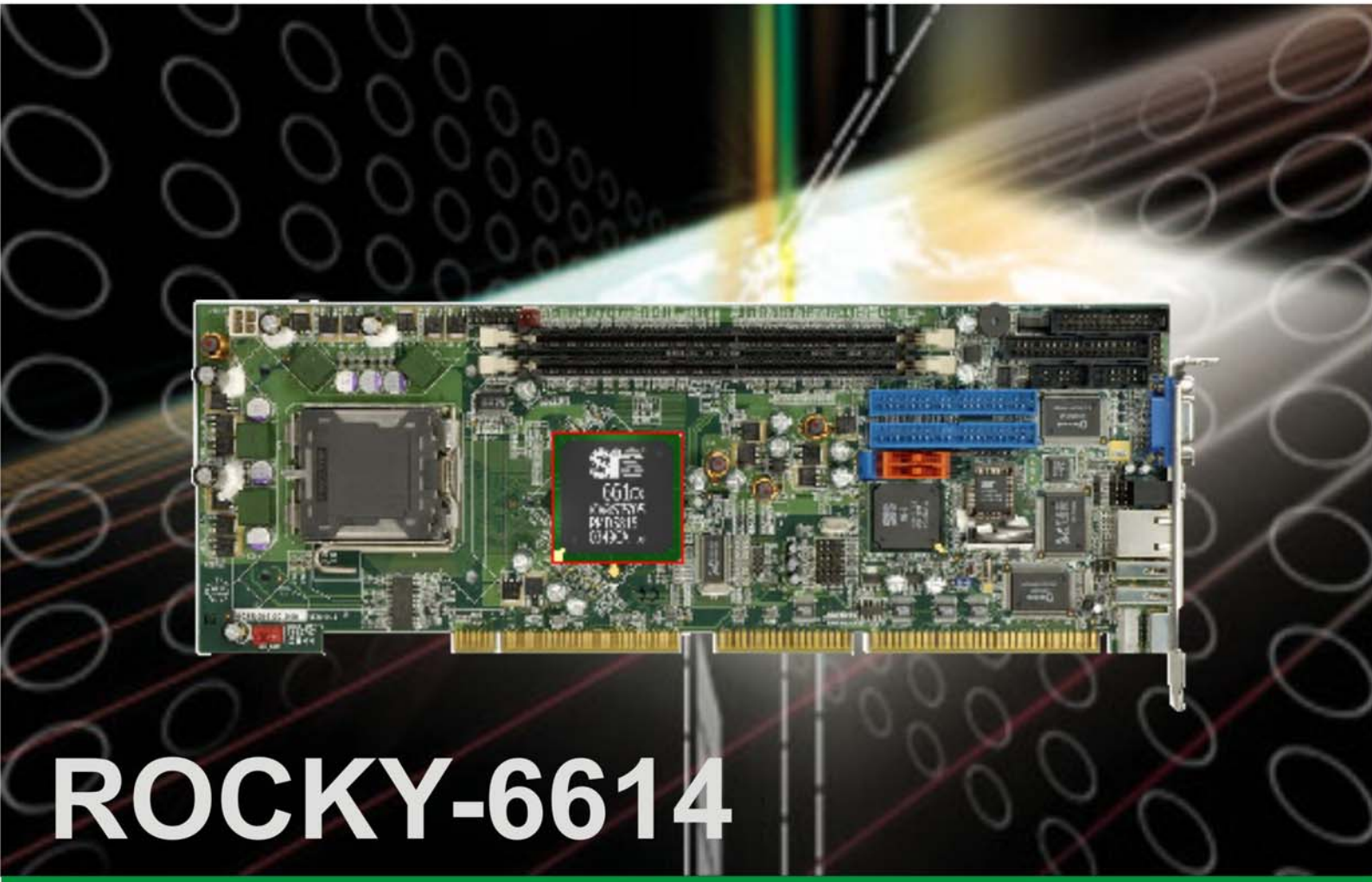
IEI Technology Corp.



ROCKY-6614

LGA 775 Pentium 4 Full-Size CPU Card with dual GbE, dual SATA and and USB 2.0

USER MANUAL

Rev. 1.0, April 2006

RoHS Lead Free

REVISION HISTORY

Title	ROCKY-6614 Intel Pentium 4 M/Pentium M Socket 479 CPU board	
Revision Number	Description	Date of Issue
1.0	Initial release	March 2006

COPYRIGHT NOTICE

TRADEMARKS

Table of Contents

List of Figures

List of Tables

List of BIOS Menus

Glossary

AC '97	Audio Codec 97
ACPI	Advanced Configuration and Power Interface
APM	Advanced Power Management
ARMD	ATAPI Removable Media Device
ASKIR	Shift Keyed Infrared
ATA	Advanced Technology Attachments
BIOS	Basic Input/Output System
CFII	Compact Flash Type 2
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
Codec	Compressor/Decompressor
COM	Serial Port
DAC	Digital to Analog Converter
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DIO	Digital Input/Output
DMA	Direct Memory Access
EIDE	Enhanced IDE
EIST	Enhanced Intel SpeedStep Technology
FDD	Floppy Disk Drive
FDC	Floppy Disk Connector
FFIO	Flexible File Input/Output
FIFO	First In/First Out
FSB	Front Side Bus
IrDA	Infrared Data Association
HDD	Hard Disk Drive
IDE	Integrated Data Electronics
I/O	Input/Output
ICH4	I/O Controller Hub 4
L1 Cache	Level 1 Cache
L2 Cache	Level 2 Cache
LCD	Liquid Crystal Display
LPT	Parallel Port Connector
LVDS	Low Voltage Differential Signaling
MAC	Media Access Controller
OS	Operating System
PCI	Peripheral Connect Interface
PIO	Programmed Input Output
PnP	Plug and Play
POST	Power On Self Test
RAM	Random Access Memory
SATA	Serial ATA
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology
SPD	Serial Presence Detect
S/PDI	Sony/Philips Digital Interface
SDRAM	Synchronous Dynamic Random Access Memory
SIR	Serial Infrared
UART	Universal Asynchronous Receiver-transmitter
USB	Universal Serial Bus
VGA	Video Graphics Adapter

Chapter

1

Introduction

1.1 ROCKY-6614 CPU Board Overview

The PICMG 1.0 form factor ROCKY-6614 LGA775 Pentium 4 CPU platform is fully equipped with a high performance processor and advanced multi-mode I/Os. The ROCKY-6614 is designed for system manufacturers, integrators, and VARs that want performance, reliability, and quality at a reasonable price.

1.1.1 ROCKY-6614 CPU Board Applications

The ROCKY-6614 CPU board has been designed for use in industrial applications where board expansion is critical and operational reliability is essential.

1.1.2 ROCKY-6614 CPU Board Benefits

Some of the ROCKY-6614 CPU board benefits include,

- providing access to multiple PCI and ISA expansion slots for easy system expansion
- operating reliably in harsh industrial environments with ambient temperatures as high as 60°C
- rebooting automatically if the BIOS watchdog timer detects that the system is no longer operating

1.1.3 ROCKY-6614 CPU Board Features

Some of the ROCKY-6614 CPU board features are listed below:

- Complies with PICMG 1.0
- Complies with RoHS
- Supports LGA775 Intel® Pentium 4 CPUs
- Supports a maximum front side bus (FSB) speed up to 800MHz
- Supports up to 2GB of 333MHz or 400MHz single channel DDR memory
- Comes with one high performance gigabit Ethernet (GbE) controller
- Supports two SATA channels with transfer rates up to 150MB/s
- Supports eight USB 2.0 connectors

1.2 ROCKY-6614 CPU Board Overview

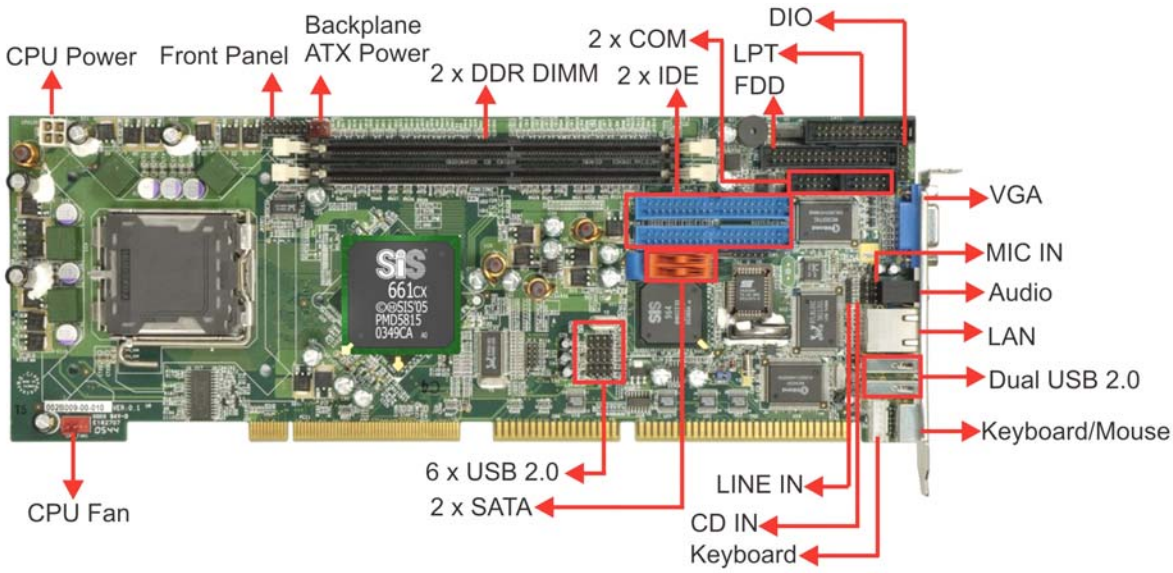


Figure 1-1: ROCKY-6614 CPU Board Overview

1.2.1 ROCKY-6614 CPU Board Connectors

The ROCKY-6614 CPU board has the following connectors onboard:

