the APIC APIC table are provided in the RSDT

5.3.7 MPS Configuration

Use the MPS Configuration menu (**BIOS Menu 12**) to select the multi-processor table.



BIOS Menu 12: MPS Configuration

➔ **MPS Revision [1.4]**

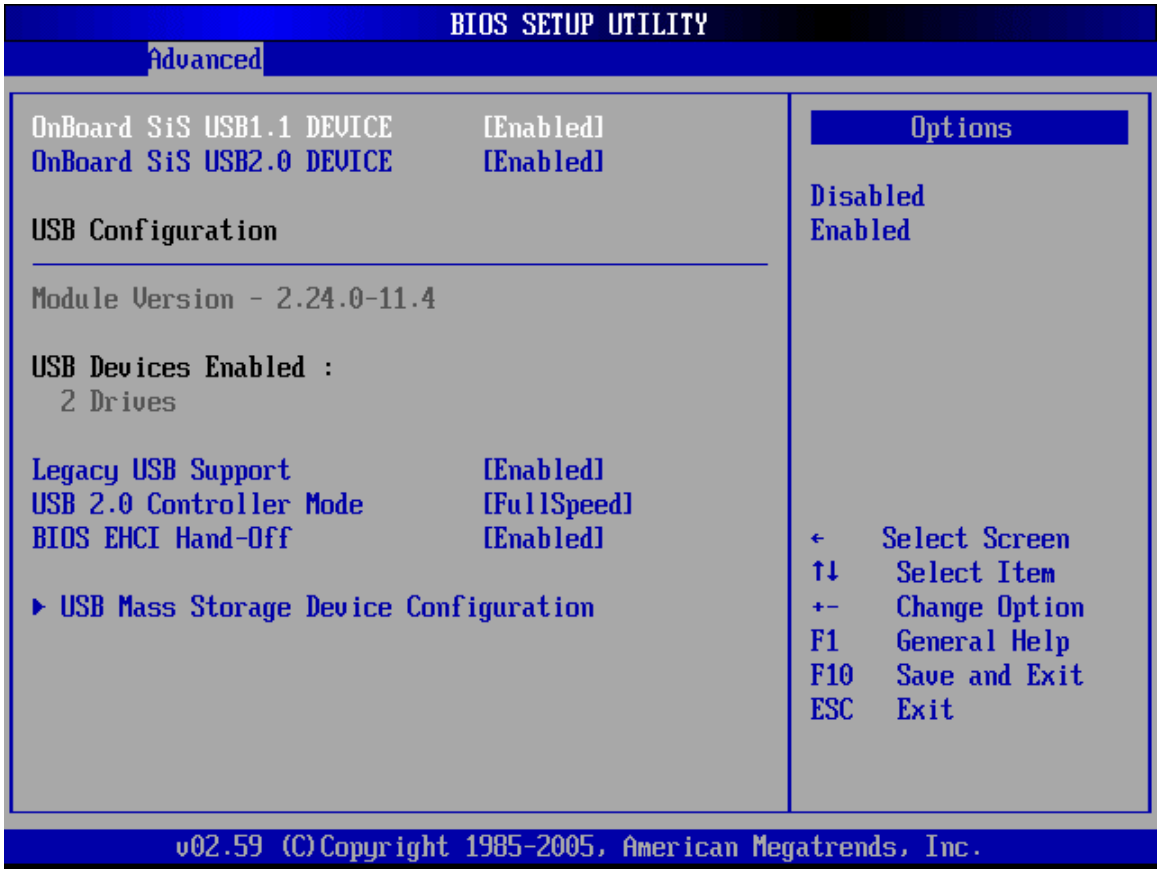
Use the Multiprocessor Specification (MPS) for OS option to specify the MPS version to be used.

➔ **1.1** MPS version 1.1 is used

➔ **1.4 DEFAULT** MPS version 1.4 is used

5.3.8 USB Configuration

Use the USB Configuration menu (**BIOS Menu 13**) to read USB configuration information and configure the USB settings.



BIOS Menu 13: USB Configuration

➔ **Onboard SiS USB1.1 DEVICE [Enabled]**

Use the Onboard **SiS USB1.1 DEVICE** BIOS option to enable or disable the onboard SiS USB1.1 controller. If disabled, USB1.1 devices cannot be used.

➔ **Disabled** USB 1.1 interface is disabled and cannot be used.

➔ **Enabled** **DEFAULT** USB 1.1 interface is enabled and can be used.

➔ **Onboard SiS USB2.0 DEVICE [Enabled]**

Use the **Onboard SiS USB2.0 DEVICE** option to enable or disable the onboard SiS USB2.0 controller. If disabled, USB2.0 devices cannot be used.

➔ **Disabled**		USB 2.0 interface is disabled and cannot be used.
➔ **Enabled**	**DEFAULT**	USB 2.0 interface is enabled and can be used.

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**		Legacy USB support disabled
➔ **Enabled**	**DEFAULT**	Legacy USB support enabled
➔ **Auto**		Legacy USB support disabled if no USB devices are connected

➔ **USB2.0 Controller Mode [FullSpeed]**

Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

➔ **FullSpeed**	**DEFAULT**	The controller is capable of operating at 12Mb/s
➔ **HiSpeed**		The controller is capable of operating at 480Mb/s

➔ **BIOS EHCI Handoff [Enabled]**

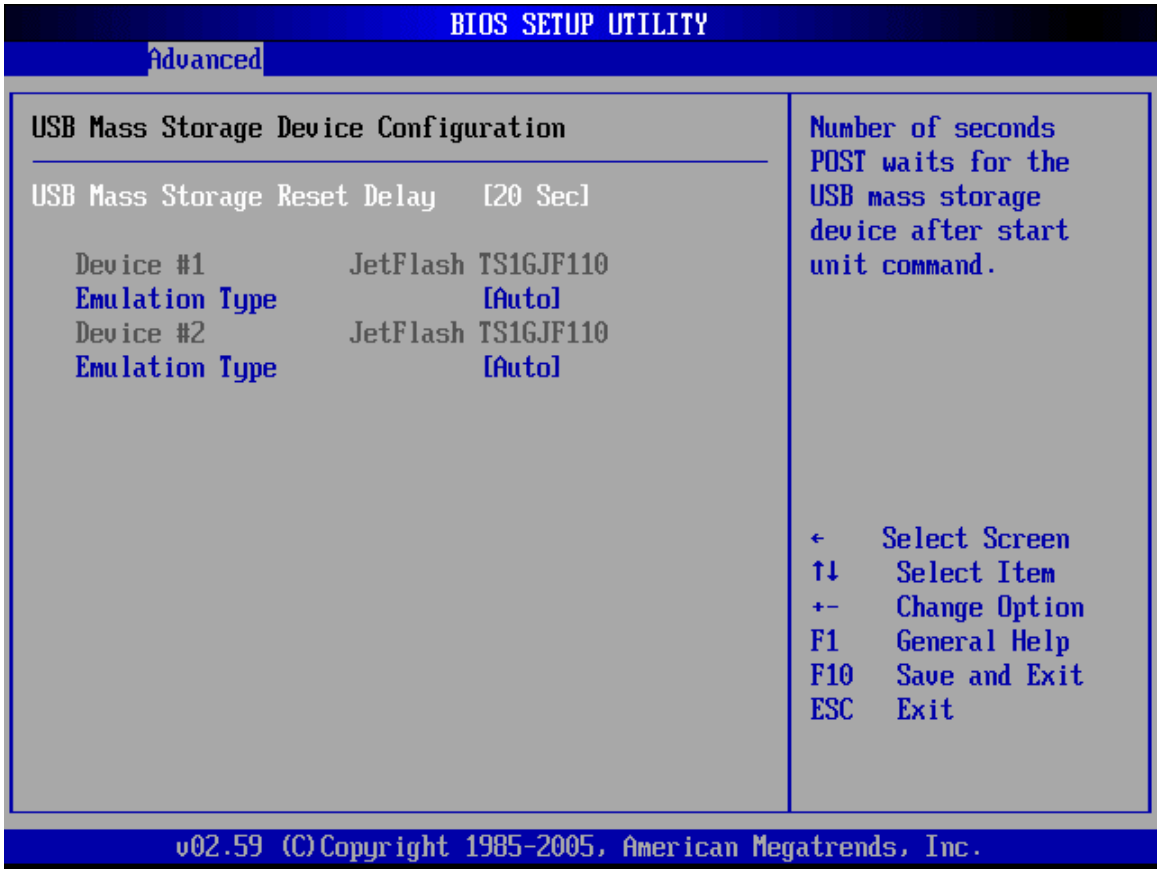
Use the **BIOS EHCI Handoff** option for systems running OSes that do not have EHCI hand-off support. The EHCI ownership change is managed by the EHCI driver.

➔ **Disabled** Systems with OSes that do not support EHCI can use the EHCI handoff functionality.

➔ **Enabled** **DEFAULT** Systems with OSes that do not support EHCI cannot use the EHCI handoff functionality.

5.3.8.1 USB Mass Storage Device Configuration

Use the USB Mass Storage Device Configuration menu (**BIOS Menu 14**) to configure USB mass storage class devices.



BIOS Menu 14: USB Mass Storage Device Configuration

➔ **USB Mass Storage Reset Delay [20 Sec]**

Use the **USB Mass Storage Reset Delay** option to set the number of seconds POST waits for the USB mass storage device after the start unit command.

➔	**10 Sec**		POST waits 10 seconds for the USB mass storage device after the start unit command.
➔	**20 Sec**	**DEFAULT**	POST waits 20 seconds for the USB mass storage device after the start unit command.
➔	**30 Sec**		POST waits 30 seconds for the USB mass storage device after the start unit command.
➔	**40 Sec**		POST waits 40 seconds for the USB mass storage device after the start unit command.

➔ **Device ##**

The **Device##** field lists the USB devices that are connected to the system.

➔ **Emulation Type [Auto]**

Use the **Emulation Type** BIOS option to specify the type of emulation BIOS has to provide for the USB device.

NOTE:

Please note that the device's formatted type and the emulation type provided by the BIOS must match for a device to boot properly. If both types do not match then device's behavior is undefined. To make sure both types match, format the device using BIOS INT13h calls after selecting the proper emulation option in BIOS setup. The FORMAT utility provided by Microsoft® MS-DOS®, Microsoft® Windows® 95, and Microsoft® Windows® 98 can be used for this purpose.

➔	**Auto**	**DEFAULT**	BIOS auto-detects the current USB.
➔	**Floppy**		The USB device will be emulated as a floppy drive.

The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.

➔ **Forced FDD** Allows a hard disk image to be connected as a floppy image. This option works only for drives formatted with FAT12, FAT16 or FAT32.

➔ **Hard Disk** Allows the USB device to be emulated as hard disk responding to INT13h calls that return DL values of 80h or above.

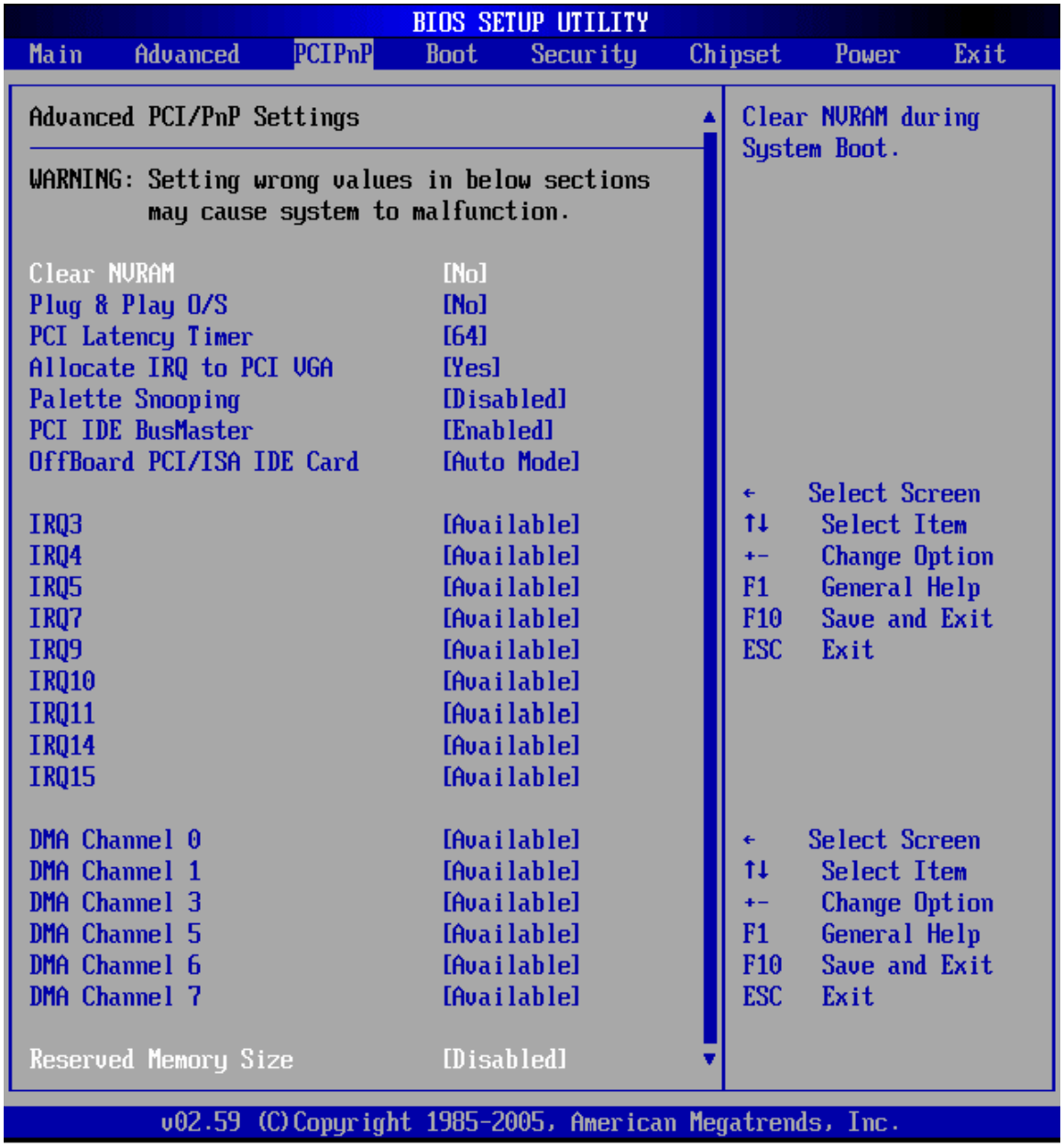
➔ **CDROM** Assumes the CD-ROM is formatted as bootable media. All the devices that support block sizes greater than 512 bytes can only be booted using this option.

5.4 PCI/PnP

Use the PCI/PnP menu (**BIOS Menu 15**) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.



BIOS Menu 15: PCI/PnP Configuration

➔ **Clear NVRAM [No]**

Use the **Clear NVRAM** option to specify if the NVRAM (Non-Volatile RAM) is cleared when the power is turned off.

➔	**No**	**DEFAULT**	System does not clear NVRAM during system boot
➔	**Yes**		System clears NVRAM during system boot

➔ **Plug & Play O/S [No]**

Use the **Plug & Play O/S** BIOS option to specify whether system plug and play devices are configured by the operating system or the BIOS.

➔ **No** **DEFAULT** If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.

➔ **Yes** This setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.

➔ **PCI Latency Timer [64]**

Use the **PCI Latency Timer** option to specify the PCI latency time. The latency time is measured in units of PCI clock cycles for the PCI device latency timer register. Configuration options are:

- 32
- 64 Default
- 96
- 128
- 160
- 192
- 224
- 248

➔ **Allocate IRQ to PCI VGA [Yes]**

Use the **Allocate IRQ to PCI VGA** option to restrict the system from giving the VGA adapter card an interrupt address.

➔ **Yes** **DEFAULT** Assigns an IRQ to a PCI VGA card if card requests IRQ

➔ **No** Does not assign IRQ to a PCI VGA card even if the card requests an IRQ

➔ **Palette Snooping [Disabled]**

Use the **Palette Snooping** option to enable or disable the palette snooping function.

➔ **Disabled**	**DEFAULT**	Unless the VGA card manufacturer requires palette snooping to be enabled, this option should be disabled.
➔ **Enabled**		PCI devices are informed that an ISA based Graphics device is installed in the system so the ISA based Graphics card functions correctly. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with the adapter card manual first, before modifying the default settings in the BIOS.

➔ **PCI IDE BusMaster [Disabled]**

Use the **PCI IDE BusMaster** BIOS option to enable or prevent PCI IDE busmastering.

➔ **Disabled**	**DEFAULT**	Busmastering is prevented
➔ **Enabled**		IDE controller on the PCI local bus has mastering capabilities

➔ **OffBoard PCI/ISA IDE Card [Auto]**

Use the Off Board PCI/ISA IDE Card BIOS option to select the OffBoard PCI/ISA IDE Card.

➔ **Auto**	**DEFAULT**	The location of the Off Board PCI IDE adapter card is automatically detected by the AMIBIOS.
➔ **PCI Slot 1**		PCI Slot 1 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 1.
➔ **PCI Slot 2**		PCI Slot 2 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 2.
➔ **PCI Slot 3**		PCI Slot 3 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 3.
➔ **PCI Slot 4**		PCI Slot 4 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 4.
➔ **PCI Slot 5**		PCI Slot 5 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 5.
➔ **PCI Slot 6**		PCI Slot 6 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 6.