- 1 x ATX 12V connector
- 1 x CPU cooling fan connector
- 1 x IrDA connector
- 2 x IDE device connectors
- 1 x FDD connector
- 2 x RS-232 connectors
- 1 x Parallel port connector
- 1 x Front panel connector
- 1 x ATX backplane power connector
- 2 x SATA connectors
- 6 x USB connectors
- 1 x DIO connector
- 1 x LINE_IN connector
- 1 x CD_IN connector
- 1 x MIC_IN connector

- 1 x Keyboard connector

The ROCKY-6614 CPU board has the following connectors on the board rear panel:

- 1 x PS/2 connector
- 1 x VGA connector
- 1 x LINE_OUT connector
- 1 x RJ-45 Ethernet connector
- 2 x USB ports

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

1.2.2 Technical Specifications

ROCKY-6614 CPU board technical specifications are listed in **Table 1-1**. Detailed descriptions of each specification can be found in **Chapter 2 Detailed Specifications**.

SPECIFICATION	
CPUs Supported	Intel® Pentium® 4 Intel® Celeron® D
Chipsets	Northbridge: SIS 661CX Southbridge: SIS 964
I/O Controller	SIS 964
Graphics Support	SiS Mirage™ Graphic Engine
Memory	Two DDR memory modules (Max. 2GB)
PCI Bus Interface	33MHz, Revision 2.3
Serial ATA (SATA)	Two SATA channels with 150MB/s transfer rates
HDD Interface	Two IDE channels supports four Ultra ATA 100/66/33 devices
Floppy Disk Drive (FDD)	Supports FDD

USB Interfaces	**Eight USB 2.0 connectors supported**
Serial Ports	**Two COM ports**
Real Time Clock	**256-byte battery backed CMOS RAM**
Hardware Monitoring	**Cooling fans, temperature and system voltages**
Power Management	**Supports Advanced Configuration and Power Interface (ACPI) Specifications Revision 2.0**
Infrared Support	**One Infrared Data Association (IrDA) interface**
Ethernet	**Gigabit Ethernet (GbE)**
BIOS	**AMI flash BIOS**
Physical Dimensions	**12.2cm x 34.1cm (width x length)**
Operating Temperature	**Minimum: 0ºC (32°F)** **Maximum: 60°C (140°F)**
Audio Interfaces	**One Audio Codec ’97 (AC’97) version 2.3 connector**

Table 1-1: Technical Specifications

THIS PAGE IS INTENTIONALLY LEFT BLANK

Chapter

2

Detailed Specifications

2.1 Compatible IEI Backplanes

The ROCKY-6614 CPU card is compatible with all IEI PICMG1.0 backplanes. For more information on these backplanes, please visit the IEI website or contact your CPU card reseller or vendor.

2.2 CPU Support

Table 2-1 lists the CPUs supported by the ROCKY-6614 CPU board.

Mfg.	Model	Max. Speed	L2 Cache	Max. FSB	Socket
Intel®	Pentium® 4 (P4) Prescott	3.80GHz	2MB	800MHz	LGA 775
Intel®	Celeron D	3.33GHz	256KB	533MHz	LGA 775

Table 2-1: Supported CPUs

2.2.1 P4 Prescott

The P4 Prescott 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.

2.2.2 Celeron D

The LGA 775 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.

2.3 Onboard Chipsets

2.3.1 Northbridge and Southbridge Chipsets

The following chipsets are preinstalled on the board:

- **Northbridge**: SiS661CX
- **Southbridge**: SiS964

The following two sections (**Section 2.3.2** and **Section 2.3.3**) list some of the features of the SiS661CX and the SiS964 chipsets. For more information on these two chipsets please refer to the SiS website.

2.3.2 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 2M/4M/8M/16M TSEG SMRAM
  - Supports Dynamic Bus Inversion.
- **DRAM Controller**
  - DDR400/DDR333/DDR266 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 800MHz Operating Frequency

2.3.3 SiS964 Southbridge Chipset

The SiS964 southbridge chipset comes with the following features:

- **SiS MuTIOL® 1G Delivering 1GB/s Bandwidth**
  - Proprietary Interconnect between SiS north bridge and SiS964 southbridge
  - Bi-Directional 16 bit Data Bus at 533MHz Operating Frequency
- **Integrated Serial Host Controller**
  - Provides 2 independent ports for SATA, compliant with Serial ATA 1.0 specification with transfer rate 150MB/s
  - Supports RAID 0, 1 and JBOD
- **USB 2.0/1.1 Host Controller**
  - One EHCI USB 2.0 controller
  - Supports Total 8 USB 2.0 ports
  - Supports USB 2.0 High-Speed Device @480 Mb/s transfer rates
- **Fast Ethernet Controller with MII Interface**
  - Supports 10/100Mb Fast Ethernet with External PHY
- **Supports six channels AC'97 Rev.2.3 Audio and V.90 Software Modem**
- **Advanced Power Management: ACPI 1.0b and APM 1.2 Compliant**
- **Dual IDE channels with ATA 133/100**
- **Supports up to six PCI Masters**
- **LPC 1.1 Interface**
- **Integrated Keyboard/PS2 Mouse Controller**

2.4 Data Flow

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

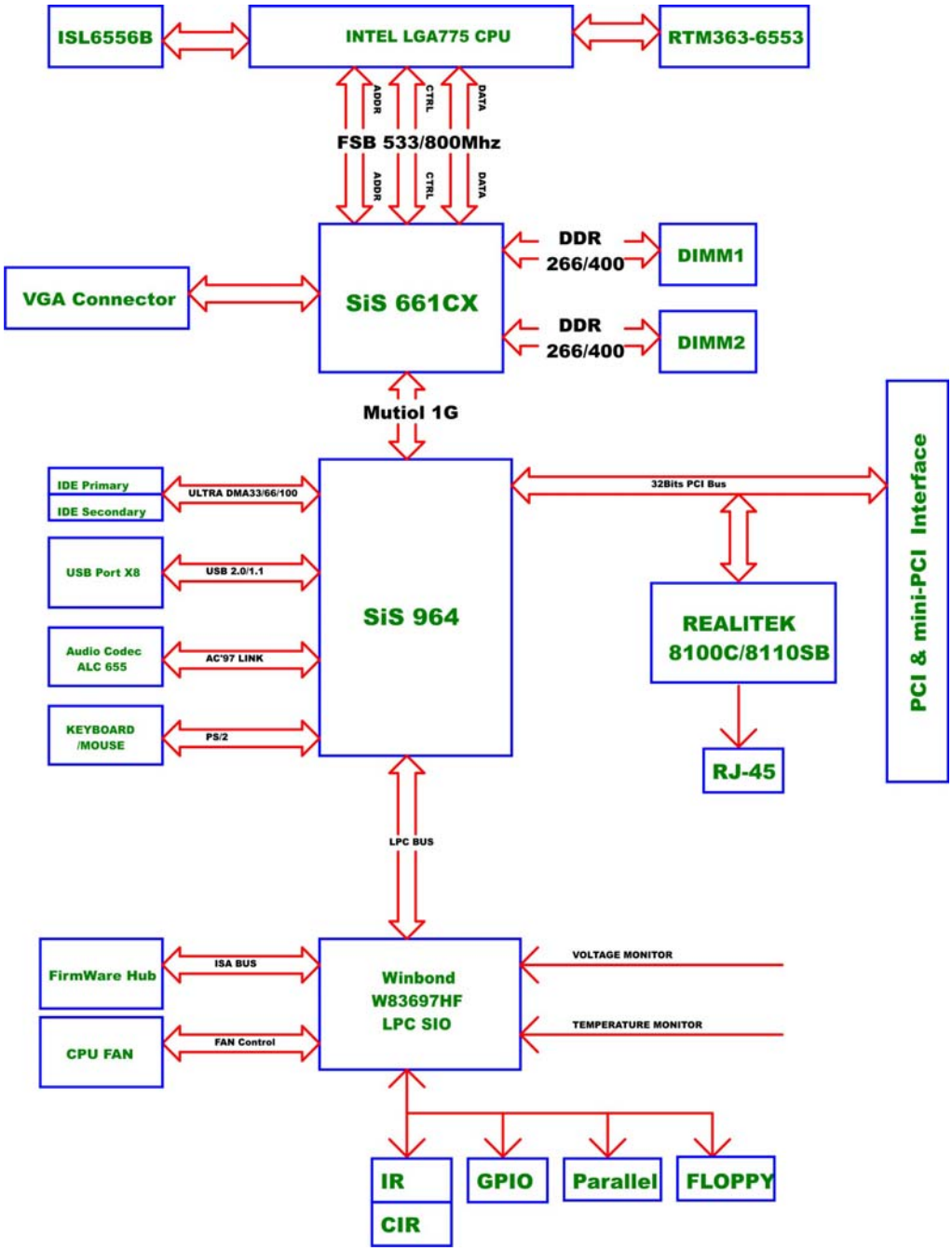


Figure 2-1: Data Flow Block Diagram

2.5 Graphics Support

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

- **AGP 3.5 and AGP 2.0 Compliant**
  - AGP 8X/4X mode support
  - Fast Write support
  - 1.5V interface support only
- **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/TV-OUT support**
  - NTSC/PAL TV-OUT
  - LCD Monitor
  - Dual view function support for LCD-TV,LCD-CRT or CRT-TV
- **Built-in high performance 333MHz RAMDAC**
- **Graphics support mode**
  - CRT highest resolution mode: 2048x1536x32@75NI
  - LCD highest resolution mode: 1600x1200x32@ 60NI
  - TV highest resolution mode: 1024x768x32@60NI

2.6 Memory Support

The ROCKY-6614 CPU has two 240-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

2.7 PCI Bus Interface Support

The PCI bus on the ROCKY-6614 CPU Board 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 (intended for external 1394 host controller)
- 44-bit addressing using the DAC protocol supported

2.8 GbE Ethernet

The Realtek RTL8110SB 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)

2.9 Drive Interfaces

The ROCKY-6614 can support the following drive interfaces.

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

2.9.1 SATA Drives

The ROCKY-6614 CPU Board supports the following SATA drives:

- 2 x first generation SATA drives with transfer rates up to 150MB/s

2.9.2 IDE HDD Interfaces

The ROCKY-6614 southbridge chipset IDE controller supports up to two HDDs with the following specifications:

- Supports PIO IDE transfers up to 16MB/s
- Supports the following Ultra ATA devices:
  - **Ultra ATA/133**, with data transfer rates up to 133MB/s
  - **Ultra ATA/100**, with data transfer rates up to 100MB/s

2.9.3 Floppy Disk Drive (FDD)

The ROCKY-6614 CPU Board supports a single FDD. The following FDD formats are compatible with the board.

- 5.25”: 360KB and 1.2MB
- 3.5”: 720KB, 1.44MB and 2.88MB

2.10 Serial Ports

The ROCKY-6614 CPU Board has two high-speed UART serial ports, configured as COM1 and COM2. The serial ports have the following specifications.

- 16C550 UART with 16-byte FIFO buffer

- 115.2Kbps transmission rate

2.11 Real Time Clock

256-byte battery backed CMOS RAM

2.12 System Monitoring

The ROCKY-6614 CPU board 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)

2.13 Infrared Data Association (IrDA) Interface

The ROCKY-6614 CPU Board 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.

2.14 USB Interfaces

The ROCKY-6614 CPU board has eight USB interfaces, six internal and two external. The USB interfaces support USB 2.0.

2.15 BIOS

The ROCKY-6614 CPU Board 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

2.16 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the ROCKY-6614 CPU Board 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.

2.17 Audio Codec

The ROCKY-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, AUX
- High-quality differential CD input
- Two analog line-level mono inputs: PCBEEP, PHONE-IN
- Two software selectable MIC inputs
- Dedicated Front-MIC input for front panel applications (software

selectable)

- 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
- Supports 48KHz S/PDIF output, complying with AC'97 Rev 2.3 specifications
- Supports 32K/44.1K/48KHz S/PDIF input
- 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

2.18 Power Consumption

Table 2-2 shows the power consumption parameters for the ROCKY-6614 CPU board when a Pentium 4 processor with a clock speed of 3.4GHz, an L2 cache of 2MB and a FSB 800MHz is running with a 2GB DDR400 module.

Voltage	Current
+5V	4.28
+12V	6.14

Table 2-2: Power Consumption

2.19 Packaged Contents and Optional Accessory Items

2.19.1 Package Contents

When you unpack the ROCKY-6614 CPU board you should find the following components.

- 1 x ROCKY-6614 single board computer
- 1 x mini jumper pack
- 1 x ATA 66/100 flat cable (P/N: 32200-000052-RS)
- 2 x SATA cables (P/N: 32000-062800-RS)
- 1 x SATA power cable (P/N: 32100-088600-RS)
- 1 x Keyboard/ PS2 mouse Y cable (P/N: 32000-000138-RS)
- 1 X RS-232 cable (P/N: 19800-000051-RS)
- 1 x USB cable (P/N: CB-USB02-RS)
- 1 x Utility CD (P/N)
- 1 x QIG (quick installation guide)

2.19.2 Optional Accessory Items

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

- Audio cable (P/N: AC-KIT08R)
- CPU Cooler (P/N: CF-520-RS)
- FDD cable (P/N: 32200-000017-RS)
- LPT cable (P/N: 19099-000049-RS)

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 ROCKY-6614 CPU Board Layout

Figure 3-1 shows the onboard peripheral connectors, backplane peripheral connectors and onboard jumpers.

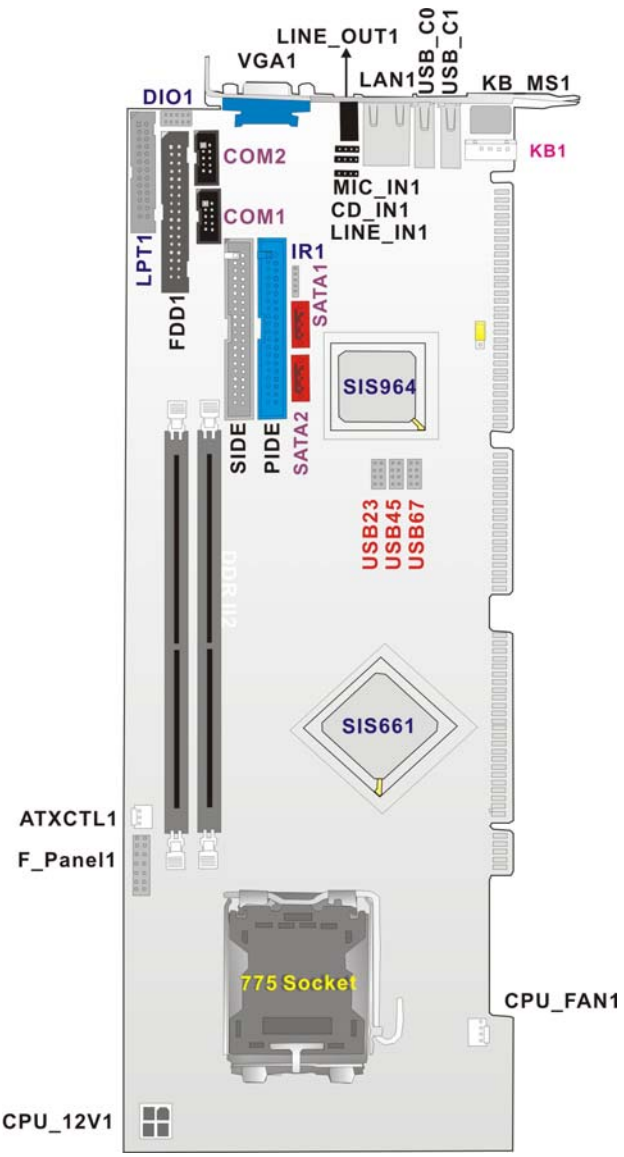


Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the ROCKY-6614 CPU board. Detailed descriptions of these connectors can be found in **Section 3.2** on **page 35**.

Label	Connector	Type
FDD1	FDD connector	34-pin header
PIDE1	Primary HDD connector	40-pin header
SIDE1	Secondary HDD connector	40-pin header
COM1	Serial communications connector	5-pin header
COM2	Serial communications connector	5-pin header
LPT1	Parallel port connector	26-pin header
SATA 1	SATA drive port (150MB/s)	SATA disk drive port
SATA 2	SATA drive port (150MB/s)	SATA disk drive port
DIO1	Digital Input Output connector	10-pin header
CPU12V1	ATX 12V connector	4-pin header
CPU_FAN1	CPU cooling fan connector	3-pin header
USB23	USB connector for 2 USB devices	8-pin header
USB45	USB connector for 2 USB devices	8-pin header
USB67	USB connector for 2 USB devices	8-pin header
IR1	Infrared	5-pin header
F_PANEL1	Front Panel connector connects to chassis front panel power and reset buttons as status LEDs	12-pin header
ATXCTL1	Connects the CPU board to the backplane	3-pin header
LINE_IN1		4-pin header

CD_IN1		**4-pin header**
MIC_IN1		**4-pin header**
KB1	**Keyboard connector**	**5-pin header**

Table 3-1: Peripheral Interface Connectors

3.1.3 Rear Panel Connectors

Table 3-2 lists the rear panel connectors on the ROCKY-6614 CPU card. Detailed descriptions of these connectors can be found in Section 3.3 on page 51.

Label	Connector	Type
KB/MS_C1	**Keyboard or Mouse connector**	**PS/2**
LAN_C1	**Ethernet connector**	**RJ-45**
LAN_C2	**Ethernet connector**	**RJ-45**
USB_C1	**USB Connector**	**USB Port**
CN2	**VGA Connector**	**15-pin VGA connector**

Table 3-2: Peripheral Interface Connectors

3.1.4 Onboard Jumpers

Table 3-3 lists the onboard jumpers. Detailed descriptions of these jumpers can be found in **Section 3.4** on **page 54**.