➔ **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available** **DEFAULT** The specified DMA is available to be used by PCI/PnP devices

➔ **Reserved** The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

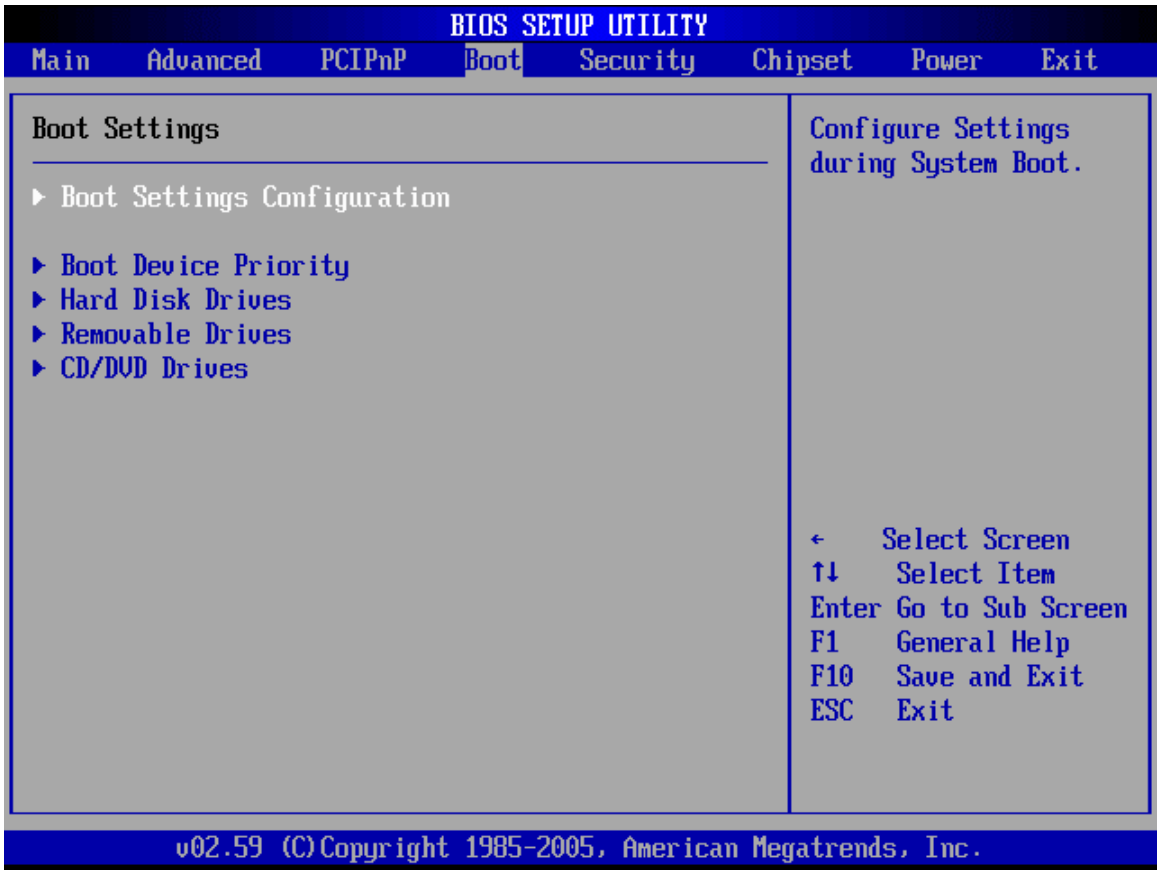
➔ **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔	**Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔	**16K**		16KB reserved for legacy ISA devices
➔	**32K**		32KB reserved for legacy ISA devices
➔	**64K**		54KB reserved for legacy ISA devices

5.5 Boot

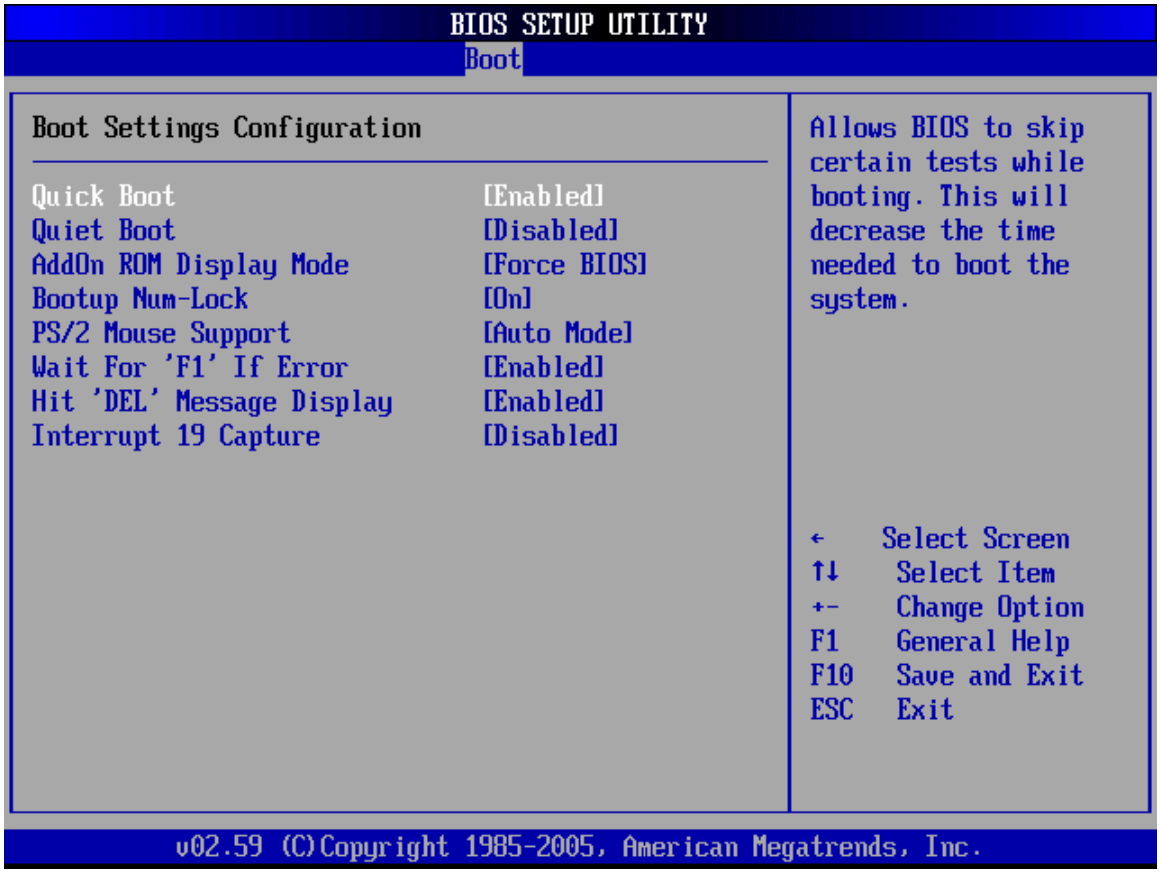
Use the Boot menu (**BIOS Menu 16**) to configure system boot options.



BIOS Menu 16: Boot

5.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (**BIOS Menu 17**) to configure advanced system boot options.



BIOS Menu 17: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Disabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**	**DEFAULT**	Normal POST messages displayed
➔ **Enabled**		OEM Logo displayed instead of POST messages

➔ **AddOn ROM Display Mode [Force BIOS]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display during system boot.
➔ **Keep Current**		The system displays normal information during system boot.

➔ **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **Off**		Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.
➔ **On**	**DEFAULT**	Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **PS/2 Mouse Support [Enabled]**

Use the **PS/2 Mouse Support** option adjusts PS/2 mouse support capabilities.

➔ **Disabled**		PS/2 mouse support is disabled and prevented from using system resources.
➔ **Enabled**	**DEFAULT**	Allows the system to use a PS/2 mouse.
➔ **Auto**		The system auto-adjusts PS/2 mouse support.

➔ **Wait For 'F1' If Error [Enabled]**

Use the **Wait For 'F1' if Error** option to specify how the system responds when the system detects an error on boot up.

➔ **Disabled**		If there is an error when booting up, the system does not wait for user intervention but continues to boot up in the operating system. Only use this setting if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached.
➔ **Enabled**	**DEFAULT**	If there is an error during boot up, the system waits for a user to press "F1" and enter the BIOS to rectify the problem. The BIOS can then be adjusted to the correct settings.

➔ **Hit 'DEL' Message Display [Enabled]**

Use the **Hit "DEL" Message Display** option to specify whether the instruction to hit the delete button to enter BIOS during POST appears or not.

➔ **Disabled**		No message displayed during POST
➔ **Enabled**	**DEFAULT**	Displays "**Press DEL to run Setup**" message in POST

➔ **Interrupt 19 Capture [Disabled]**

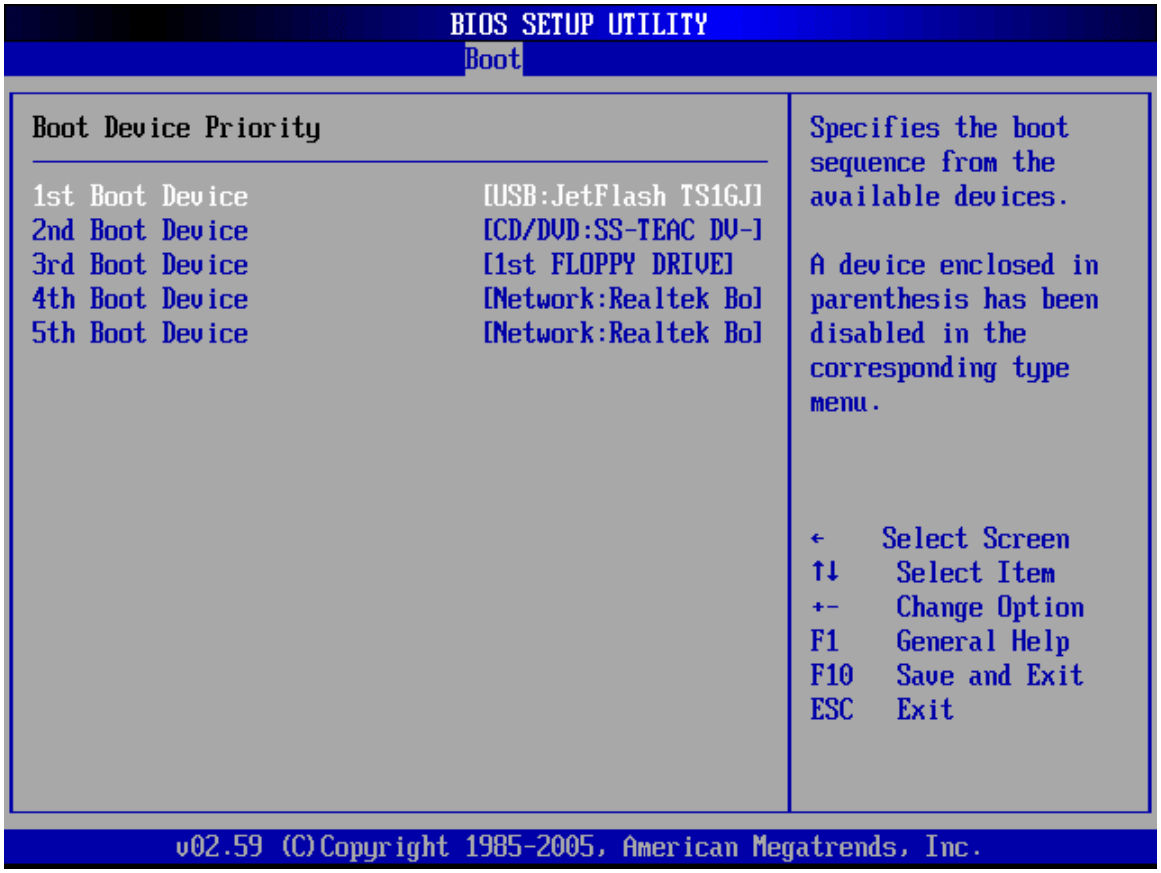
Use the **Interrupt 19 Capture** option to allow optional ROMs such as network controllers to trap BIOS interrupt 19.

➔ **Disabled**	**DEFAULT**	Does not allow optional ROM to trap interrupt 19
➔ **Enabled**		Allows optional ROM to trap interrupt 19

5.5.2 Boot Device Priority

Use the Boot Device Priority menu (**BIOS Menu 18**) to specify the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD



BIOS Menu 18: Boot Device Priority Setting

5.5.3 Hard Disk Drives

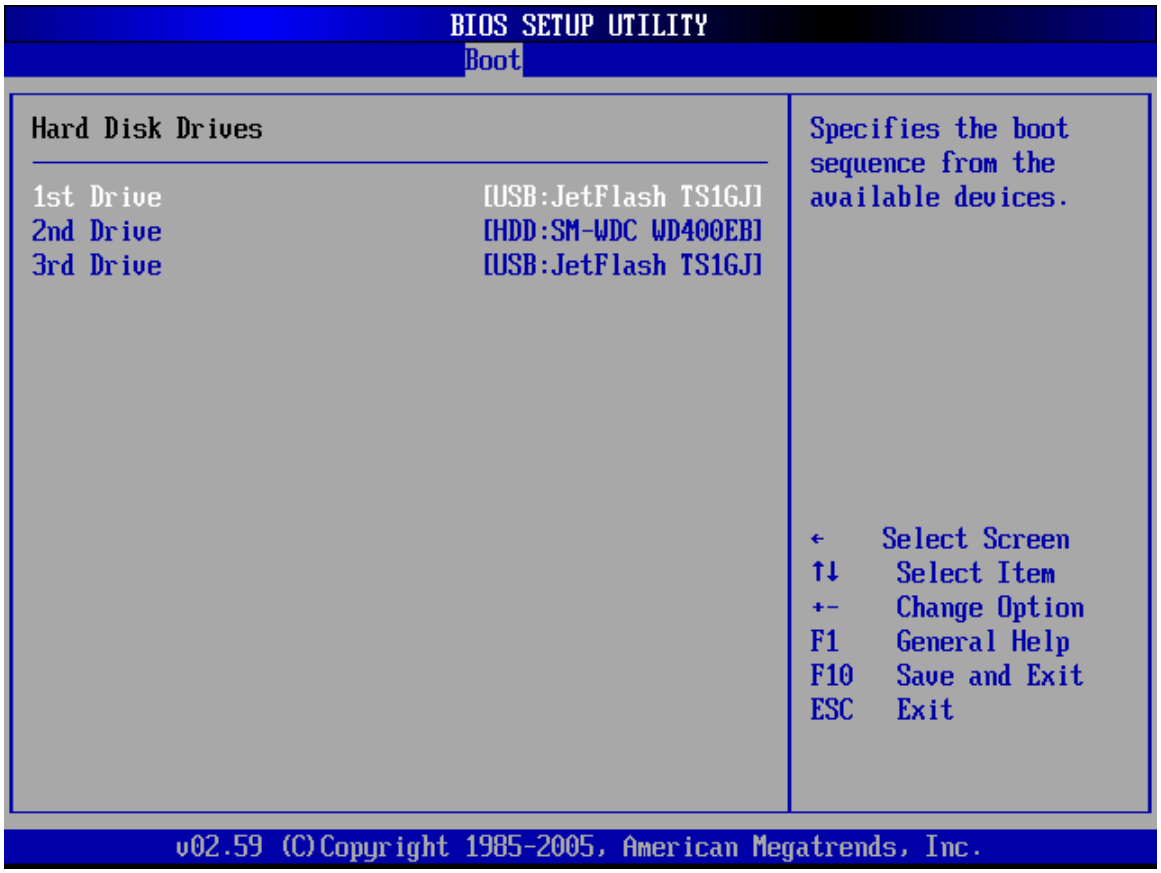
The **Hard Disk Drives** menu (**BIOS Menu 19**) is similar to the **Removable Drives BIOS Menu 20** and it specifies the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

- 1st Drive [HDD: PM-(part number)]
- 2nd Drive [HDD: PS-(part number)]
- 3rd Drive [HDD: SM-(part number)]
- 4th Drive [HDD: SM-(part number)]

NOTE:

Only the drives connected to the system are shown. For example, if only two HDDs are connected only "**1st Drive**" and "**2nd Drive**" are listed.

The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available HDDs is shown. Select the first HDD system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.



BIOS Menu 19: Hard Disk Drives

5.5.4 Removable Drives

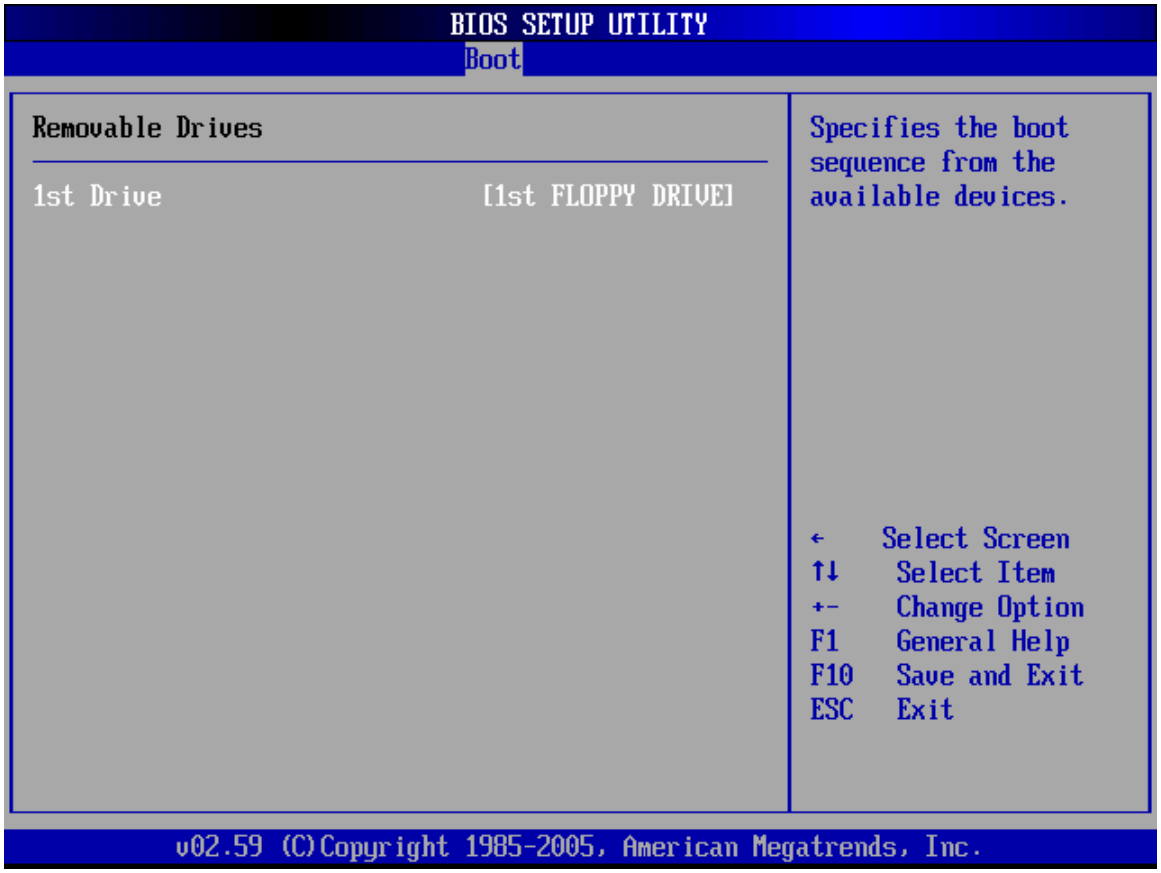
The **Removable Drives** menu (**BIOS Menu 20**) specifies the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

- 1st Drive [1st FLOPPY DRIVE]
- 2nd Drive [2nd FLOPPY DRIVE]

NOTE:

Only the drives connected to the system are shown. For example, if only one FDD is connected only "**1st Drive**" is listed.

The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available FDDs is shown. Select the first FDD system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.