Label	Connector	Type
JP2	**Clear CMOS**	**3-pin header**

Table 3-3: Onboard Jumpers

3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the CPU card and are only accessible when the CPU board is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the ROCKY-6614 CPU board.

3.2.1 FDD Connector

CN Label: **FDD1**

CN Type: **2x17 pin header**

CN Location: **See Figure 3-2**

CN Pinouts: **See Table 3-4**

The ROCKY-6614 is shipped with a 34-pin daisy-chain drive connector cable. This cable can be connected to the FDD connector.

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

29	GND	30	READ DATA#
31	GND	32	SIDE 1 SELECT#
33	GND	34	DISK CHANGE#

Table 3-4: FDD Connector Pinouts

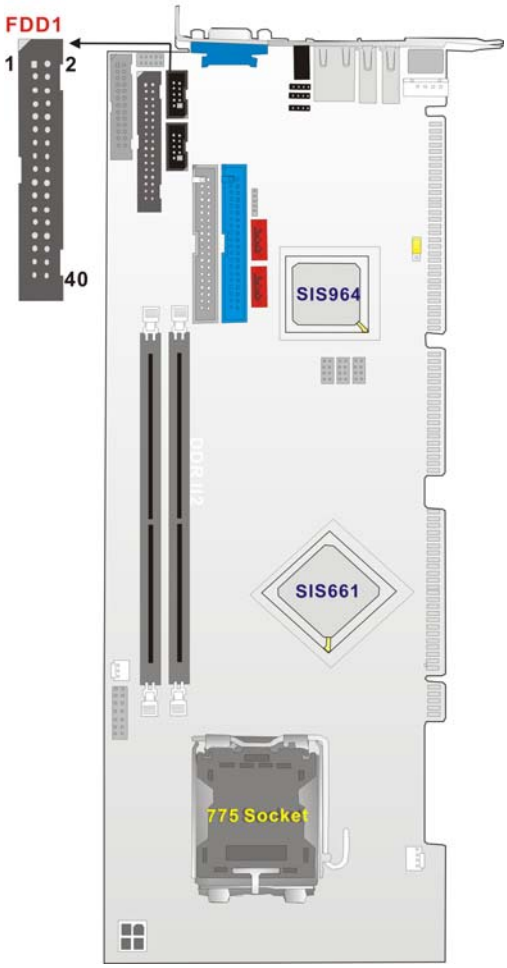


Figure 3-2: FDD Connector Location

3.2.2 IDE Connectors

CN Label: **PIDE1 and SIDE2**

CN Type: **2x20 pin header**

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

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

Two IDE connectors provide connectivity for four IDE devices.

PIN NO.	DESCRIPTION	PIN NO.	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**	BALE – DEFAULT
29	IDE DACK	**30**	GND
31	INTERRUPT	**32**	N/C
33	SA1	**34**	PDIAG#
35	SA0	**36**	SA2
37	HDC CS0#	**38**	HDC CS1#
39	HDD ACTIVE#	**40**	GND

Table 3-5: IDE Connector Pinouts

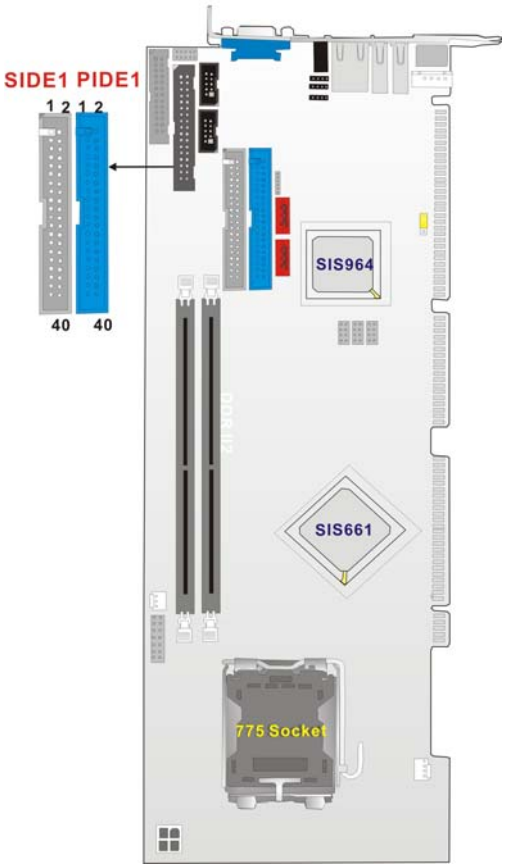


Figure 3-3: IDE Connector Location

3.2.3 COM Ports

CN Label:	**COM1, COM2**
CN Type:	**2x5 pin headers**
CN Location:	**See Figure 3-4**
CN Pinouts:	**See Table 3-6**

The ROCKY-6614 CPU board has two internal high-speed UART connectors accessed through a 10-pin cable connector.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DATA CARRIER DETECT (DCD)	6	DATA SET READY (DSR)
2	RECEIVE DATA (RXD)	7	REQUEST TO SEND (RTS)

3	TRANSMIT DATA (TXD)	8	CLEAR TO SEND (CTS)
4	DATA TERMINAL READY (DTR)	9	RING INDICATOR (RI)
5	GND (GND)	10	GND (GND)

Table 3-6: Internal COM Port Connector Pinouts

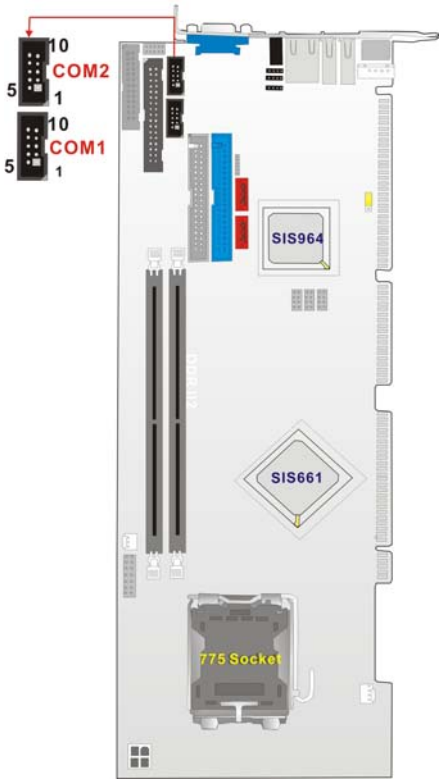


Figure 3-4: COM Port Locations

3.2.4 Parallel Port

CN Label: **LPT1**

CN Type: **2x13 pin header**

CN Location: **See Figure 3-5**

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

The parallel port is connected to a printer or other parallel device with a 26-pin flat-cable connector.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #
2	DATA0	15	ERROR#
3	DATA1	16	INITIALIZE#
4	DATA2	17	PRINTER SELECT LN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACKNOWLEDGE#	23	GND
11	BUSY	24	GND
12	PAPER EMPTY	25	GND
13	PRINTER SELECT		

Table 3-7: LPT Connector Pinouts

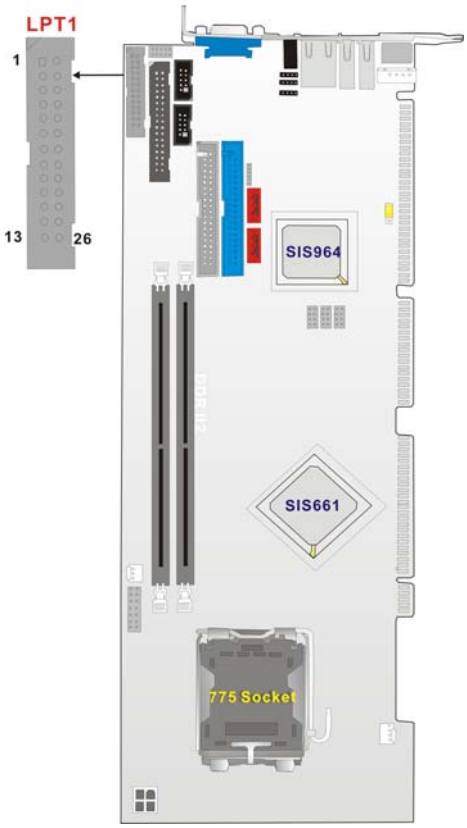


Figure 3-5: LPT Connector Location

3.2.5 Internal USB Connectors

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

CN Type: **2x4 pin header**

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

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

Three 2x4 pin connectors provide connectivity to six USB 2.0 ports. Two additional USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	USB Power	2	GND
3	USBPX-	4	USBPX-
5	USBPX+	6	USBPX+
7	GND	8	USB Power

Table 3-8: USB Port Connector Pinouts

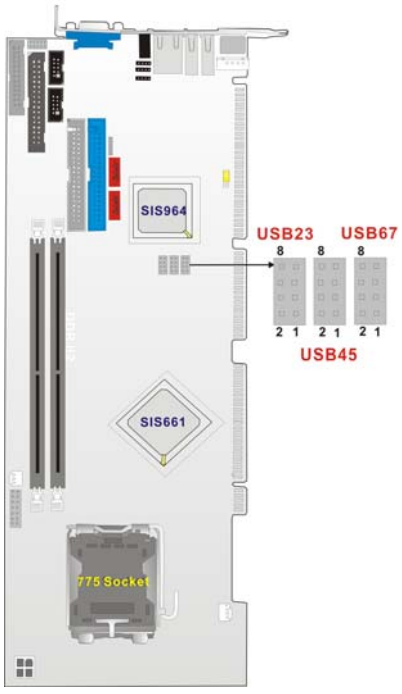


Figure 3-6: USB Port Connector Location

3.2.6 Cooling Fan Connector

CN Label: **CPU_FAN1**

CN Type: **1x3 pin header**

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

CN Pinouts: **See Table 3-9**

The CPU_FAN1 CPU cooling fan connector provides a 12V, 500mA current to the cooling fan. The connector has a "rotation" pin to get rotation signals from fans and notify the system so the system BIOS can recognize the fan speed. Please note that only certain fans can issue the rotation signals.