BIOS Menu 20: Removable Drives

5.5.5 CD/DVD Drives

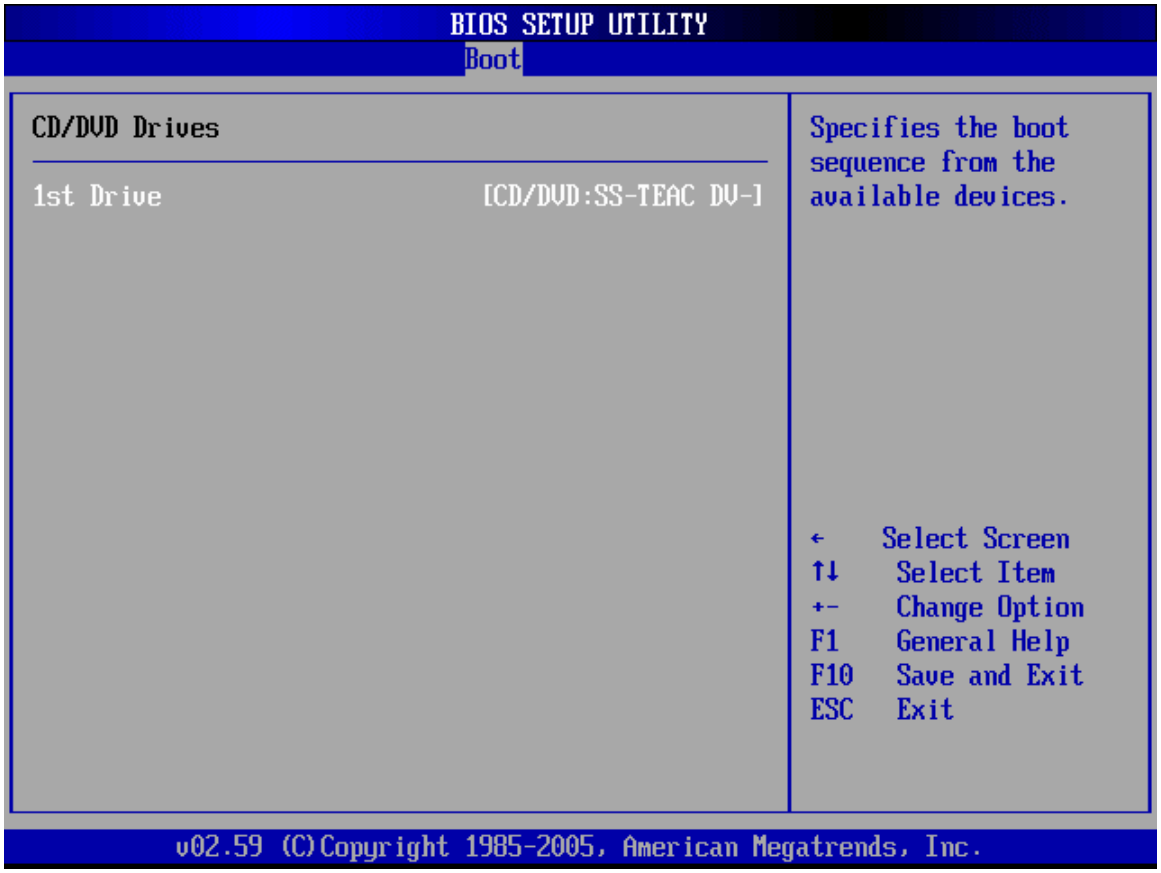
The **CD/DVD Drives** menu (**BIOS Menu 21**) is similar to the **Removable Drives BIOS Menu 20** and it specifies the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

- 1st Drive [CD/DVD: PM-(part ID)]
- 2nd Drive [HDD: PS-(part ID)]
- 3rd Drive [HDD: SM-(part ID)]
- 4th Drive [HDD: SM-(part ID)]

NOTE:

Only the drives connected to the system are shown. For example, if only two CDs or DVDs are connected only "**1st Drive**" and "**2nd Drive**" are listed.

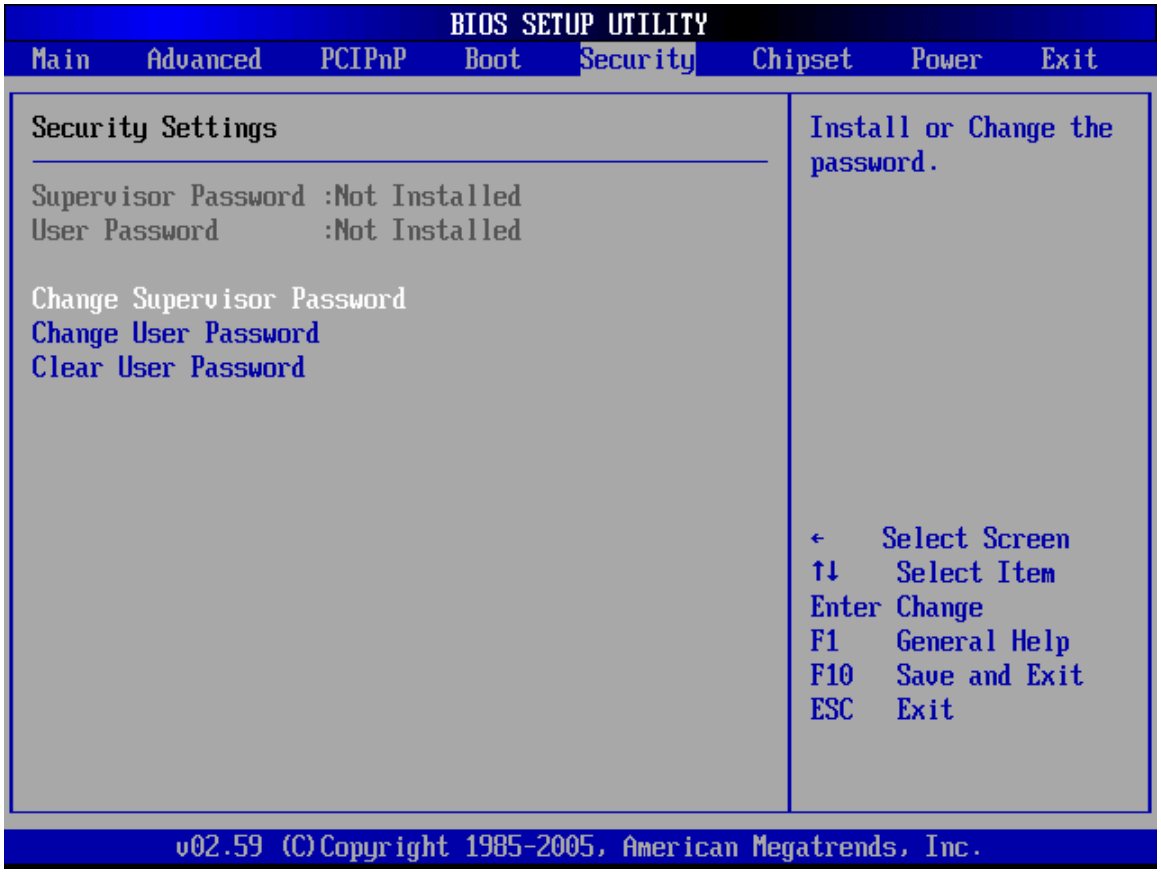
The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available CD/DVD drives is shown. Select the first CD/DVD drive the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.



BIOS Menu 21: CD Drives

5.6 Security

The **Security** menu (**BIOS Menu 22**) allows system security settings including passwords to be configured.



BIOS Menu 22: Security

➔ **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

➔ **Change User Password**

Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the

password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

Use the Chipset menu (**BIOS Menu 23**) to access the NorthBridge and SouthBridge configuration menus

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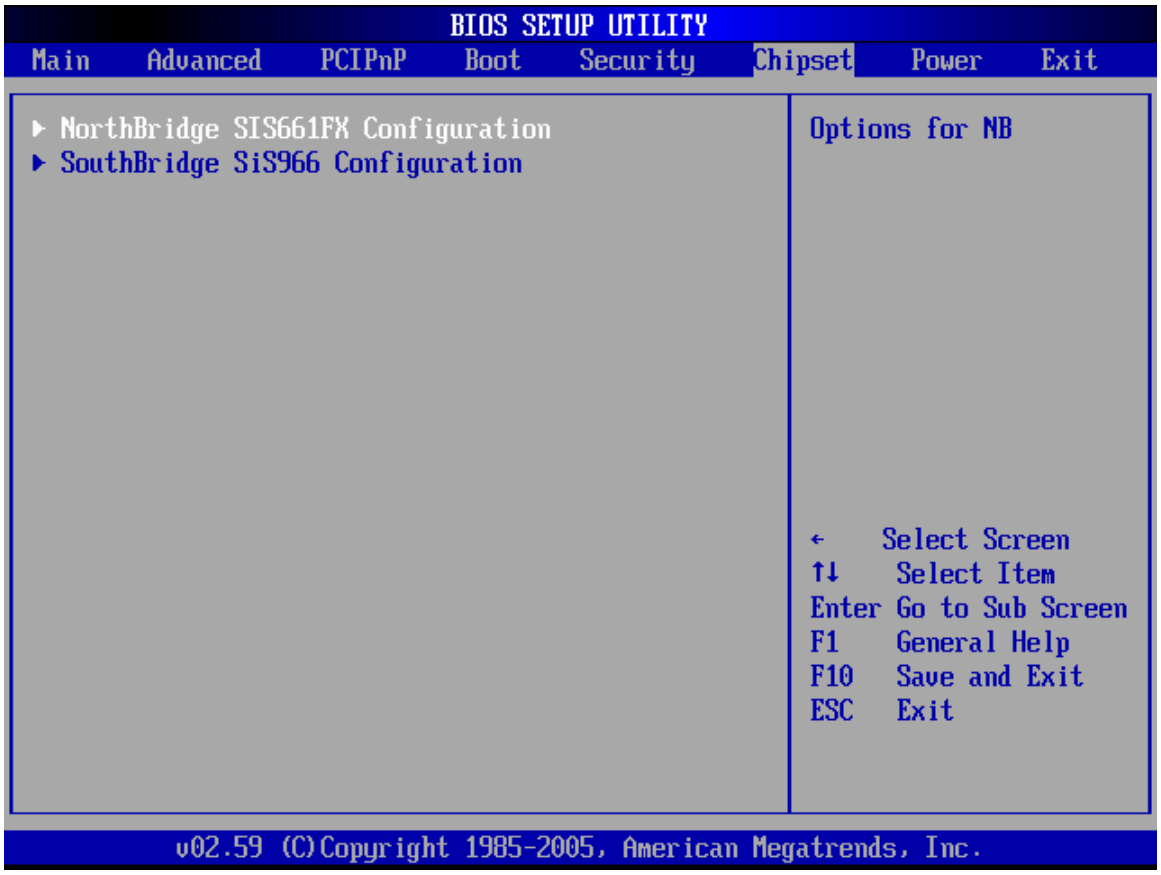
WARNING!

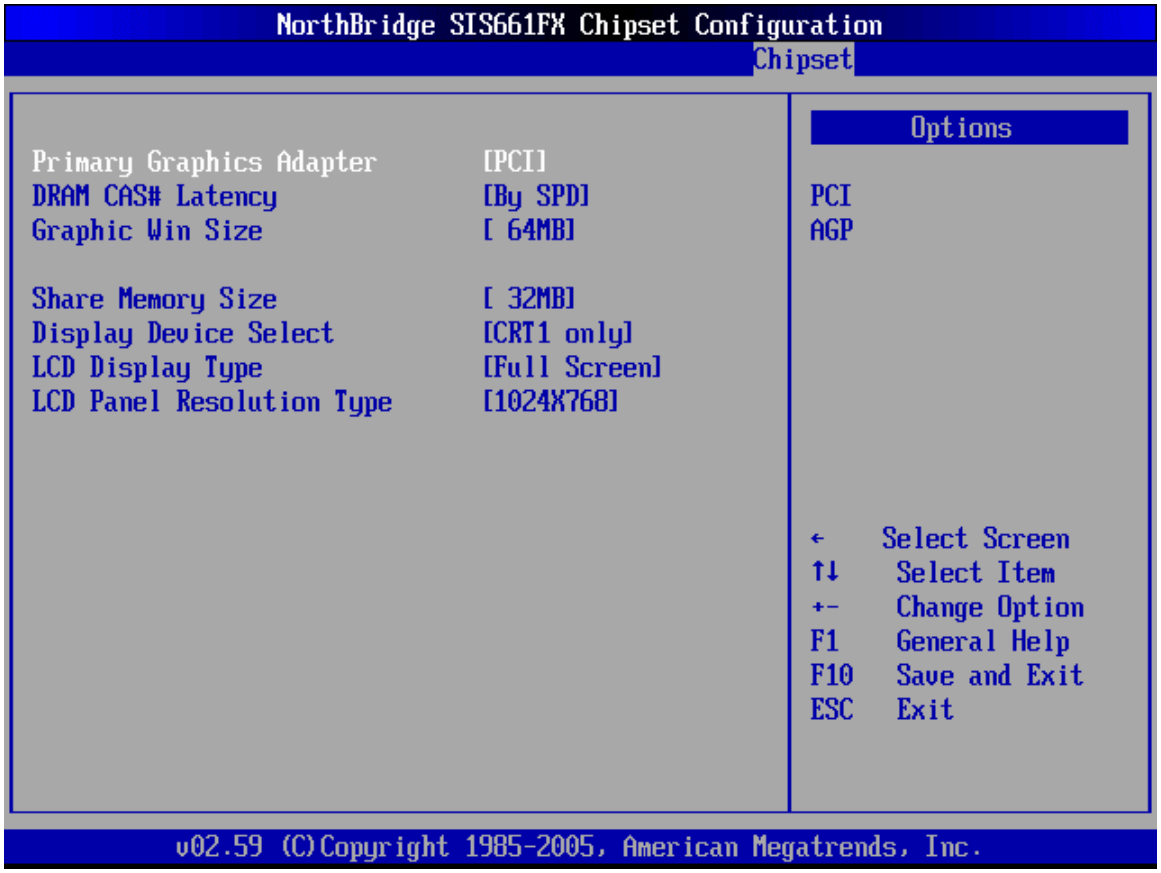
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 23: Chipset

5.7.1 Northbridge SIS661FX Configuration

The **Northbridge SIS661FX Configuration** menu (**BIOS Menu 24**) allows the northbridge chipset to be configured.



BIOS Menu 24:NorthBridge Chipset Configuration

➔ **Primary Graphics Adapter [PCI]**

Use the **Primary Graphics Adapter** option to select the graphics adapter the system uses.

➔ **PCI** **DEFAULT** PCI graphics adapter is used

➔ **AGP** AGP graphics adapter is used

➔ **DRAM CAS# Latency [3]**

Use the **CAS Latency Time** configuration option to set the Column Address Strobe (CAS) delay time. The following configuration options are available

- By SPD DEFAULT
- 2T
- 2.5T
- 3T

➔ **Graphic Win Size [256MB]**

Use the **Graphic Win Size** option to select the size of the AGP aperture and the size of the GART (Graphics Address Relocation Table). The aperture is a portion on the PCI memory address range dedicated for use as AGP memory address space and the GART is a translation table that translates the AGP memory addresses into actual addresses. The following options are available.

- 32MB
- 64MB
- 128MB Default

➔ **Share Memory Size [32MB]**

Use the **Share Memory Size** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

- 16MB
- 32MB Default
- 64MB
- 128MB
- Disabled

➔ **Display Device Select [CRT1 only]**

Use the **Display Device Select** BIOS feature to determine what displays are used. Dual display functionality is enabled here. Dual display configuration options are listed below:

- CTR1 only DEFAULT
- CRT1 + LCD
- CRT1 + TV
- CRT1 + CRT2

➔ **LCD Display Type [Full Screen]**

Use the **LCD Display Type** BIOS to specify the screen display type. Configuration options are listed below:

- Full Screen DEFAULT
- Center Screen

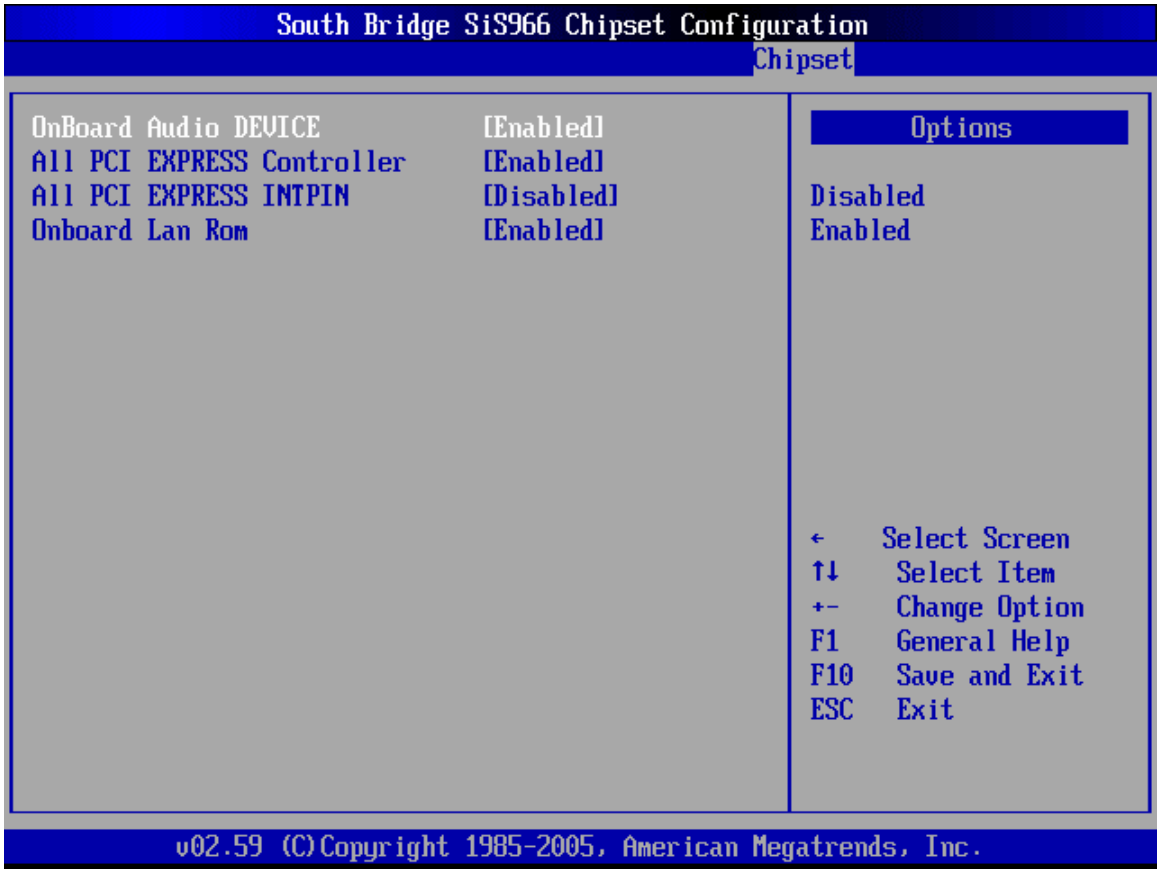
➔ **LCD Panel Resolution Type**

Use the **LCD Panel Resolution Type** to determine the LCD panel resolution. Configuration options are listed below:

- 1024 x 768
- 1280 x 1024
- 1400 x 1050
- 1280 x 768 (HT x VT = 1688 x 806)
- 1600 x 1200
- 1280 x 768 (HT x VT = 1408 x 806)

5.7.2 South Bridge SiS966 Configuration

The **South Bridge SiS966 Configuration** menu (**BIOS Menu 25**) the southbridge chipset to be configured.



BIOS Menu 25:SouthBridge Chipset Configuration

➔ **OnBoard Audio DEVICE**

The **OnBoard AC'97 DEVICE** option enables or disables the AC'97 CODEC.

➔ **Enabled** **DEFAULT** The onboard AC'97 automatically detected and enabled

➔ **Disabled** The onboard AC'97 is disabled

➔ **All PCI EXPRESS Controller [Enabled]**

Use the **All PCI EXPRESS Controller** to enable the PCIe controllers on the system.

➔ **Enabled**	**DEFAULT**	PCIe controllers enabled
➔ **Disabled**		PCIe controllers disabled

➔ **All PCI EXPRESS INTPIN [Disabled]**

Use the **All PCI EXPRESS INTPIN** to enable the PCIe interrupt pin function on the PCIe bus.

➔ **Enabled**		PCIe INTPIN function enabled
➔ **Disabled**	**DEFAULT**	PCIe INTPIN function disabled

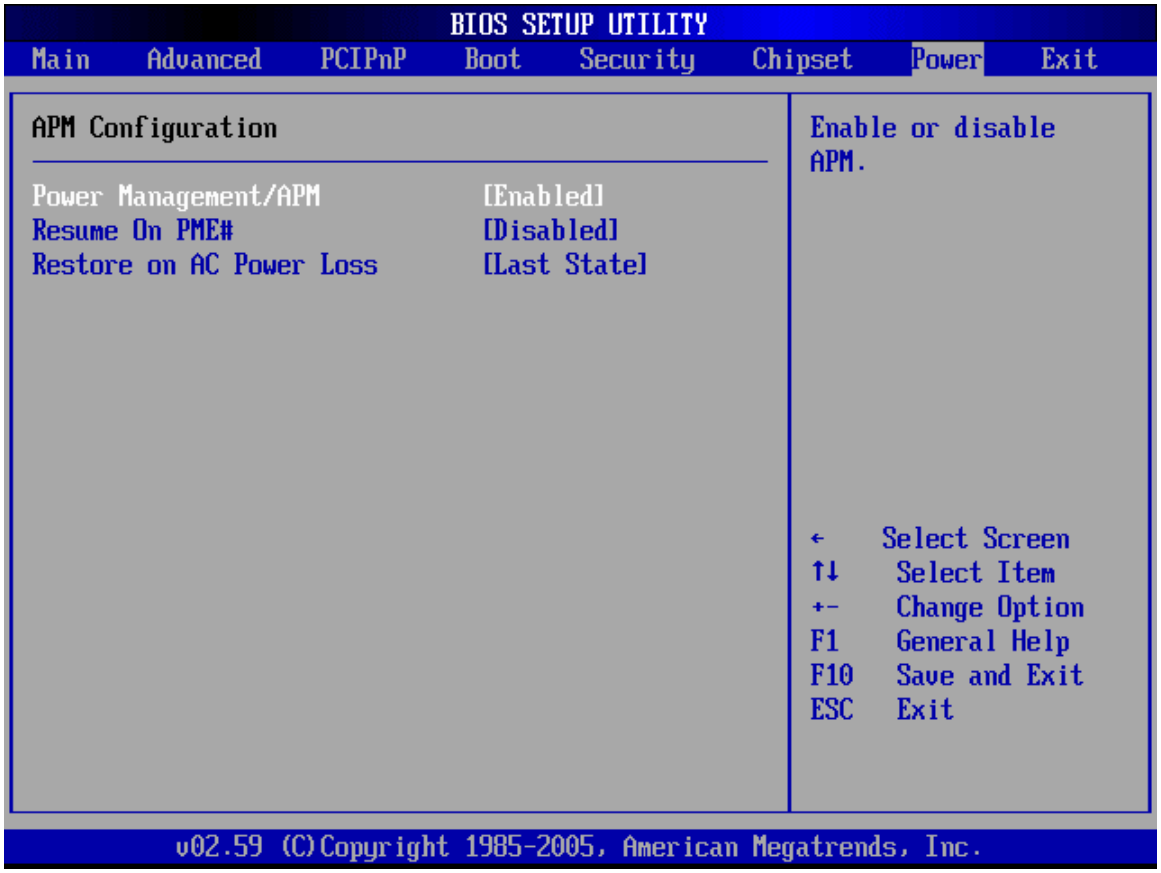
➔ **OnBoard Lan ROM [Enabled]**

Use the **OnBoard Lan ROM** option enables or disables the onboard LAN.

➔ **Enabled**		The onboard LAN device automatically detected and enabled
➔ **Disabled**	**DEFAULT**	Onboard LAN device manually disabled

5.8 Power

The Power menu (**BIOS Menu 26**) allows the advanced power management options to be configured.



BIOS Menu 26: Power

➔ **Power Management/APM [Enabled]**

The **Power Management/APM** BIOS option allows access to the advanced power management features. If this option is disabled, the only other option on the screen is the "**Resume On RTC Alarm**."

➔ **Disabled** Disables the Advanced Power Management (APM) feature

➔ **Enabled** **DEFAULT** Enables the APM feature

➔ **Resume On PME# [Enabled]**

The **Resume On PME#** BIOS option to enable the system to be roused from a suspended or standby state when there is activity on the PCI PME (power management event) controller.

➔ **Disabled**		Wake event not generated by PCI PME controller activity
➔ **Enabled**	**DEFAULT**	Wake event generated by PCI PME controller activity

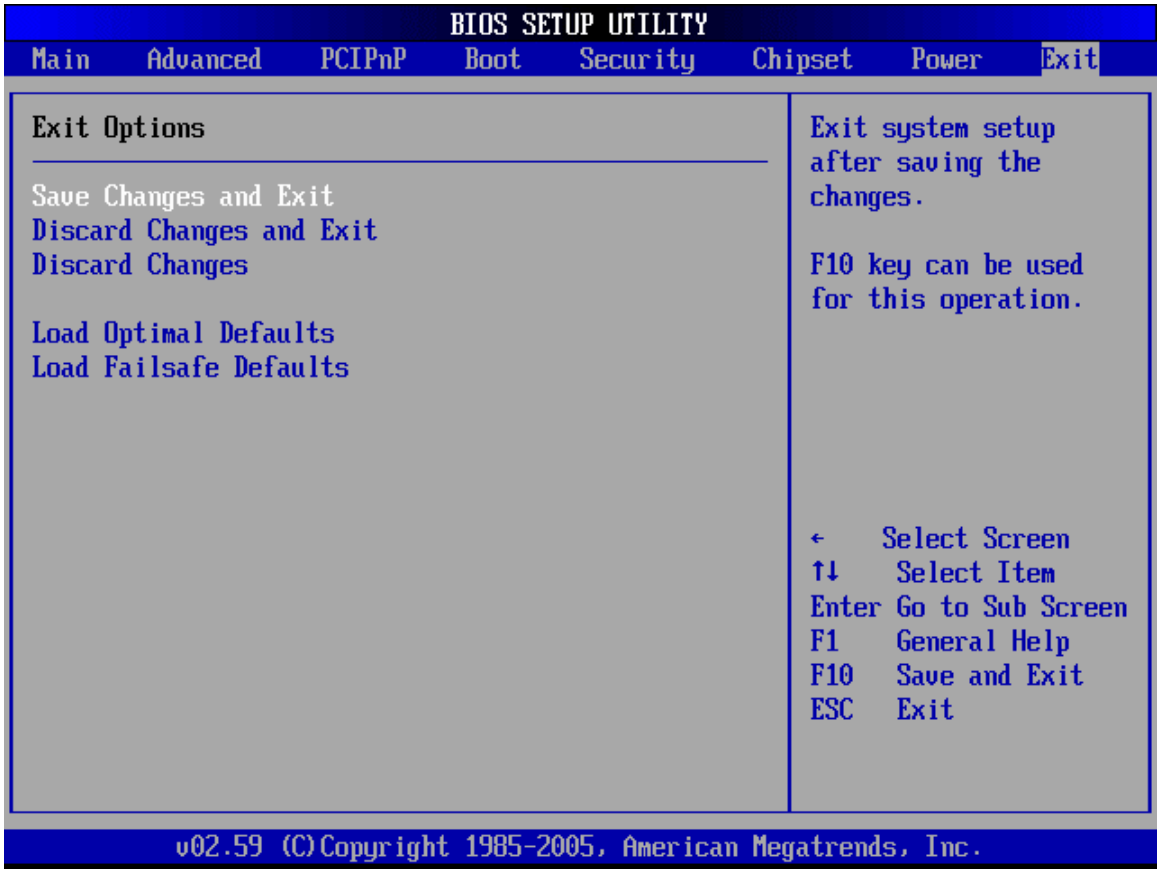
➔ **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**		The system remains turned off
➔ **Power On**		The system turns on
➔ **Last State**	**DEFAULT**	The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

5.9 Exit

Use the Exit menu (**BIOS Menu 27**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 27:Exit

➔ **Save Changes and Exit**

If configuration changes are complete, select this option to save them and exit the BIOS menus.

➔ **Discard Changes and Exit**

If configuration changes are complete but do need to be saved, select this option to exit the BIOS menus.

➔ **Discard Changes**

If configuration changes are complete but do need to be saved but BIOS still needs to be run , select this option.

➔ **Load Optimal Defaults**

This option loads optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

➔ **Load Failsafe Defaults**

This option loads failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

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Chapter

6

Driver Installation

6.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. You may visit the IEI website or contact technical support for the latest updates.

The POS-6614 motherboard has the following software drivers:

- SiS AGP Chipset Driver
- VGA Driver
- SiS IDE Driver
- Audio Driver
- LAN Driver
- SATA RAID Utility

All drivers can be found on the CD that came with the CPU card. To install the drivers please follow the instructions in the sections below.

Insert the CD into the system that contains the POS-6614 motherboard.

NOTE:

If your system does not run the "autorun" program when the CD is inserted, click the **Start** button, select **Run**, then type **X:\autorun.exe** (replace **X** with the actual drive letter for your CD-ROM) to access the **IEI Driver CD** main menu.

Step 1: From the SIS Solution Driver CD main menu (**Figure 6-1**), click **POS-6614**.

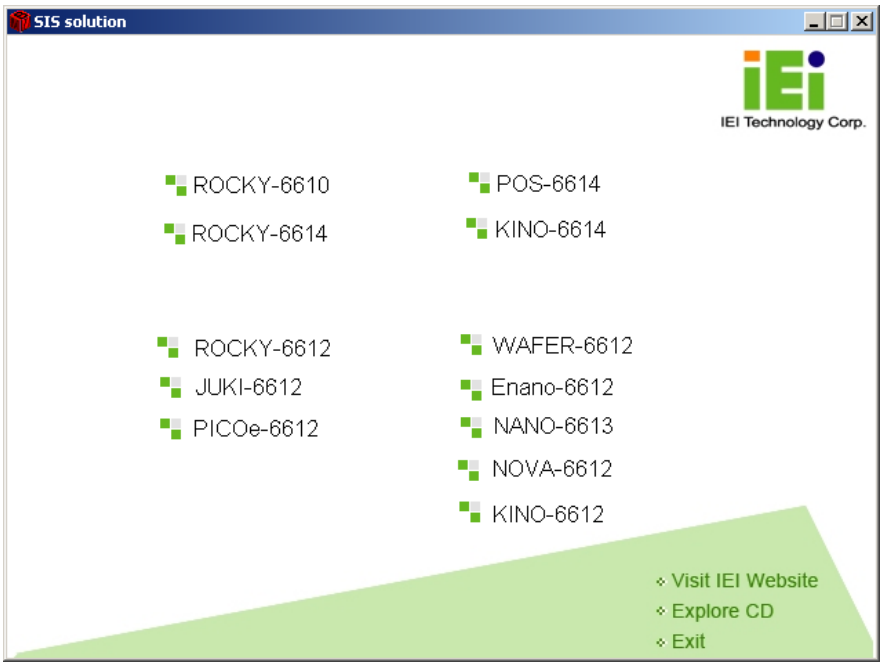

Figure 6-1: SIS Solution CD Main Menu

Step 2: A window appears listing the drivers available for installation (**Figure 6-2**).

Figure 6-2: SIS Solution CD Driver Menu

Step 3: Select any item from the list to view more information on the driver installation, or select Manual to navigate to the POS-6614 motherboard user manual.

The following sections fully describe the driver installation procedures for the POS-6614 motherboard.

6.2 VGA Driver Installation

To install the VGA driver, please follow the steps below.

Step 1: Select **2-VGA** from the SIS Solution CD driver menu (**Figure 6-2**).

Step 2: A new window appears showing the folder contents on the CD for the VGA driver (**Figure 6-9**).

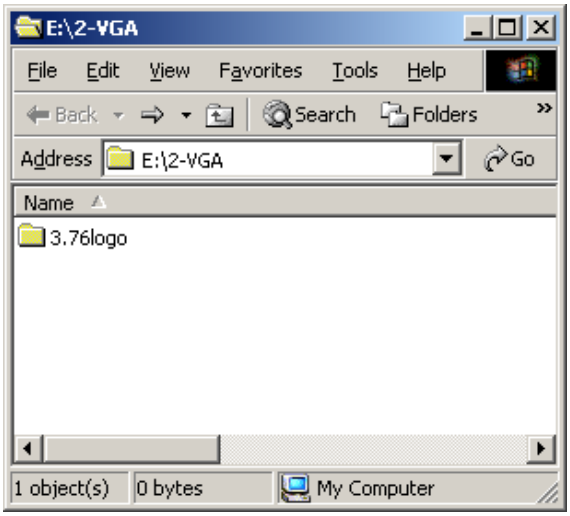

Figure 6-3: CD 2-VGA Folder

Step 3: Double-click the **3.76logo** sub-folder to view the folder contents on the CD for the VGA driver (**Figure 6-10**).

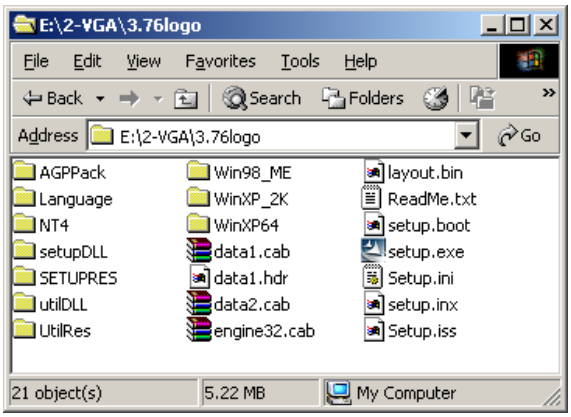

Figure 6-4: CD 2-VGA\3.76logo Folder

Step 4: Double-click the **setup.exe** file to begin the driver installation process.

Step 5: The "**Starting InstallShield Wizard**" in **Figure 6-11** appears.

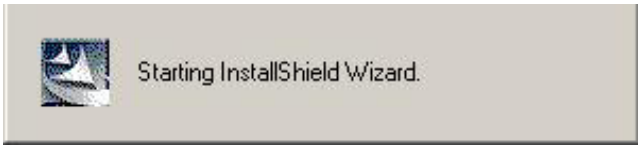

Figure 6-5: Starting InstallShield Wizard Screen

Step 6: The "**Preparing Setup**" window in **Figure 6-12** appears next.

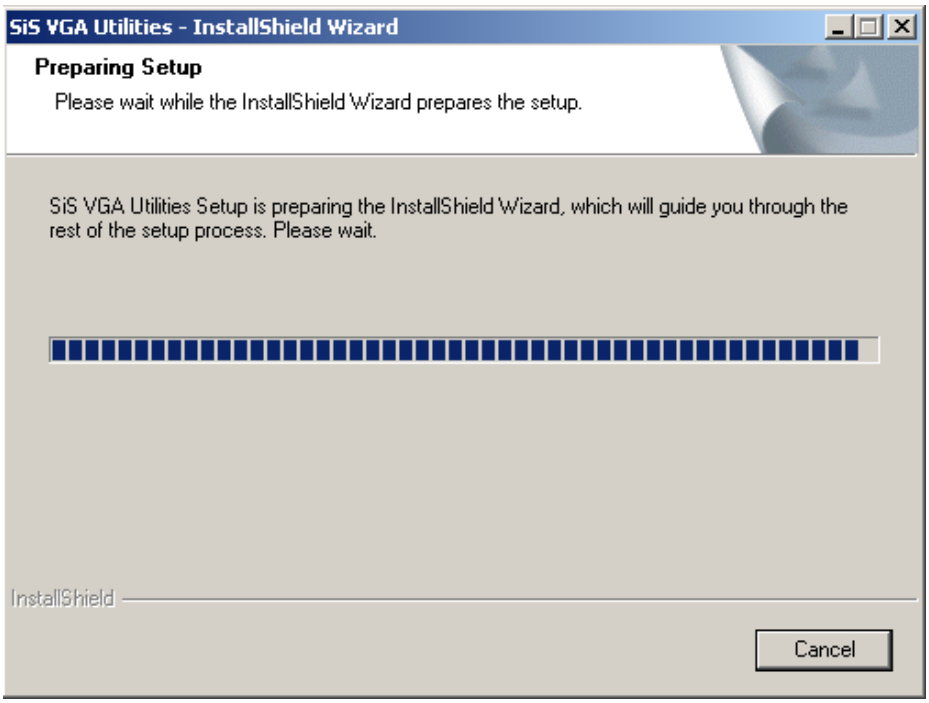

Figure 6-6: Preparing Setup Screen

Step 7: Then, the welcome screen shown in **Figure 6-7** appears.

Figure 6-7: VGA Utilities Welcome Screen

Step 8: You then select the setup type (see **Figure 6-8**). Once the setup type is selected, click on the **NEXT** button in the setup type menu (see **Figure 6-8**).

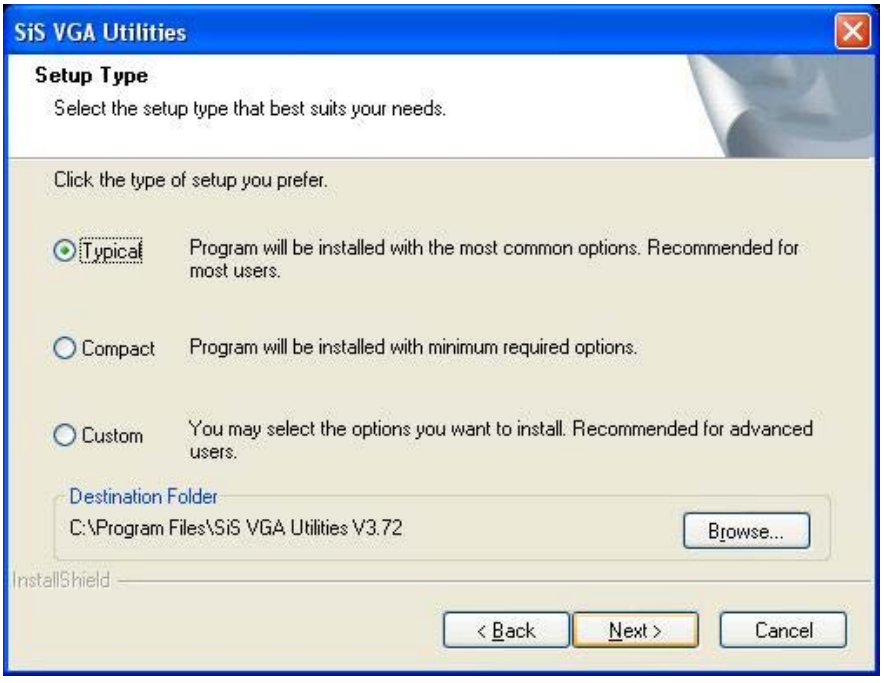

Figure 6-8: Select Setup Installation Type

Step 9: You are then prompted to select a folder to copy the files in (see **Figure 6-9**).