PIN	DESCRIPTION
1	Sense Pulse
2	+12V
3	GND

Table 3-9: Cooling Fan Connector Pinouts

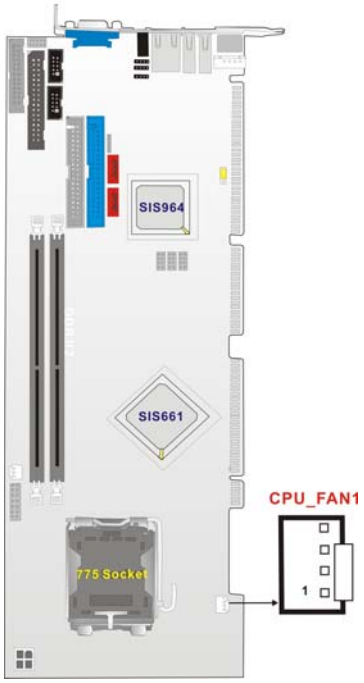


Figure 3-7: Cooling Fan Connector Locations

3.2.7 Backplane to Mainboard ATX Connector

CN Label: **ATXCTL1**

CN Type: **1x3 pin header**

CN Location: **See Figure 3-8**

CN Pinouts: **See Table 3-10**

Connects a power source from a backplane with an ATX Connector.

PIN NO.	DESCRIPTION
1	GND
2	PSON#
3	5VSB

Table 3-10: CN7 Connector Pin Outs

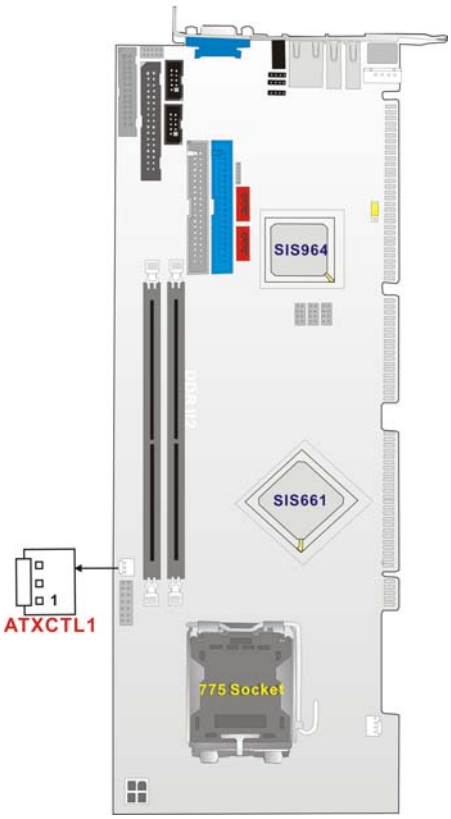


Figure 3-8: ATXCTL1 Connector Locations

3.2.8 System Front Panel Connector

CN Label: **F_PANEL1**

CN Type: **2x7 pin header**

CN Location: **See Figure 3-9**

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

The system panel connector connects to:

- the system chassis front panel LEDs
- the chassis speaker
- the power switch
- the reset button.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC5	2	VCC5
3	N/C	4	N/C
5	GND	6	N/C
7	Power Button	8	SPK
9	GND	10	N/C
11	VCC5	12	SYS_RST#
13	HD_LED (-)	14	GND

Table 3-11: System Panel Connector Pinouts

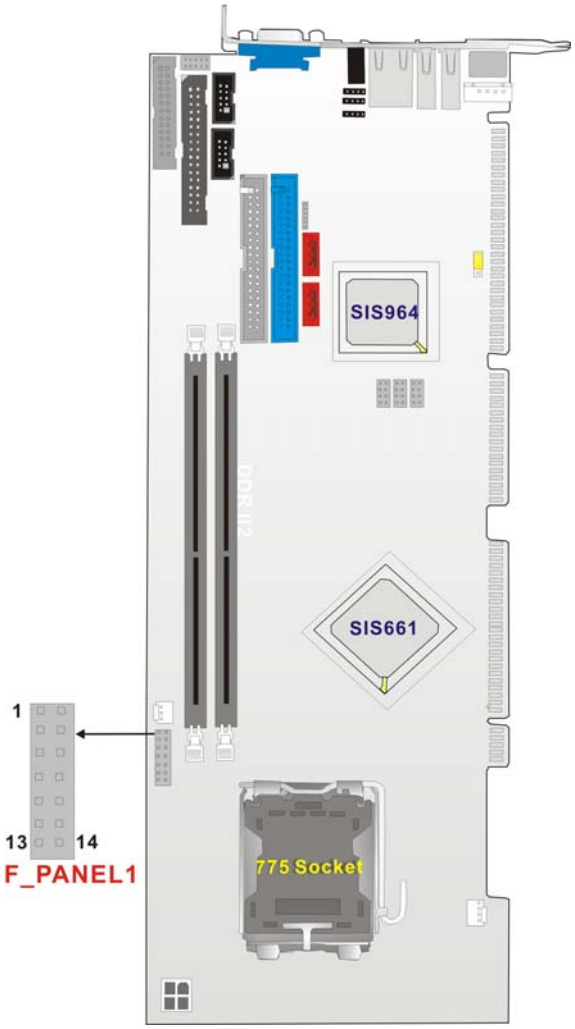


Figure 3-9: System Panel Connector Location

3.2.9 IrDA Connector

CN Label: **IR1**

CN Type: **1x6 pin header**

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

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

The integrated IrDA connector supports both the SIR and ASKIR infrared protocols.

PIN	DESCRIPTION
1	VCC5
2	NC
3	IR-RX
4	GND
5	IR-TX
6	CIRRX

Table 3-12: IrDA Connector Pinouts

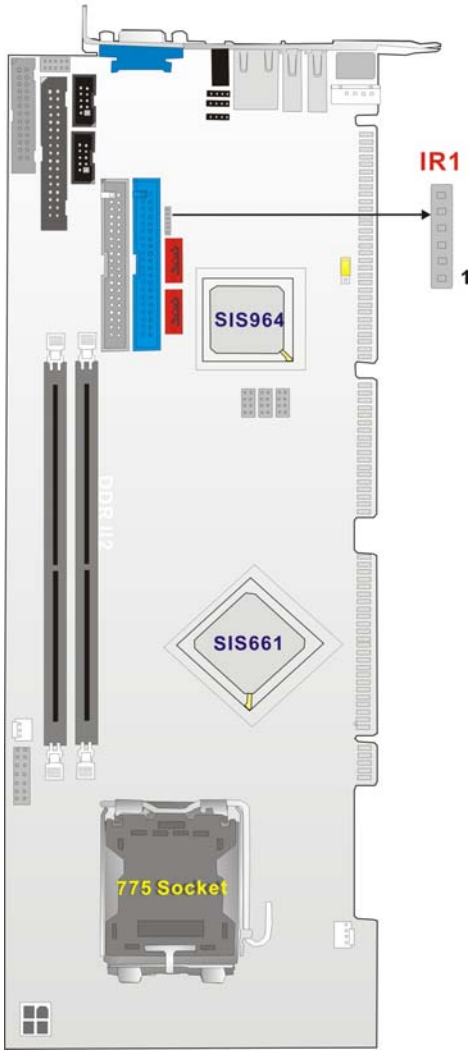


Figure 3-10: IrDA Connector Location

3.2.10 SATA Drive Connectors

CN Label: **SATA1, SATA2**

CN Type: **1x7 pin port**

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

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

The SATA drive ports provide connectivity to SATA drives with a maximum data transfer rate of 150MB/s.

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

Table 3-13: SATA Connector Pinouts

CAUTION!