Once the setup type is selected, click on the **NEXT** button.

Figure 6-9: Select Folders to Copy Files

Step 10: Before the files are copied, you can review you selected settings (see **Figure 6-10**). Once you have completed reviewing your settings, click on the **NEXT** button.

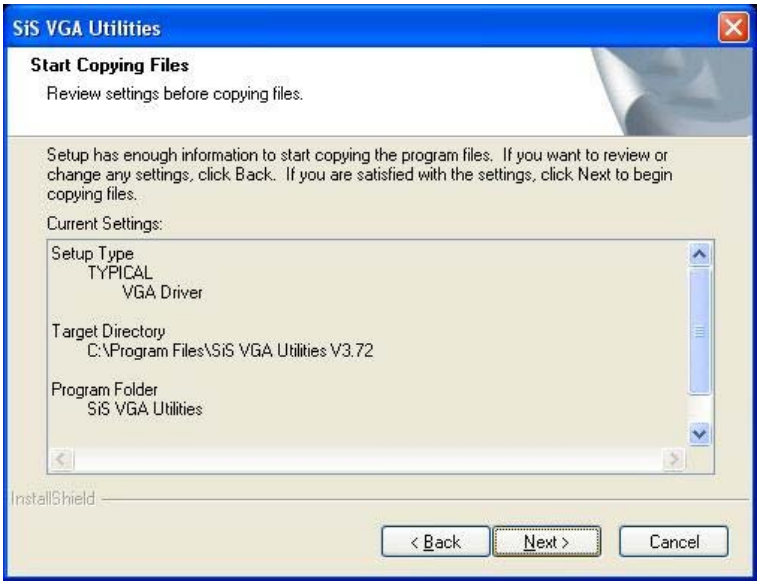

Figure 6-10: Review Settings

Step 11: The driver installation will then start.

Step 12: Once the installation is complete, you will be prompted to read the Read Me file. (see **Figure 6-11**)

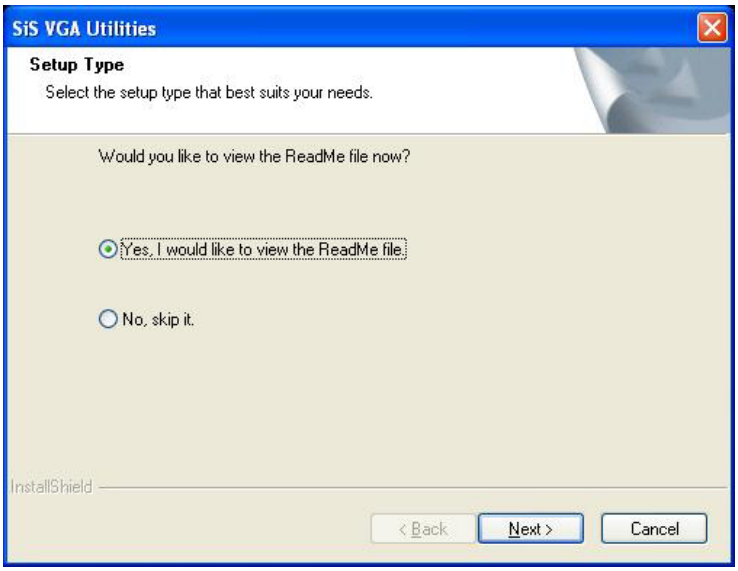

Figure 6-11: Read ReadMe File

Step 13: Once you have completed reading the Read Me file or it you skip reading the Read Me file, you will be prompted to restart your computer. Select yes or no.

Figure 6-12: Restart the Computer

6.3 Audio Driver Installation

To install the audio driver, please follow the steps below.

Step 1: Select **4-Audio** from the SIS Solution CD driver menu (**Figure 6-2**).

Step 2: A new window appears showing the folder contents on the CD for the IDE driver. Navigate to the **\4-Audio\AC97\Windows** (or other appropriate OS) sub-folder to view the folder contents on the CD for the audio driver (**Figure 6-26**).

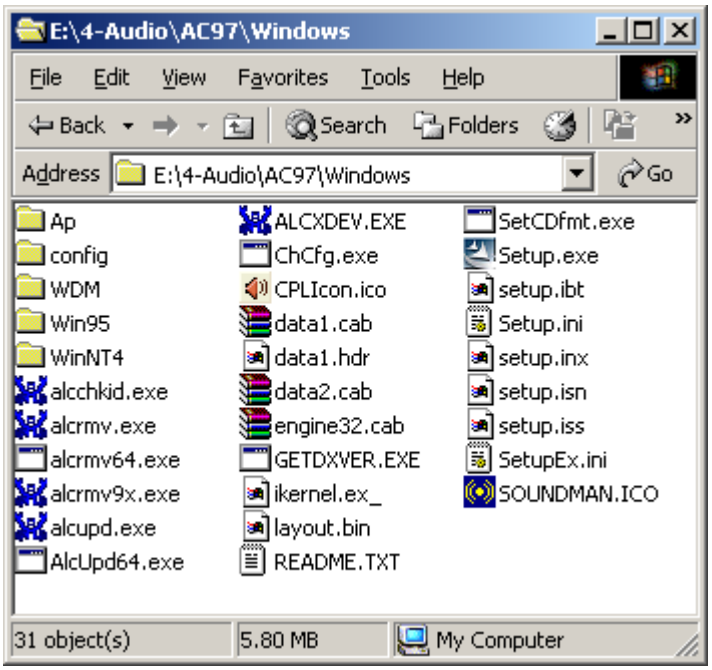

Figure 6-13: CD 4-Audio\AC97\Windows Folder

Step 3: Double-click the **Setup.exe** file to begin the driver installation process.

Step 4: Once you double click the **Setup** icon, the install shield wizard for the audio driver starts. See **Figure 6-14.**

Figure 6-14: Audio Driver Install Shield Wizard Starting

Step 5: The RealTek Audio Setup prepares the install shield to guide you through the rest of the setup process. See **Figure 6-15**.

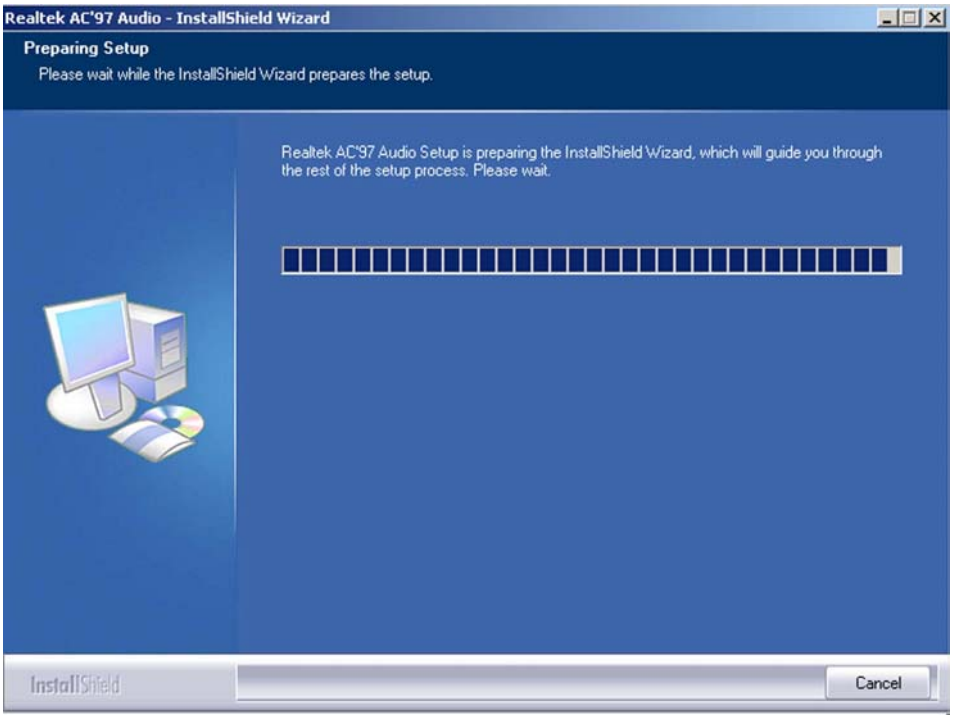

Figure 6-15: Audio Driver Setup Preparation

Step 6: After install shield is prepared, the welcome screen shown in **Figure 6-16** appears. To continue the installation process, click the "**NEXT**" button. The install shield starts to configure the new software as shown in **Figure 6-17**.

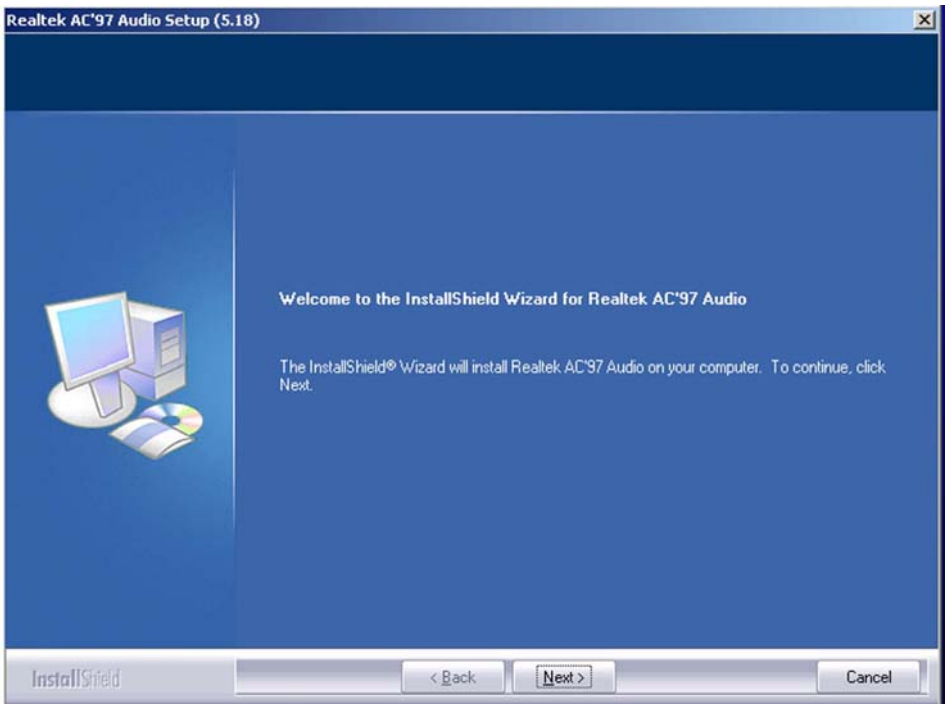

Figure 6-16: Audio Driver Welcome Screen

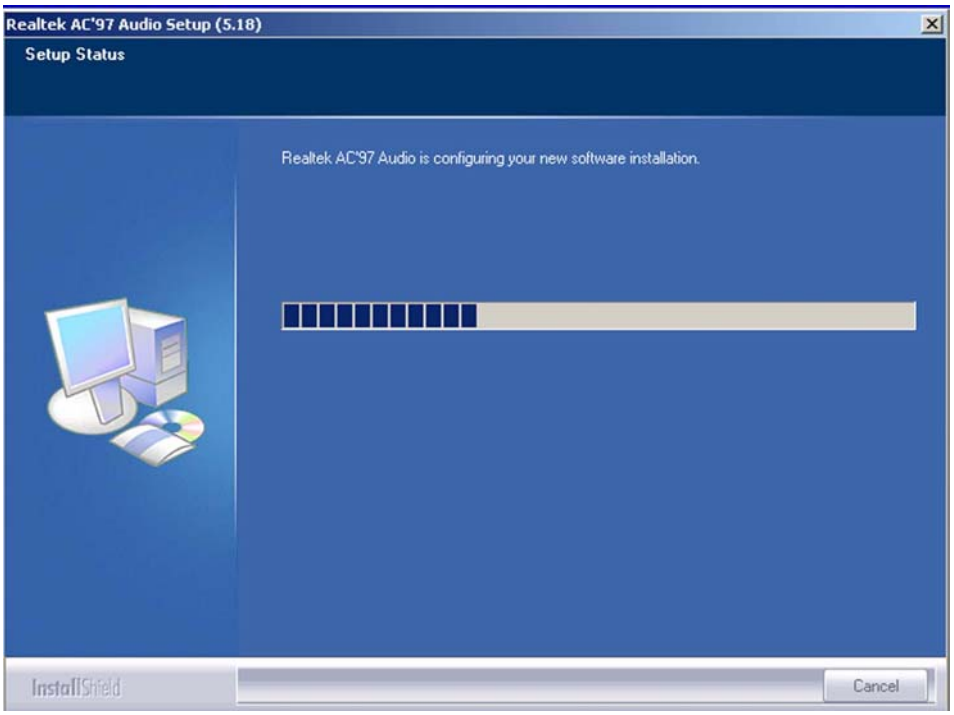

Figure 6-17: Audio Driver Software Configuration

Step 7: At this stage the "**Digital Signal Not Found**" screen shown in **Figure 6-18** appears. To continue the installation process, click the "**YES**" button. The installation notice shown below will appear.

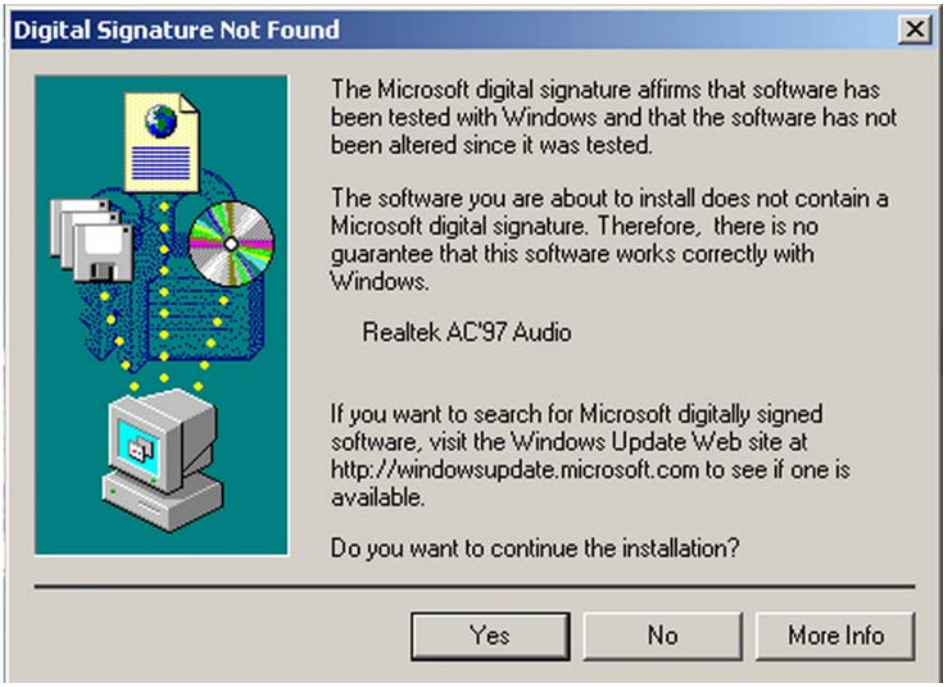

Figure 6-18: Audio Driver Digital Signal

Step 8: At this stage the clicking the "**YES**" button in **Figure 6-18** appears, the installation of the driver begins. See **Figure 6-19**.

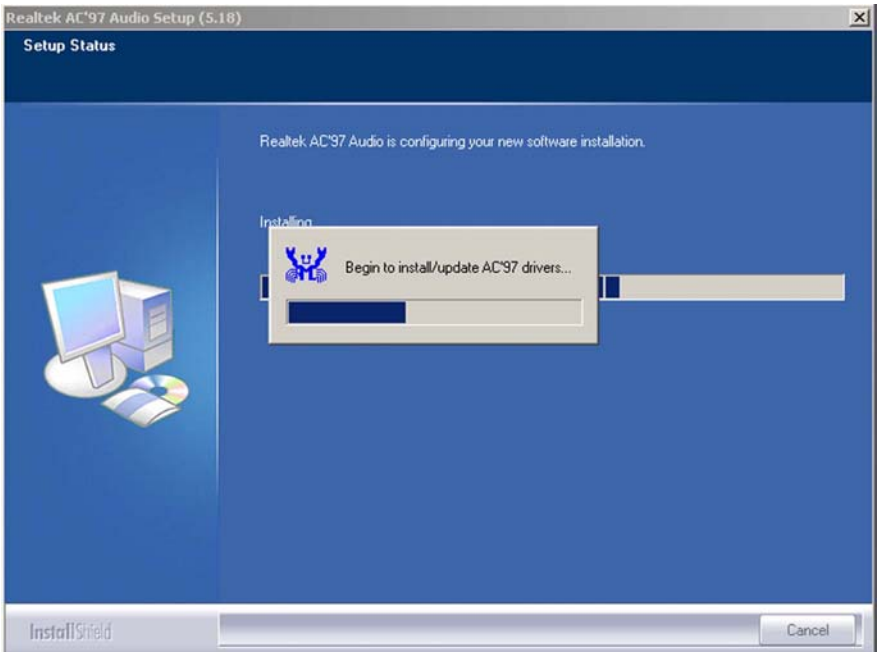

Figure 6-19: Audio Driver Installation Begins

Step 9: After the driver installation process is complete, a confirmation screen shown in **Figure 6-20** appears.

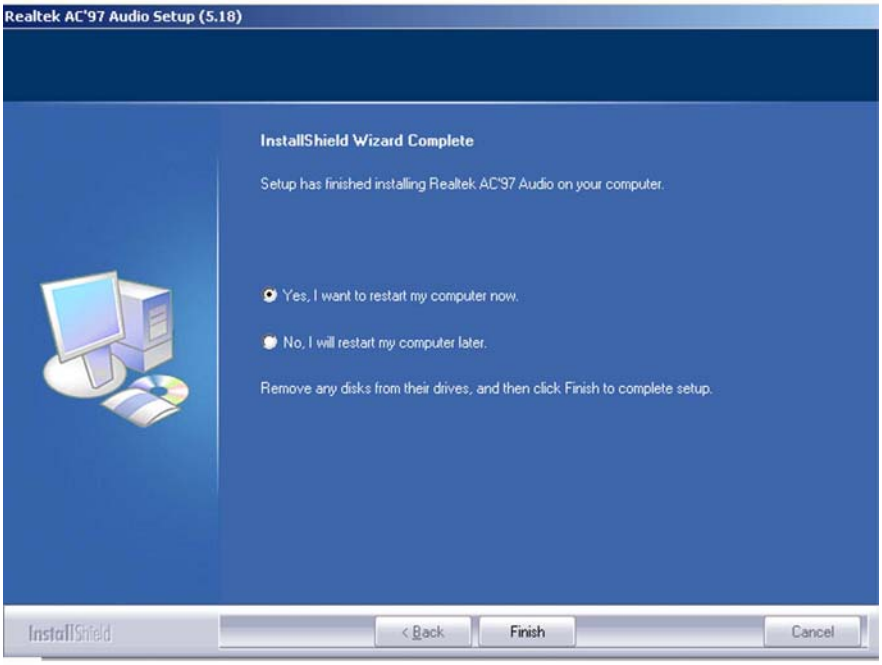

Figure 6-20: Audio Driver Installation Complete

Step 10: The confirmation screen shown in **Figure 6-20** allows you to restart the computer immediately after the installation is complete or to restart the computer later. For the settings to take effect the computer must be restarted. Once you have decided when to restart the computer, click the "**FINISH**" button.