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

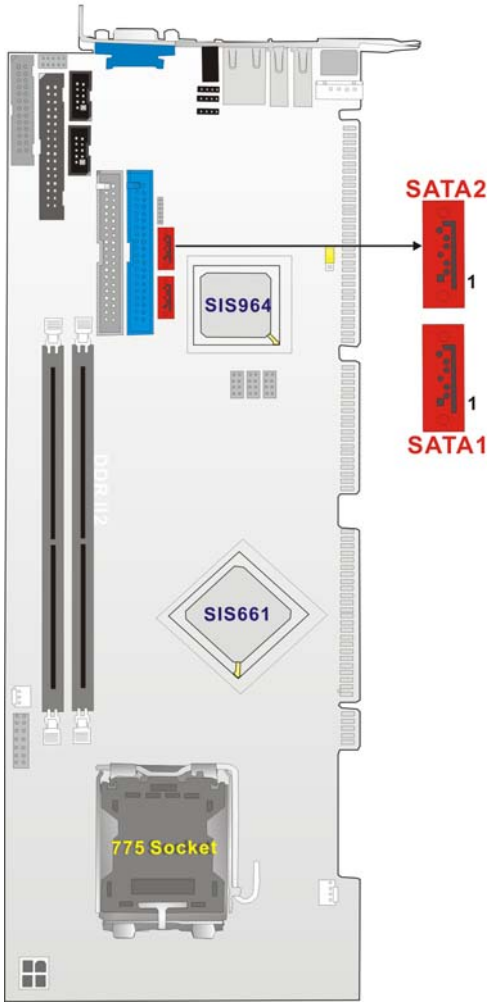


Figure 3-11: SATA Connector Locations

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.

3.2.11 Keyboard Connector

CN Label: **KB1**

CN Type: **1x5 pin header**

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

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

For alternative application, a keyboard pin header connector is also available on board.

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	N/C
4	GND
5	VCC

Table 3-14: KB1 Connector Pinouts

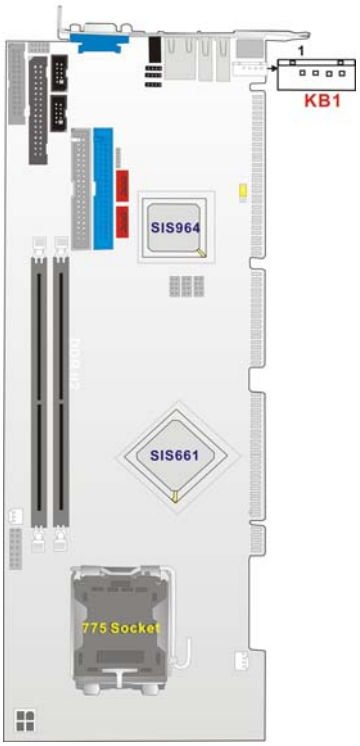


Figure 3-12: KB1 Connector Location

3.2.12 ATX-12V Power Source Connector

CN Label: **CPU12V**

CN Type: **2x2 pin header**

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

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

This connector supports the ATX-12V power supply.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	3	+12V
2	GND	4	+12V

Table 3-15: CN100 Connector Pinouts

Figure 3-13: ATX Connector Location

3.3 External (Rear Panel) Connectors

Figure 3-14 shows the ROCKY-6614 CPU board rear panel. The peripheral connectors on the back panel can be connected to devices externally when the CPU card is installed in a chassis. The peripheral connectors on the rear panel are:

- 1 x PS/2 keyboard connector
- 2 x USB connectors
- 1 x RJ-45 GbE connector
- 1 x VGA connector
- 1 x Line-out connector

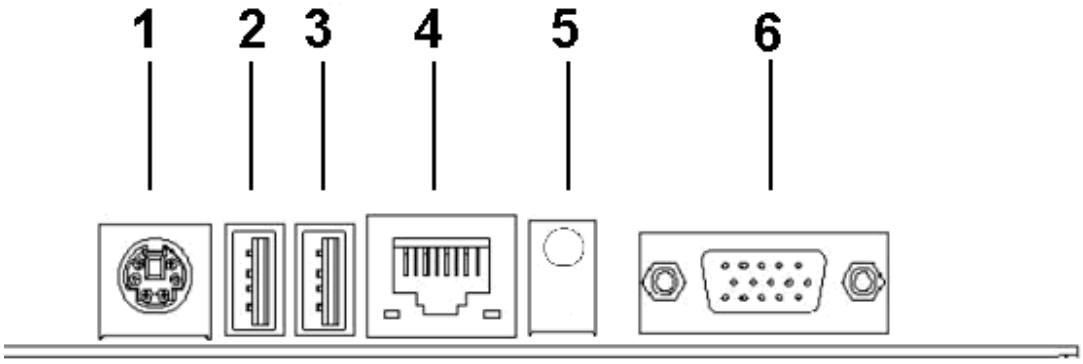


Figure 3-14: ROCKY-6614 CPU Board Rear Panel

3.3.1 PS/2 Connector

CN Label: **KB_MS1**

CN Type: **PS/2**

CN Location: **See Figure 3-14 (labeled number 1)**

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

Figure 3-15 shows PS/2 Pinout locations

The PS/2 mouse and keyboard connectors are connected to a mouse and keyboard

PIN	DESCRIPTION	PIN	DESCRIPTION
1	KB Data	2	N/C

3	GND	4	+5V
5	Clock	6	N/C

Table 3-16: PS/2 Pinouts

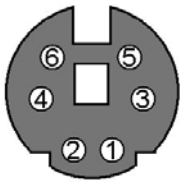


Figure 3-15: PS/2 Pinout locations

3.3.2 USB Connectors

CN Label: **USB_C0, USB_C1**

CN Type: **USB port**

CN Location: **See Figure 3-14 (labeled number 2 and 3)**

CN Pinouts: **See Table 3-17**

USB devices can be connected directly to the USB connectors on the rear panel.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+5V	2	DATA-
3	DATA+	4	GND

Table 3-17: USB Connectors

3.3.3 Ethernet Connectors

CN Label: **LAN1**

CN Type: **RJ-45**

CN Location: **See Figure 3-14 (labeled number 4)**

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

One 1Gb connections can be made between the Ethernet connector and a Local Area Network (LAN) through a network hub. An RJ-45 Ethernet connector is shown in **Figure 3-16**.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TXD+	8	GND
2	TXD-	9	GRN+
3	RXD+	10	GRN-
4	CT_TXD	11	YEL-
5	CT_RXD	12	YEL+
6	RXD-	13	S GND
7	N/C	14	S GND

Table 3-18: RJ-45 Ethernet Connector Pinouts

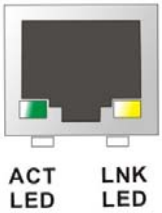


Figure 3-16: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 3-19**.

STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	Activity	YELLOW	Linked

Table 3-19: RJ-45 Ethernet Connector LEDs

3.3.4 VGA Connector

CN Label: **VGA1**

CN Type: **15-pin**

CN Location: **See Figure 3-14 (labeled number 7)**

The standard 15-pin VGA connector connects to a CRT or LCD display monitor.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Red	9	No Connect
2	Green	10	Ground
3	Blue	11	No Connect
4	No Connect	12	DDC DAT
5	Ground	13	Horizontal Synchronization
6	Ground	14	Vertical Synchronization
7	Ground	15	DDC Clock
8	Ground		

Table 3-20: VGA Connector Pinouts

3.4 Onboard Jumpers

NOTE:

A jumper is a metal bridge that is used to close an electrical circuit. It consists of two 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.

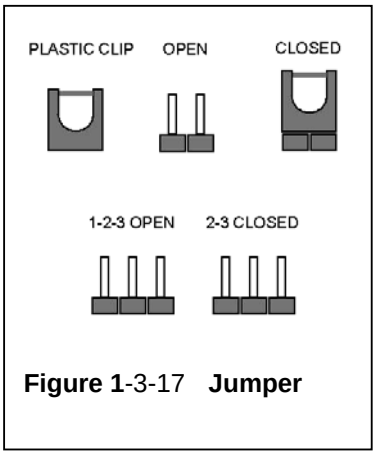


Figure 1-3-17 **Jumper**

The ROCKY-6614 CPU Board one onboard jumper, "**Clear CMOS**."

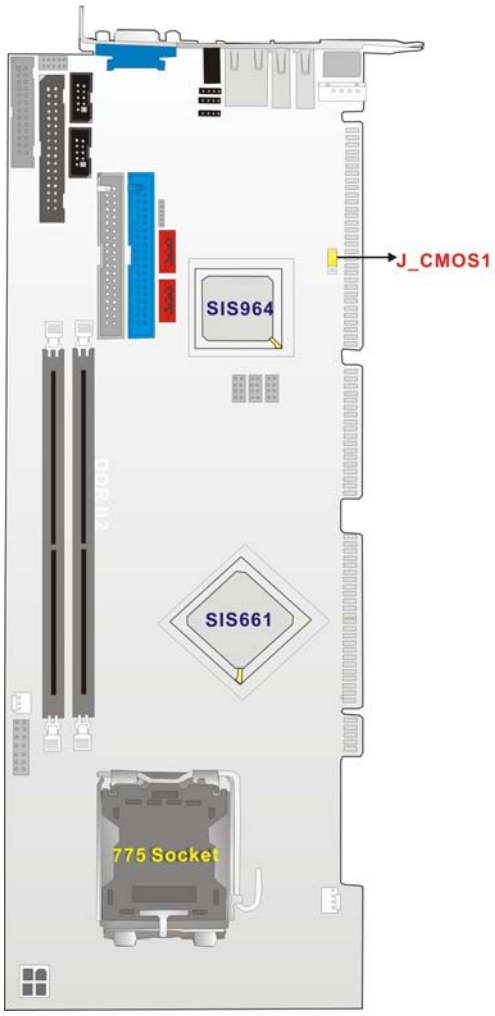


Figure 3-18: Jumper Locations

3.4.1 Reset CMOS Jumper

Jumper Label:	**J_CMOS1**
Jumper Type:	**3 pin header**
Jumper Settings:	**See Table 3-21**
Jumper Location:	**See Figure 3-18**

If the CPU Card fails to boot due to improper BIOS setting, 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, you may then try to correct the fault by pressing the F1 to enter the CMOS Setup menu. You may then do one of the following:

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

After you have done one of the above, save your changes and exit the CMOS Setup menu.