6.4 LAN Driver Installation

To install the LAN driver, please follow the steps below.

Step 1: Select **5-LAN** from the SIS Solution CD driver menu (**Figure 6-2**).

Step 2: A new window appears showing the folder contents on the CD for the IDE driver. Navigate to the **\5-LAN\Realtek\RTL8110SC\Windows \WIN98_ME_2K_XP_XP64\PCI_InstallShield_5649_060919** (or other appropriate OS) sub-folder to view the folder contents on the CD for the audio driver (**Figure 6-34**).

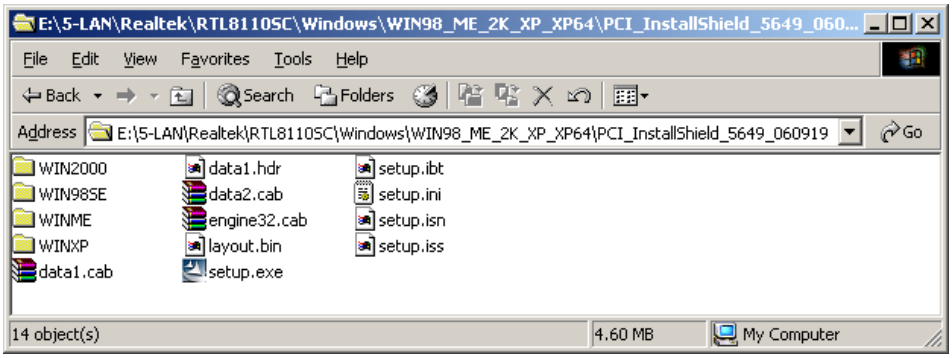

Figure 6-21: CD 5-LAN\Realtek\RTL8110SC\Windows\WIN98_ … Folder

Step 3: Double-click the **setup.exe** file to begin the driver installation process.

Step 4: A **Welcome** screen shown in **Figure 6-35** appears.

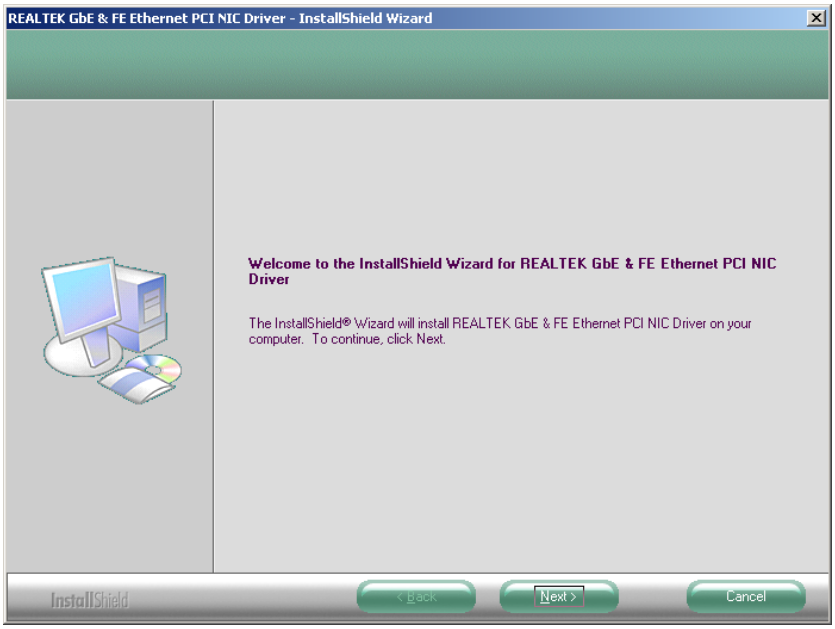

Figure 6-22: LAN Driver Welcome Screen

Step 5: To continue installing click "**Next.**"

Step 6: A **Ready to Install** screen shown in **Figure 6-36** appears. To continue installing click "**Next.**"

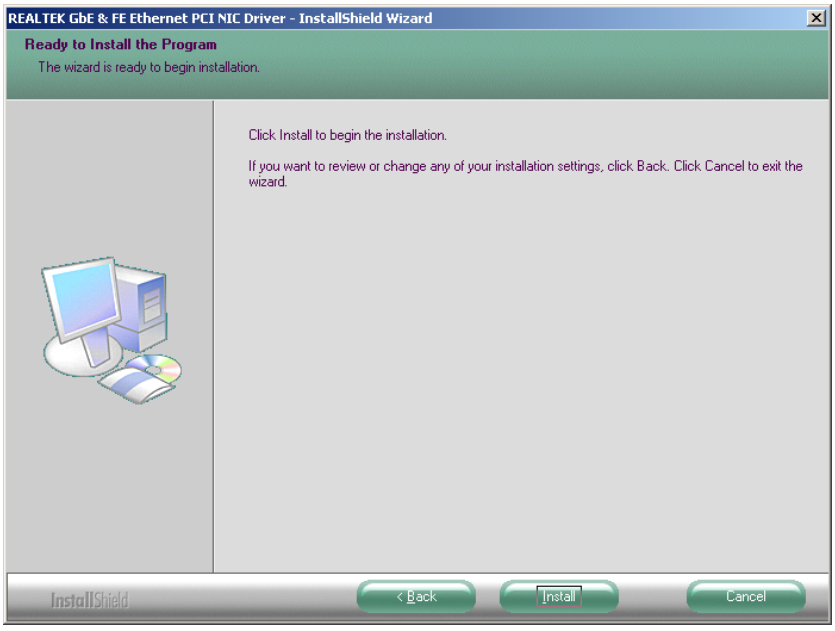

Figure 6-23: LAN Driver Ready to Install Screen

Step 7: The driver will be installed and a confirmation screen at the end of the installation will appear. (See **Figure 3-37**)

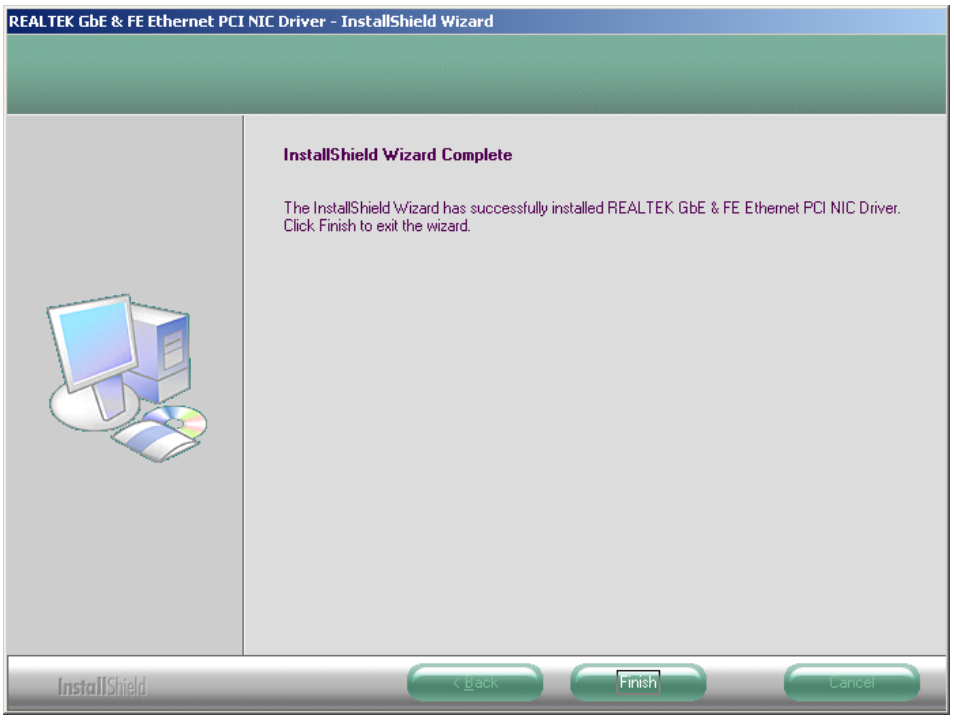

Figure 6-24: LAN Driver Installation Complete

6.5 SiS SATA RAID Utility Installation

NOTE:

The SATA RAID Utility should be installed only when the target system has a SATA RAID configuration.

To install the **SiS SATA RAID Utility**, please follow the steps below.

Step 1: Select **6-SATA RAID** from the SIS Solution CD driver menu (**Figure 6-2**).

Step 2: A new window appears. Navigate to the **\6-SATA RAID\Windows** (or other appropriate OS) sub-folder to view the folder contents on the CD for the **SiS SATA RAID Utility** (**Figure 6-38**).

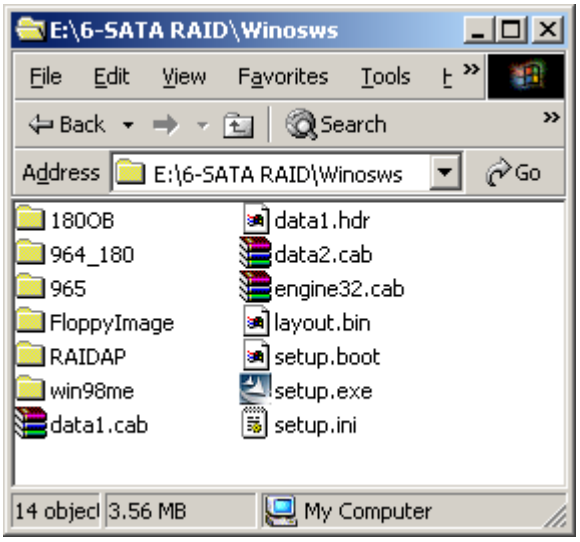

Figure 6-25: CD 6-SATA RAID\Windows Folder

Step 3: Double-click the **setup.exe** file to begin the driver installation process.

Step 4: The "**Starting InstallShield Wizard**" in **Figure 6-39** appears.

Figure 6-26: Starting Install Shield Wizard

Step 5: The **Preparing Setup** window appears next (**Figure 6-27**).

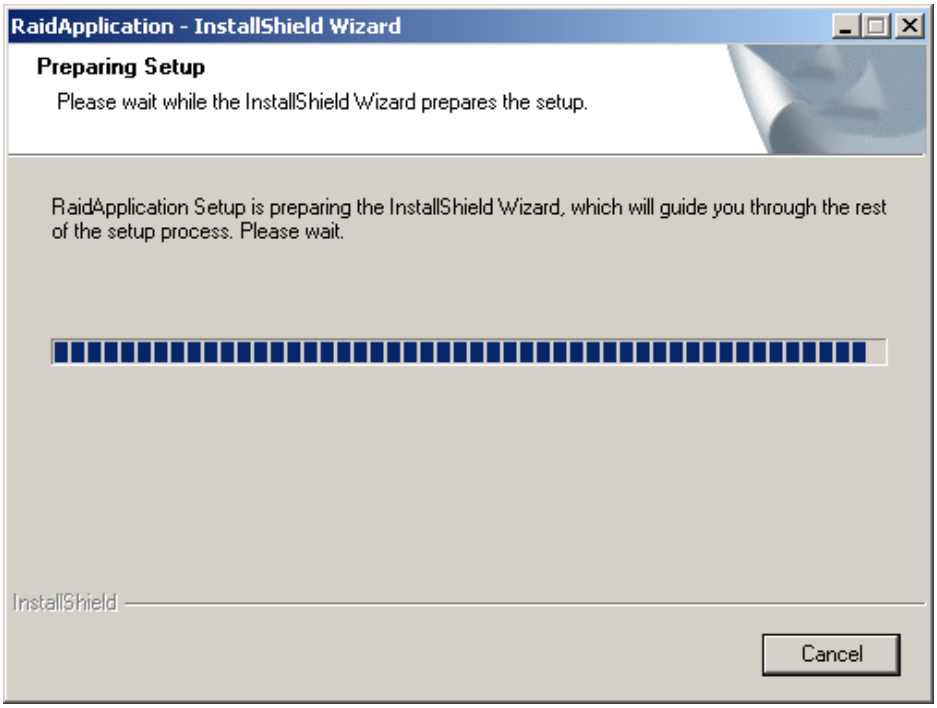

Figure 6-27: Preparing Setup

Step 6: The **InstallShield** window appears next (**Figure 6-28**).

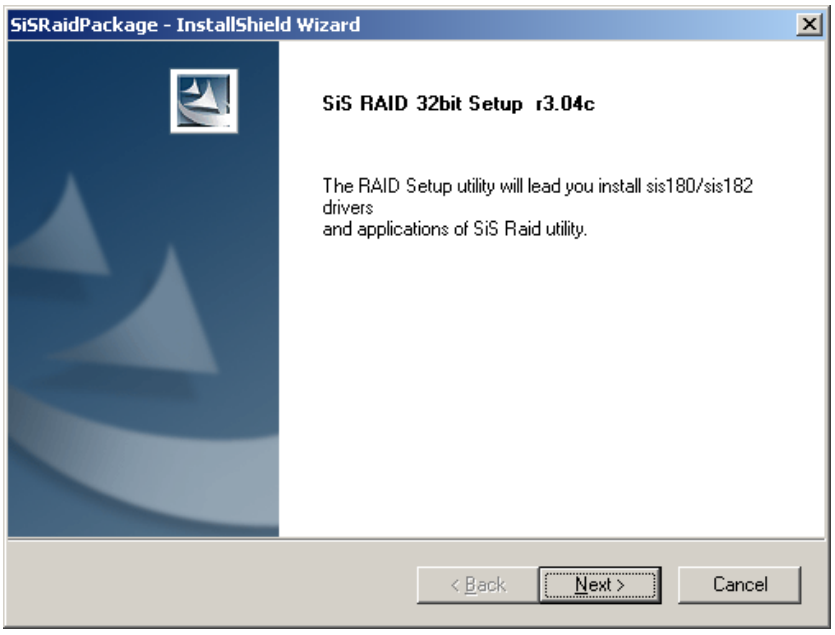

Figure 6-28: Install Shield

Step 7: Click **NEXT** and a **License Agreement** screen appears (**Figure 6-29**). Read the license agreement.

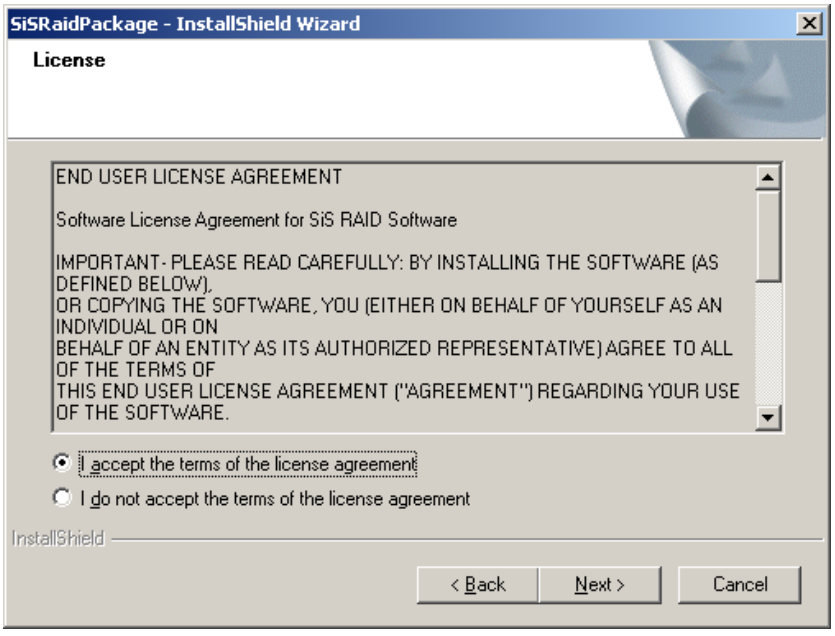

Figure 6-29: License Agreement

Step 8: To accept the terms and conditions stipulated in the license agreement, click **NEXT**.

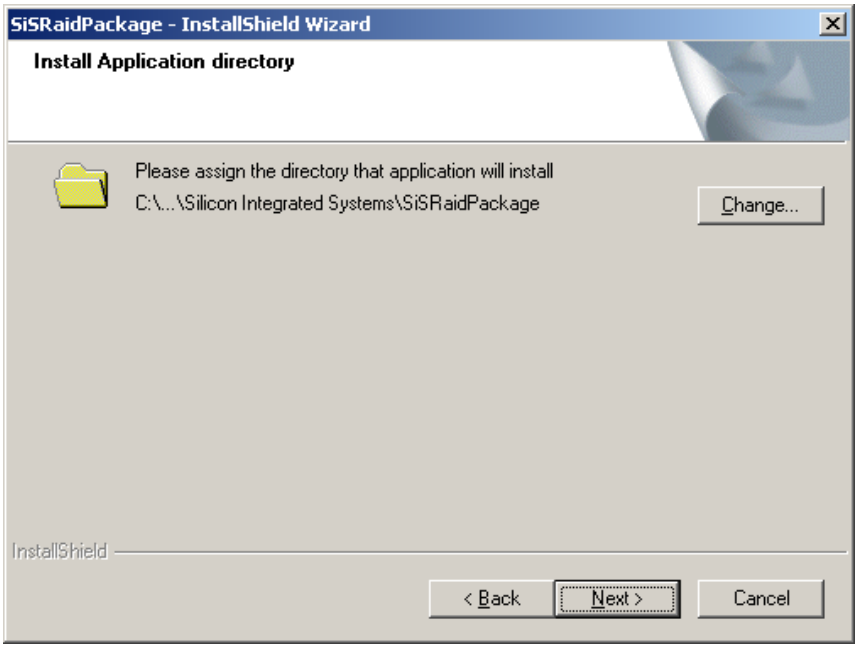

Figure 6-30: Install Application Directory

Step 9: The **Install Application Directory** window appears (**Figure 6-30**). Click **CHANGE** to manually select a destination folder for the program, or click **NEXT** to accept the default directory and continue the installation.

Step 10: The **Select Needed Components** window appears (**Figure 6-31**).

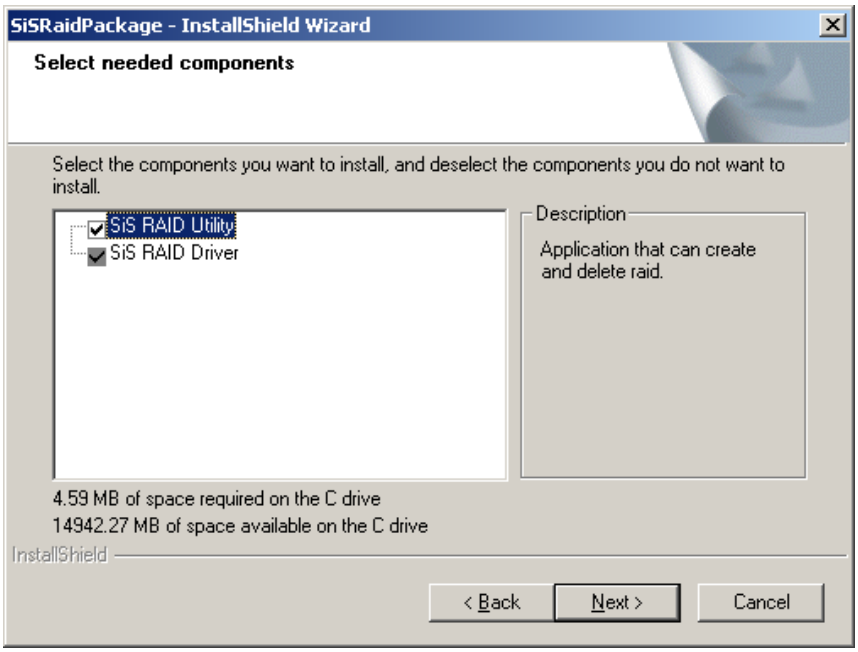

Figure 6-31: Select Needed Components

Step 11: Select the necessary components by clicking the checkboxes and click **NEXT** to continue.

Step 12: The **Ready to Install** window appears (**Figure 6-32**).

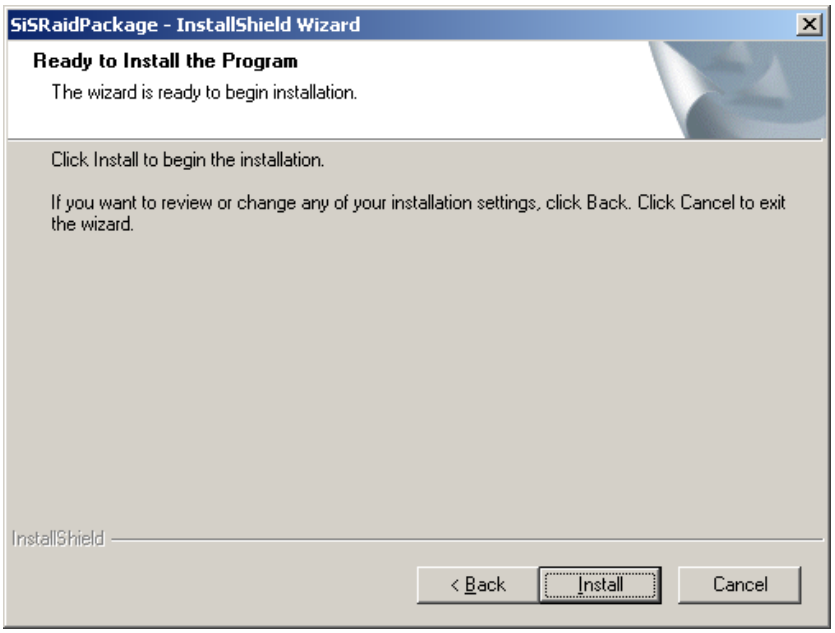

Figure 6-32: Ready to Install

Step 13: Click **INSTALL** and the install shield begins to extract and install the files (**Figure 6-33**).

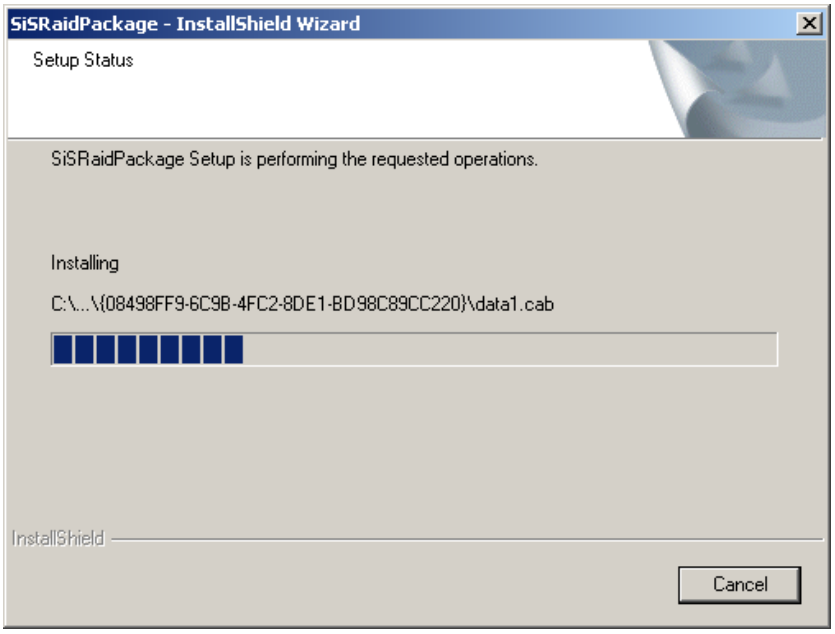

Figure 6-33: Setup Status

Step 14: After the driver installation process is complete, a confirmation screen appears (**Figure 6-34**).

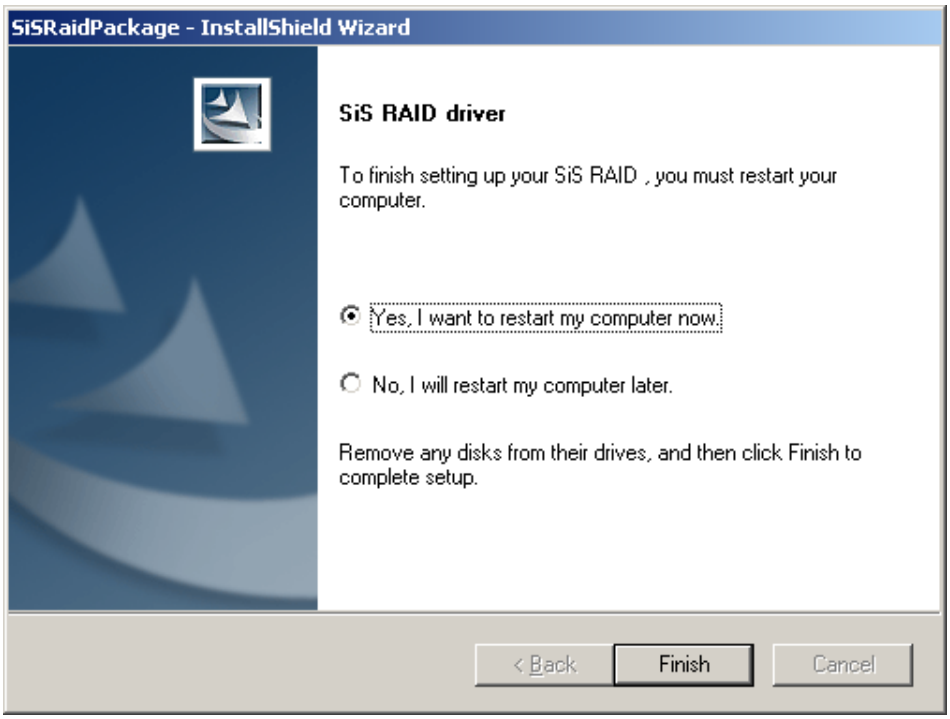

Figure 6-34: Restart the Computer

Step 15: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

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Appendix

A

BIOS Menu Options

A.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 5**.