J_CMOS1	CLEAR CMOS
1-2 closed	Normal (default)
2-3 closed	Clear CMOS

Table 3-21: JP2 Jumper Settings

Chapter

4

Installation and Configuration

4.1 Installation Considerations

NOTE:

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

4.1.1 Installation Notices

Before and during the installation of the ROCKY-6614 CPU Board, please **do** the following:

- **Read the user manual**
  - The user manual provides a complete description of the ROCKY-6614 CPU board, installation instructions and configuration options.
- **Wear an electrostatic discharge cuff (ESD)**
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff will remove ESD from your body and help to prevent ESD damage.
- **Place the CPU Card on an antistatic pad**
  - When you are installing or configuring the CPU Card, place it on an antistatic pad. This will help to prevent potential ESD damage.
- **Turn off all power to the ROCKY-6614 CPU card**
  - When working with the CPU card, 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 ROCKY-6614 CPU Board **DO NOT:**

- remove any of the stickers on the PCB board. These stickers are required for warranty validation.

- use the product before you have verified that all 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 you unpack the ROCKY-6614 CPU card, do not proceed with the installation and contact the reseller or vendor you purchased the CPU card from.

4.2.1 Unpacking Precautions

Before you install the ROCKY-6614 CPU card, you must unpack the CPU card. Some components on ROCKY-6614 are very sensitive to static electricity and can be damaged by a sudden rush of power. To protect it from being damage, follow these precautions:

- Ground yourself to remove any static charge before touching your ROCKY-6614 You can do so by wearing a grounded wrist strap at all times or by frequently touching any conducting materials that is connected to the ground.
- Handle your ROCKY-6614 by its edges. Do not touch the IC chips, leads or circuitry if not necessary.

Do not place a PCB on top of an anti-static bag. Only the inside of the bag is safe from static discharge.

4.2.2 Checklist

When you unpack the ROCKY-6614 , please make sure that your package contains the following items.

- 1 x ROCKY-6614 single board computer
- 1 x mini jumper pack
- 1 x ATA 66/100 flat cable
- 2 x SATA cables
- 1 x SATA power cable
- 1 x Keyboard/ PS/2 mouse Y cable
- 1 X RS-232 cable
- 1 x ATX-12V cable
- 1 x USB cable
- 1 x Utility CD
- 1 x QIG

If one or more of these items are missing, please contact the reseller or vendor you purchased the ROCKY-6614 CPU card from and do not proceed any further with the installation.

4.3 ROCKY-6614 CPU Card Installation

WARNING!

1. Never run the CPU board without an appropriate heatsink and cooler that can be ordered from IEI Technology or purchased separately.
2. Be sure to use the CPU 12V power connector (CN10007) for the CPU power.

WARNING!

Please note that the installation instructions described in this manual should be carefully followed in order to avoid damage to the CPU Card components and injury to you.

WARNING!

When installing electronic components onto the CPU Card always take the following anti-static precautions in order to prevent ESD damage to your board and other electronic components like the CPU and DIMM modules

The following components must be installed onto the CPU Card or connected to the CPU Card during the installation process.

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

4.3.1 CPU Installation

4.3.1.1 CPU Selection: HT Functionality Requirements

Enabling Hyper-Threading Technology on your system requires meeting all of the platform requirements listed below:

- CPU: An Intel® Pentium 4 Processor with HT Technology must be installed
- Chipset: A chipset that supports HT Technology (that has been met by the ROCKY-6614)
- OS: An operating system that has optimizations for HT Technology

4.3.1.2 CPU Installation

WARNING:

CPUs are expensive and sensitive components. When you install the CPU be careful not to damage it in anyway. Make sure you install it properly and ensure that a heatsink and CPU cooling fan is properly installed before you run the CPU Card or else both the CPU and the board will be damaged.

The LGA775 socket is shown in Figure 4-1.

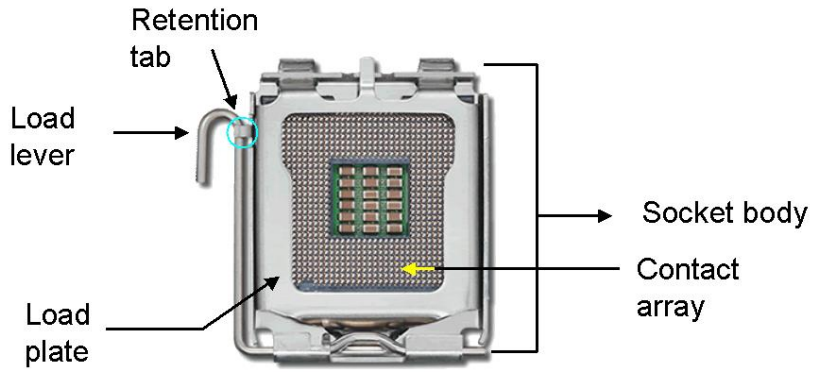


Figure 4-1: Intel LGA775 Socket

To install Intel LGA775 socket CPU onto your CPU Card, follow the steps below:

Step 1: **Remove the protective cover.** Remove the black protective cover by prying it off the load plate. The protective cover is used to protect the delicate pins on the LGA775 socket. To remove the protective cover, locate the "**REMOVE**" sign and use your fingernail to pry the protective cover off. (See **Figure 4-2**)

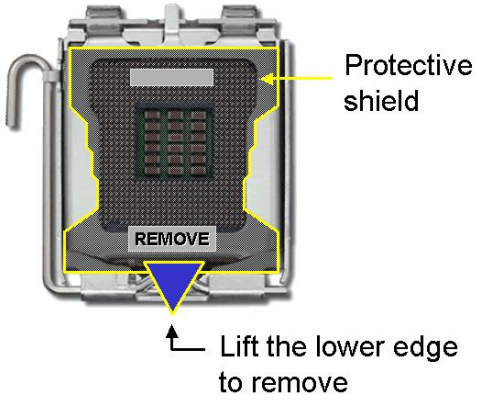


Figure 4-2: Remove the CPU Socket Protective Shield

Step 2: **Open the socket**. To 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**)

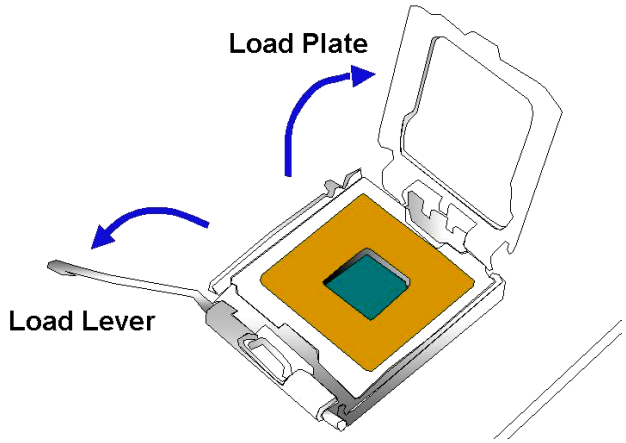


Figure 4-3: Open the CPU Socket Load Plate

Step 3: **Inspect the CPU and the socket**. Make sure that the pins on the CPU are not bent. Also make sure socket contacts are free of foreign material. If you see any debris in the socket remove it using compressed air.

Step 4: **Insert the 775-pin CPU**. To insert the CPU refer to **Figure 4-4** and follow the five steps below.

1. Hold the CPU by the LGA edges marked by back lines.
2. Orient the CPU with the IHS (Integrated Heat Sink) side facing upward.
3. Locate pin 1 and the two orientation notches on the CPU.
4. Carefully match the two orientation notches on the CPU with the alignment keys of the socket.
5. Carefully place the CPU into the socket with a gentle and vertical motion.

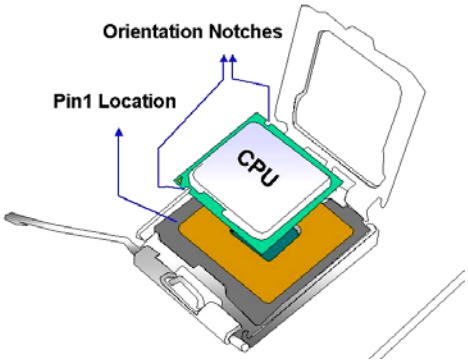


Figure 4-4: Insert the CPU

Step 5: **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 6: **After the cooling kit is installed** (see **Section 4.3.2**), connect the CPU cable to the CPU 12V power connector.

4.3.2 Cooling Kit (CF-520) Installation

WARNING:

It is strongly recommended that you DO NOT use the original heatsink and cooler provided by Intel on the ROCKY-6614.

The CPU board is vertically mounted on a horizontal backplane, and Intel's heatsink does not come with a support bracket on the soldering side, the PCB may be bent by the weight of the cooling kit.

IEI's cooling kit (CF-520) includes a support bracket that is combined with the heatsink mounted on the CPU to counterweigh and balance the load on both sides of the PCB.