Appendix

B

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table B-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT      15H
 ;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1     ;is the application over?
        JNE      W_LOOP         ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT      15H
;
; EXIT ;
```

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Appendix

C

Address Mapping

C.1 I/O Address Map

I/O address Range	Description
000-01F	DMA Controller
020-021	Interrupt Controller
040-043	System time
060-06F	Keyboard Controller
070-07F	System CMOS/Real time Clock
080-09F	DMA Controller
0A0-0A1	Interrupt Controller
0C0-0DF	DMA Controller
0F0-0FF	Numeric data processor
1F0-1F7	Primary IDE Channel
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	SiS661CX Graphics Controller
3C0-3DF	SiS661CX Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table C-1: I/O Address Map

C.2 1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	LAN
IRQ3	COM2	IRQ11	LAN/USB2.0/SATA
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table C-4: IRQ Mapping Table

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Appendix

D

AC'97 Audio CODEC

D.1 Introduction

The motherboard comes with an onboard Realtek ALC655 CODEC. Realtek ALC655 is a 20-bit DAC and 18-bit ADC full-duplex AC'97 2.3 compatible stereo audio CODEC with a variable sampling rate.

D.1.1 Accessing the AC'97 CODEC

The CODEC is accessed through three phone jacks on the rear panel of the motherboard. The phone jacks include:

1. A LINE output
2. A LINE input
3. A MIC input line.

D.1.2 Driver Installation

The driver installation has been described in **Section 6.5**.

After rebooting, the sound effect configuration utility appears in the **Windows Control Panel** (**Figure D-1**). If the peripheral speakers are properly connected, sound effects should be heard.

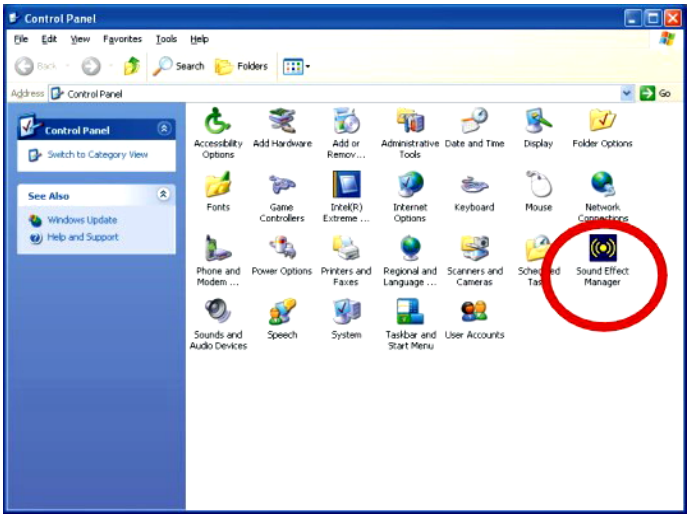

Figure D-1: Control Panel Sound Effect Manager

D.2 Sound Effect Configuration

D.2.1 Accessing the Sound Effects Manager

To access the Sound Effects Manager, please do the following:

Step 1: Install the audio CODEC driver.

Step 2: Click either:

- The **Sound Effect Manager** icon in the **Notification Area** of the system task bar (**Figure D-2**), or
- The **Sound Effect Manager** icon in the **Control Panel** (**Figure D-3**).

Figure D-2: Sound Effect Manager Icon [Task Bar]

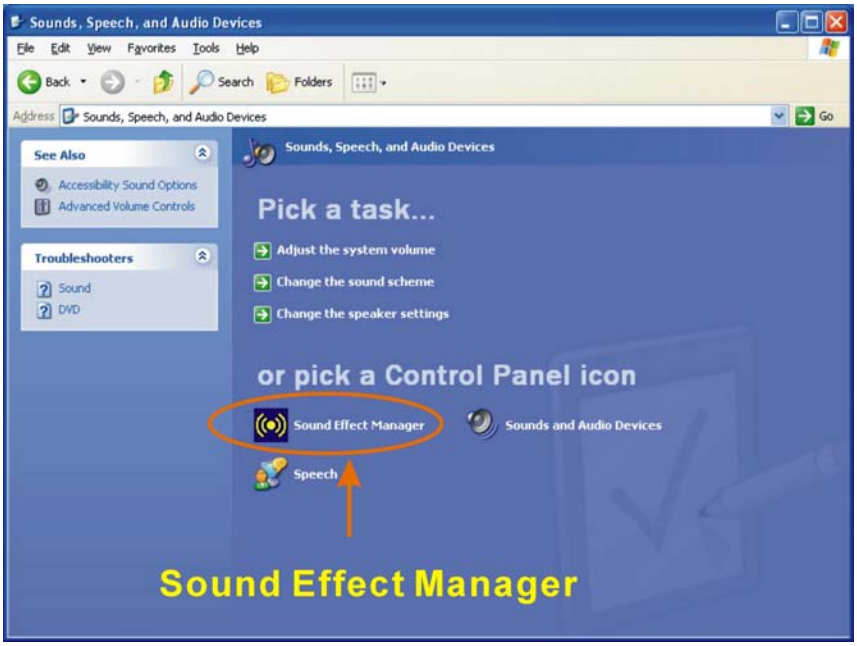

Figure D-3: Sound Effect Manager Icon [Control Panel]

Step 3: The sound effect manager appears (**Figure D-4**).

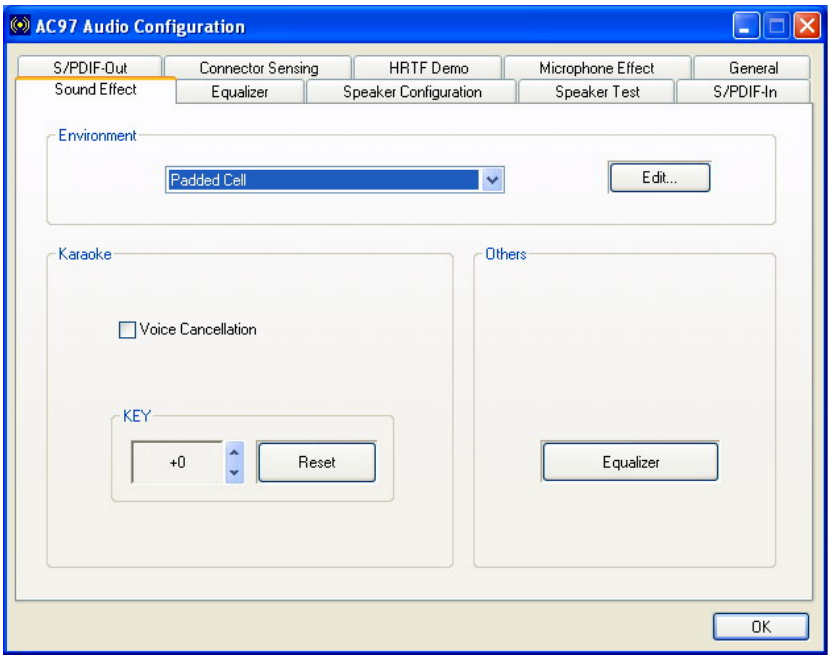

Figure D-4: Sound Effects Manager (ALC655)

NOTE:

The Sound Effect Manager shown in **Figure D-4** is for the RealTek ALC655 audio CODEC. Different CODECs may have different sound manager appearances.

The following section describes the different configuration options in the Sound Effect Manager.

D.2.2 Sound Effect Manager Configuration Options

The **Sound Effects Manager** enables configuration of the items listed below. To configure these items click the corresponding menu tab in the **Sound Effects Manager** (**Figure D-4**).

NOTE:

The Karaoke Mode is configured in the Sound Effect menu. To access Karaoke configuration settings, click on the Sound Effect menu tab.

- Sound Effect
- Karaoke Mode
- Equalizer
- Speaker Configuration
- Speaker Test
- S/PDIF-In
- S/PDIF-Out
- Connector Sensing
- HRTF Demo
- Microphone Effect
- General

NOTE:

Not all RealTek Sound Effect Managers have all the above listed options. The Sound Effect Manager loaded onto the system may only have some of the options listed above.

Below is a brief description of the available configuration options in the **Sound Effects Manager**.

- ***Sound Effect***:- Select a sound effect from the 23 listed options in the drop down menu. Selected sound effect properties can be edited. To edit the sound effect click **EDIT**.
- ***Karaoke Mode***:- The **Karaoke Mode** is accessed in the Sound Effect window. The **Voice Cancellation** disables the vocal part of the music being played.

The **Key adjustment** up or down arrow icons enables users to define a key that fits a certain vocal range.

- ***Equalizer Selection***:- Preset equalizer settings enable easy audio range settings. Ten frequency bands can be configured.
- ***Speaker Configuration***:- Multi-channel speaker settings are configured in this menu. Configurable options include:
  - Headphone
  - Channel mode for stereo speaker output
  - Channel mode for 4 speaker output
  - Channel mode for 5.1 speaker output
  - Synchronize the phonejack switch with speakers settings
- ***Speaker Test*:-** Each speaker connected to the system is tested individually to see if the 4-channel or 6-channel audio operates properly.
- ***S/PDIF-In & S/PDIF-Out***:- These functions are currently not supported.
- ***Connector Sensing***:- Realtek ALC655 detects if an audio device is plugged into the wrong connector. If an incorrect device is plugged in, a warning message appears.
- ***HRTF Demo***:- Adjust HRTF (Head Related Transfer Functions) 3D positional audio here before running 3D applications.
- ***Microphone Effect***:- Microphone noise suppression is enabled in this menu.
- ***General***:- General information about the installed AC'97 audio configuration utility is listed here.

Appendix

E

RAID Setup

E.1 Introduction

E.1.1 RAID Support

The SiS966 southbridge chipset integrated controller supports the following three SATA RAID levels:

- JBOD
- RAID0
- RAID1

E.1.2 What is RAID

RAID, or redundant array of inexpensive disks, is a method of saving data on multiple disks so that if one of the disks is damaged or destroyed, the data on the disks is not lost. Only the three RAID levels listed above can be implemented on your system

- JBOD stands for Just a Bunch Of Disks. This is not a RAID level. If any thing happens to one hard drive, all the information on that drive is lost.
- RAID0 refers to disk striping. Data is distributed (striped) over multiple disks. This increases the overall disk performance but the data is not redundantly stored and therefore any damage to the system disks will result in a loss of information.
- RAID1 refers to disk mirroring. The information on one disk is completely mirrored onto a second disk. The effective storage capacity of the hard disks is halved but the data on the disks is safe. If one of the disks is destroyed or damaged in any way the information on that disk is retrievable from the second disk.

E.2 RAID Setup

E.2.1 Introduction

To setup the RAID, the following procedures must be completed.

Step 1: Two SATA drives must be installed onto the system.

Step 2: The RAID BIOS must be configured.

E.2.2 Install SATA Drives

To implement the on-chip RAID function, two SATA drives must be connected to the system. Use the SATA drive cables that came with the system to connect the SATA drives.

E.2.3 Configure the SATA Controller in BIOS

To configure the RAID BIOS, follow the steps below:

Step 1: Turn on the motherboard and enter the BIOS setup utility. Do this by pressing **DELETE** when the system boots up.

Step 2: Select the **Advanced Settings** menus.

Step 3: Select the **IDE Configuration** sub-menu.

Step 4: In the **IDE Configuration** sub-menu select the "**Onboard PCI S-ATA Controller**" option.

Step 5: Set the "**Onboard PCI S-ATA Controller**" option to the "**Raid Mode**" and press **ENTER**.

Step 6: Save the changes and exit the BIOS setup utility. To do this, hit the escape key and select the **Exit** menu from the top menu bar in the BIOS utility setup.

Step 7: When the **Exit** menu appears, select the "**Save Changes and Exit**" menu option.

E.2.4 Configure the RAID BIOS

The next step is to configure the BIOS RAID. To do this, follow the steps below.

Step 1: Restart the system. Wait for the POST to be completed.

Step 2: The system prompts the user to press <**CTRL**> and <**S**> to enter the BIOS RAID Setup Utility (**Figure E-4**).

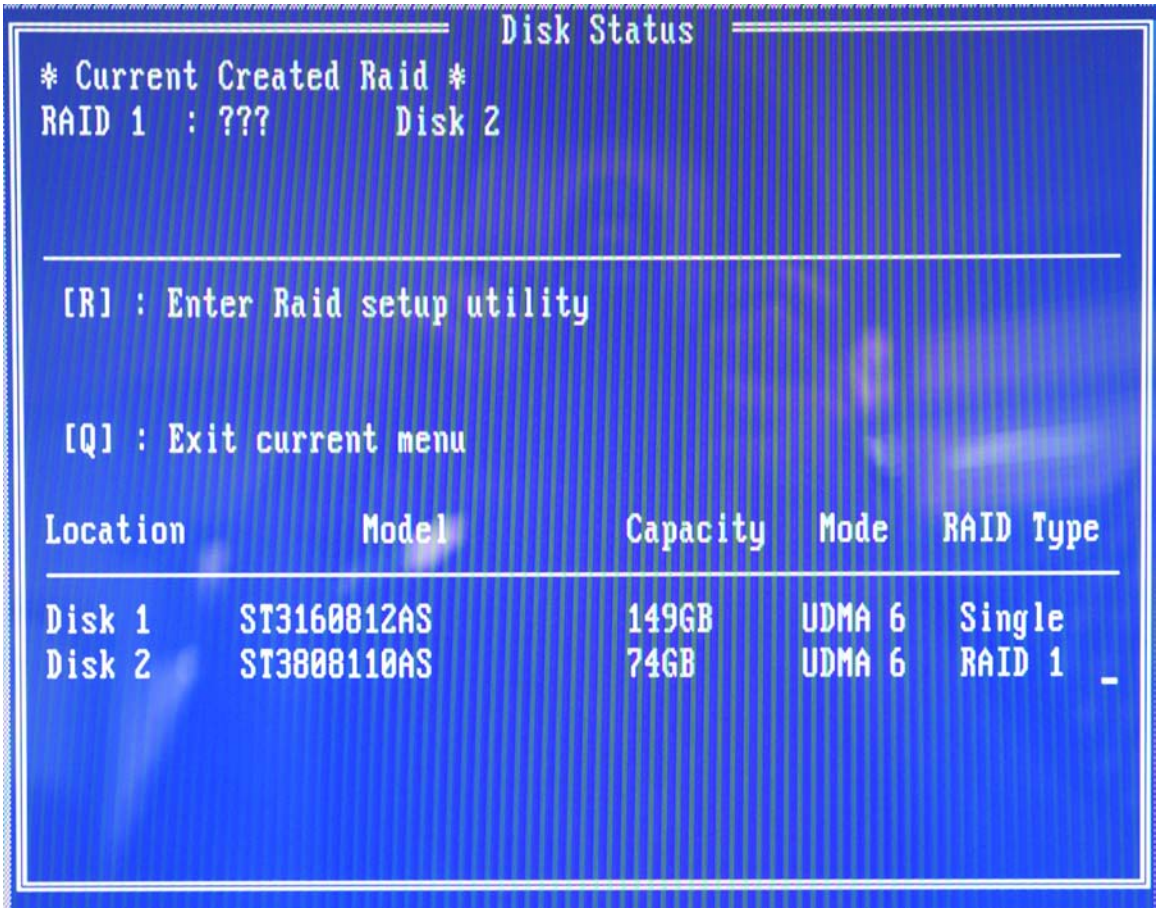

Figure E-1: BIOS RAID Utility

Step 3: To setup the RAID, press "**R**." The RAID setup screen will appear (**Figure E-5**).

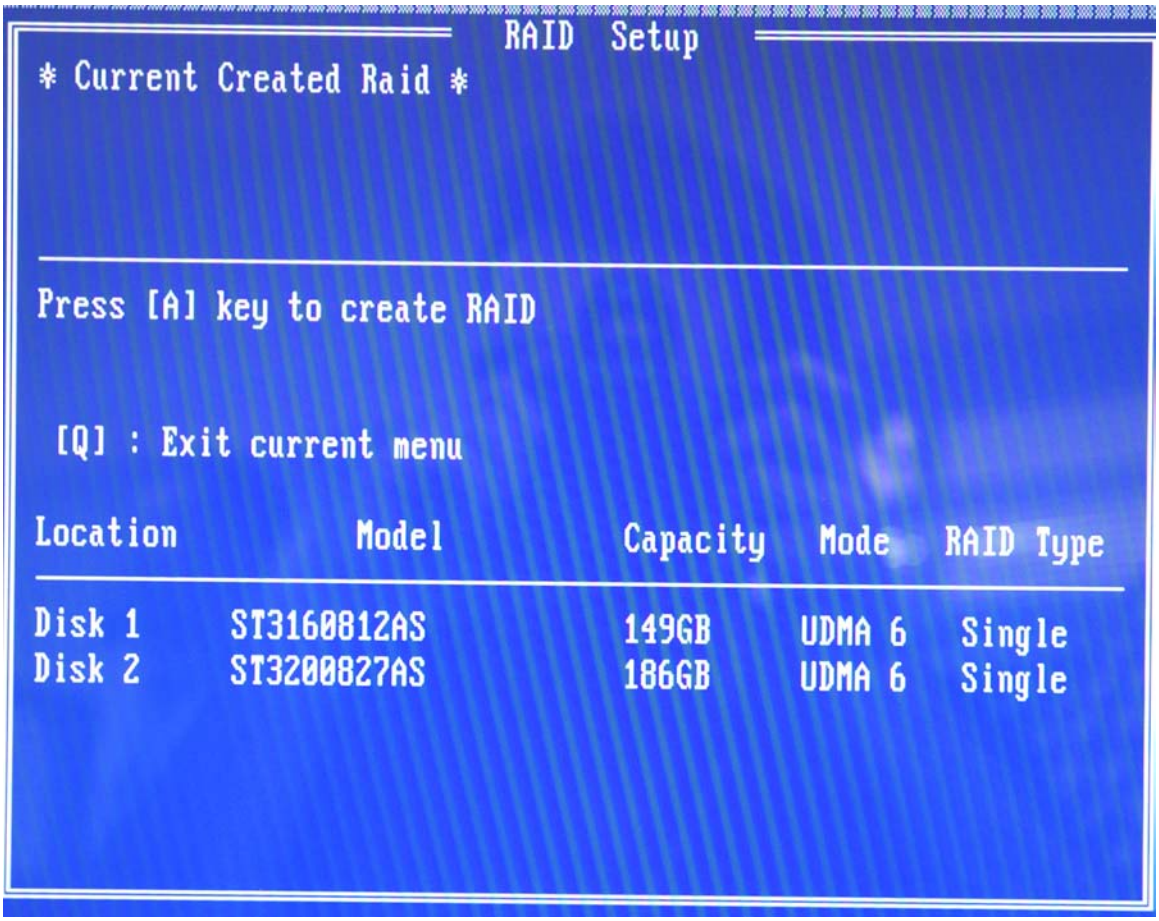

Figure E-2: Create RAID

Step 4: Click "**A**" to setup the RAID (**Figure E-5**).

Step 5: The system then prompts the user to select the RAID configuration type. JBOD, RAID0 or RAID1. Select the desired RAID configuration (**Figure E-6**).

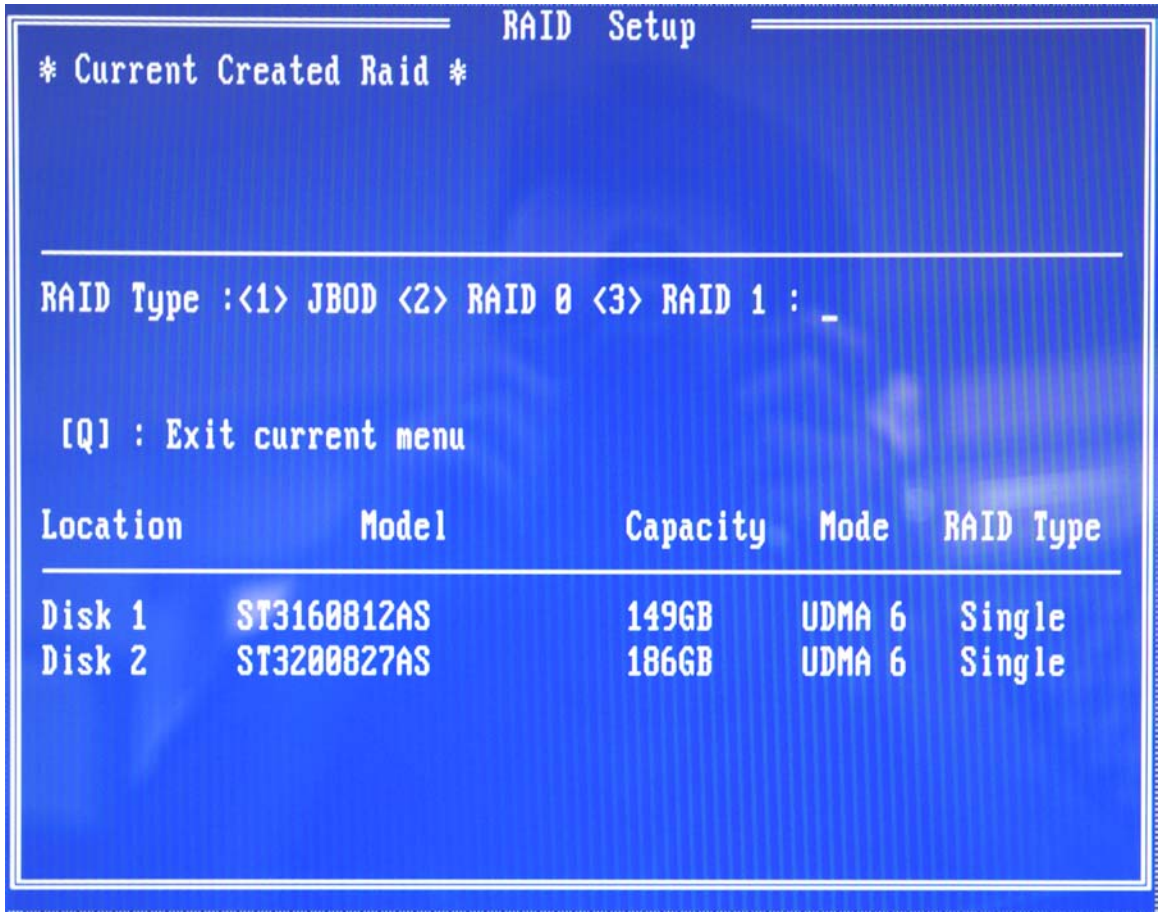

Figure E-3: Create RAID

Step 6: The system then prompts the user to **Auto Create** or **Manual Create** (**Figure E-7**).

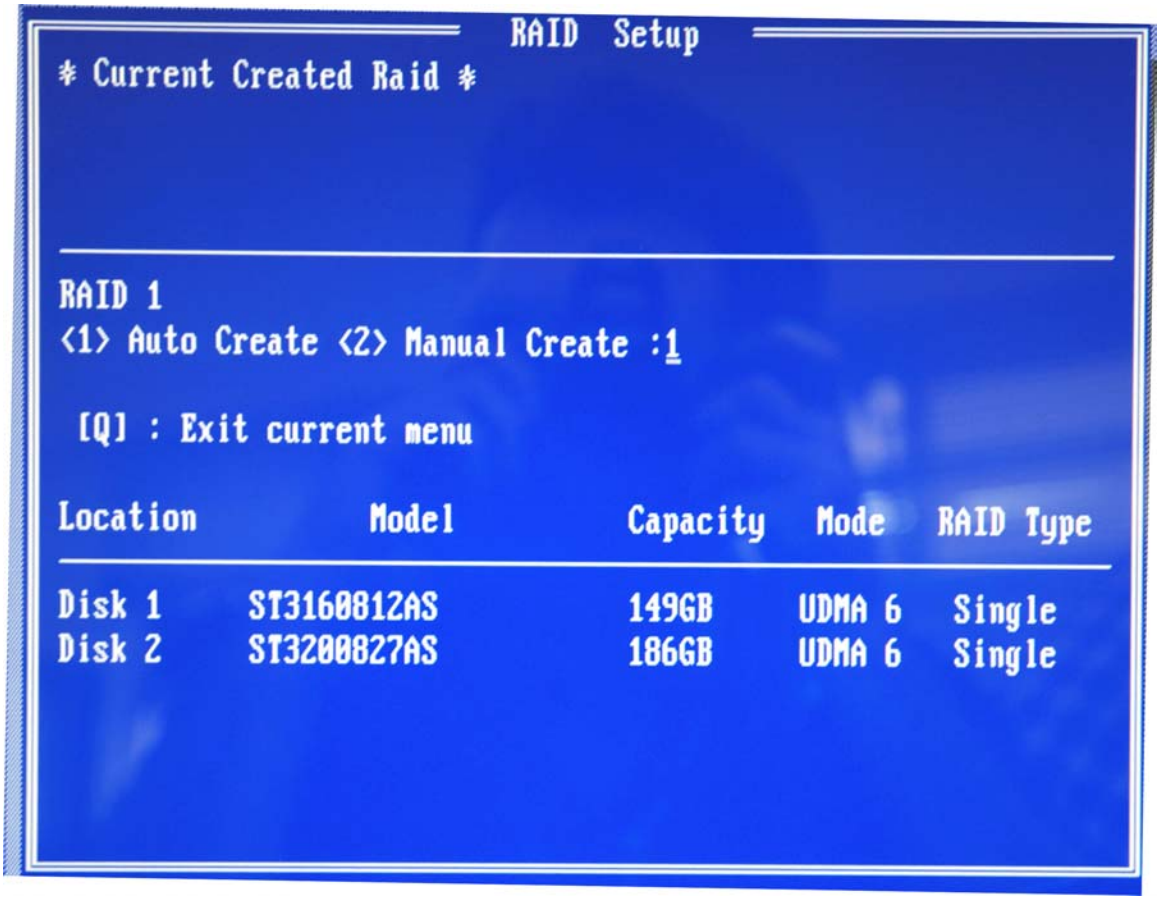

Figure E-4: Select "Auto"

Step 7: The user is prompted to **Auto Create** or **Manual Create**. Select **Auto Create** (**Figure E-8**).

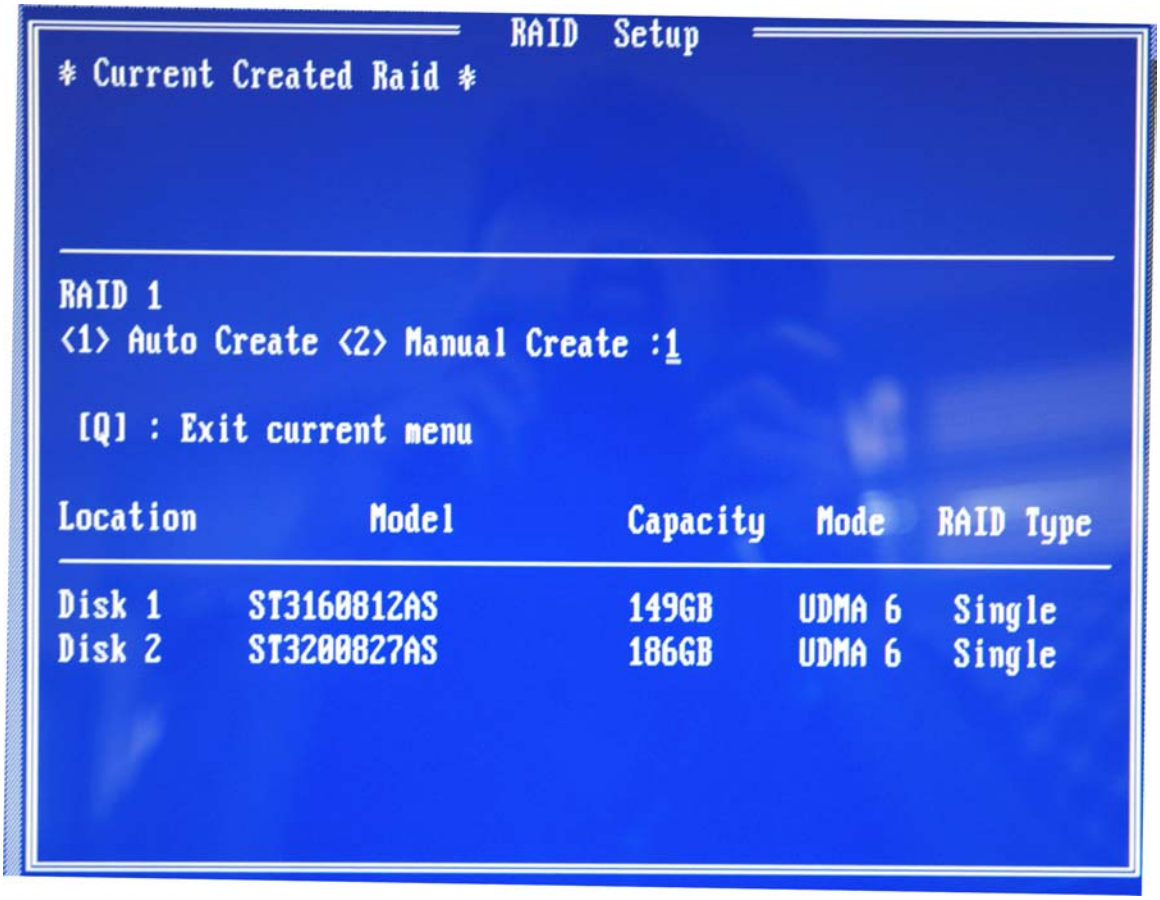

Figure E-5: Select "Auto"

Step 8: After the RAID configuration is complete, save the changes and exit the RAID configuration utility.

E.2.5 Install the OS

Install the OS onto the SATA drives. To do this, follow the steps below.

Step 1: Insert the OS installation CD into the CD drive attached to the IDE device.

Step 2: Restart the system.

Step 3: When prompted, press **F6** to install the RAID controller device. Next, press **F2** to continue the installation.

Step 4: A message informs the user the OS is unable to determine the mass storage device installed on the system. At this point, insert the FDD with the copied RAID

driver files into the FDD drive. The OS accesses the SATA drives through this disk.

Step 5: Next, select the driver for the OS being installed into the system. Once selected, press **ENTER**.

Step 6: The OS and the RAID drivers are then installed into the system. The SATA drives are configured as RAID drives as stipulated in the above selection.

Step 7: The OS continues to be installed and the RAID on the SATA drives configured.

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