Figure 4-5: IEI CF-520 Cooling Kit

The IEI LGA775 CPU cooling kit (CF-520) shown in **Figure 4-5** comprises a CPU heatsink and a cooling fan.

CAUTION:

The CF-520 heatsink has a layer of thermal paste sprayed on the lower surface. Do not accidentally wipe the thermal paste away when you unpack or install the heatsink. Thermal paste between the CPU and the heatsink is important for optimal heat dissipation.

To install the cooling kit, follow the instructions below.

Step 1: Place the heatsink onto the socket. Make sure that the CPU cable can be properly routed when the heatsink is installed.

Step 2: Align the heatsink so that its fourspring screw fasteners can pass through the pre-drilled holes on the PCB.

Step 3: From the other side of the PCB, align the support bracket to the screw threads on heatsink that were inserted through the PCB holes.

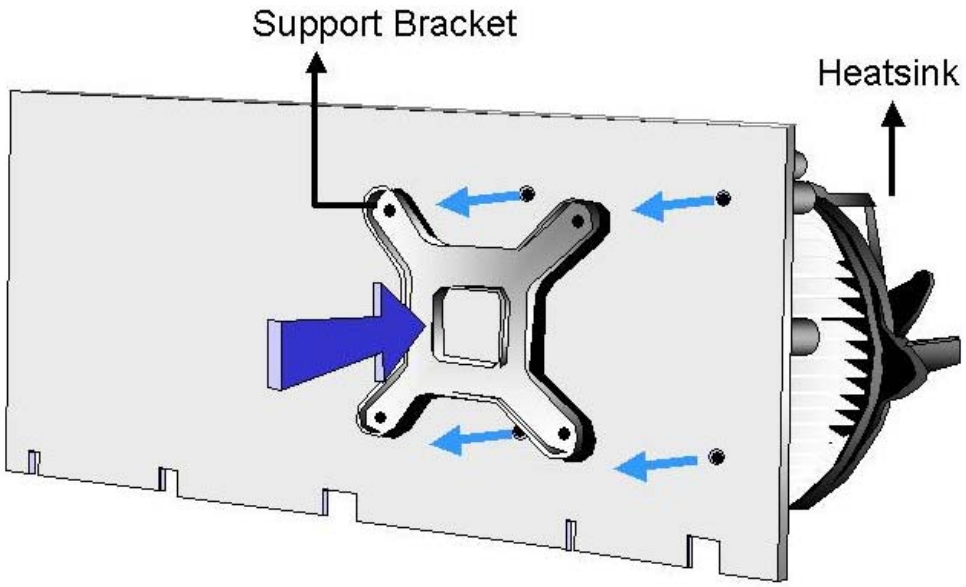


Figure 4-6: Securing the heatsink to the PCB board

Step 4: Use the screwdriver to tighten the four screws. Tighten each nut a few turns at a time and do not over-tighten the screws.

Step 5: Connect the fan cable on the cooler fan to the CPU fan connector on the CPU card. Make sure the fan cable does not touch any heat generating chips and fan blades.

4.3.3 DIMM Module Installation

4.3.3.1 Purchasing the Memory Module

WARNING!

The DDR2 architecture is not compatible with DDR1 modules. If your system is installed with DDR1 modules, damage might occur and you will not be able to boot up your system.

When you purchase your 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 you use memory modules of identical brand, size, chips, and speed.
- 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.

4.3.3.2 DIMM Module Installation

The ROCKY-6614 CPU Board has two DDR SDRAM DIMM sockets. To install the DIMM modules, follow the instructions below.

Step 1: Pull the two white handles on either side of the DIMM socket down.

Step 2: Align the DIMM module with the DIMM socket making sure the matching pins are correctly aligned.

Step 3: Insert the DIMM module slowly. Once you are sure it is correctly inserted, push down firmly. The white handles on either side of the socket will move back up and lock the module into the socket.

4.3.4 Peripheral Device Connection

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

Quantity	Type
1	ATA 66/100 flat cable
2	SATA cables
1	SATA power cable
1	Keyboard/ PS2 mouse Y cable
1	RS-232 cable
1	USB cable

Table 4-1: IEI Provided Cables

4.3.4.1 IDE Disk Drive Connector (IDE1)

The cable used to connect the CPU card to the IDE HDD is a standard 44-pin ATA 66/100 flat cable. To connect an IDE HDD to the CPU Card, follow the instructions below.

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

Step 2: Connect one end of the cable to the PIDE1 connector on the CPU card. 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.

NOTE:

When two EIDE 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.

4.3.4.2 Floppy Drive Connector (FDD1)

This connector provides access to two externally mounted 3.5” floppy drives. To connect the CPU Card to a FDD, follow the instructions below.

Step 1: Insert one side of the cable into the FDC making sure that the red wire on the cable corresponds to pin one on the connector.

Step 2: Attach the connector on the other side of the cable to the floppy drive(s). You can only use one connector in the set. The connection sequence determines which of the two connected floppy drives is drive A: and which is drive B.

4.4 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 configure, the CPU Card can be mounted into chassis.

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

4.5 Rear Panel Connectors

4.5.1 LCD Panel Connection

The conventional CRT monitor connector, VGA1, is a 15-pin, female D-SUB connector. Pin assignments can be seen in that can be connected to external monitors.

4.5.2 Ethernet Connection

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

4.5.3 USB Connection

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

THIS PAGE IS INTENTIONALLY LEFT BLANK

Chapter

5

AMI BIOS Setup

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 you may change.

5.1.1 Starting Setup

The AMI BIOS is activated when you turn on the computer. 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 you respond, you must restart your computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown 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
Page Up key	Increase the numeric value or make changes
Page Dn 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.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When you press **F1** 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 you are unable to boot your computer after you have made changes to the system configuration, you must restore the CMOS defaults. Use the jumper described in Chapter **Chapter 3**, **Section 3.4.1**.

5.1.5 BIOS Menu Bar

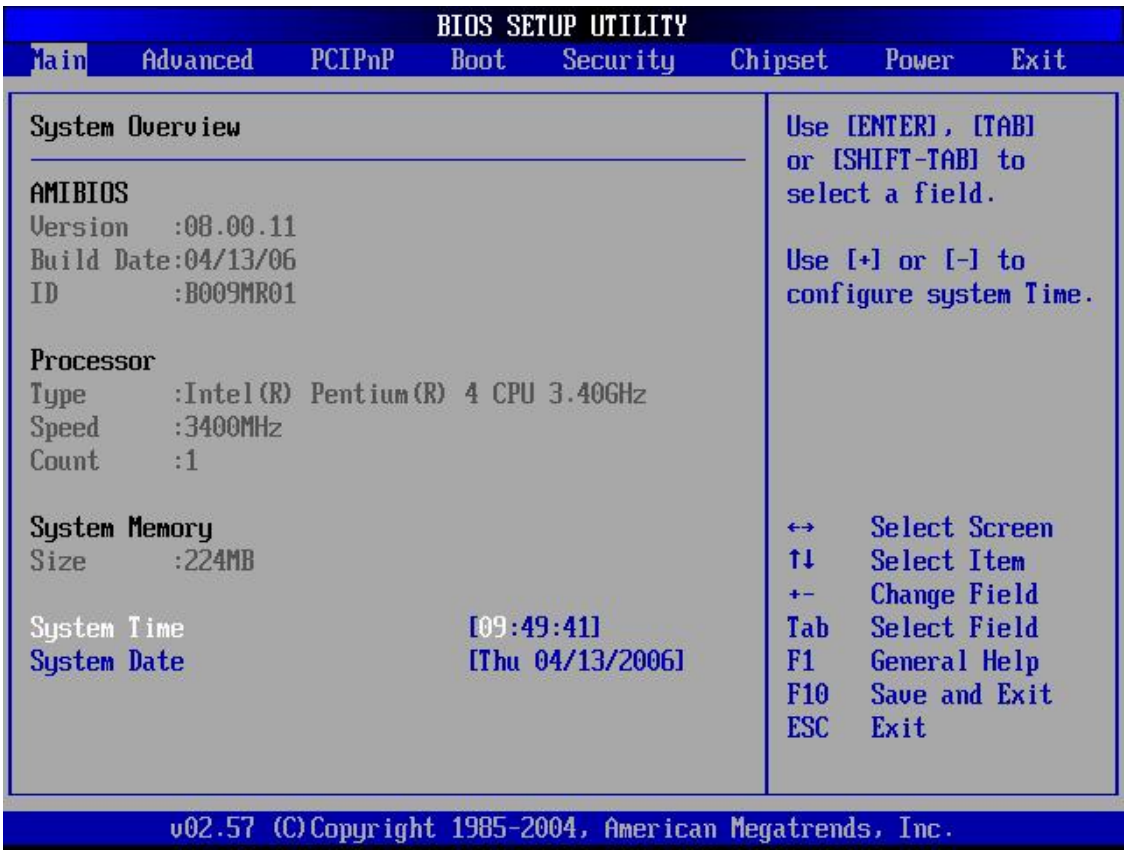
The **menu bar** on top of the BIOS screen has the following main items:

- **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 will completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

When you enter the **BIOS Setup** program, the **Main** menu (**BIOS Menu 1**) appears. The **Main** menu gives you 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 CPU board
  -
- **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]**: Allows you to set the system time.
- **System Date [Day xx/xx/xxxx]:** Allows you to set the system date.

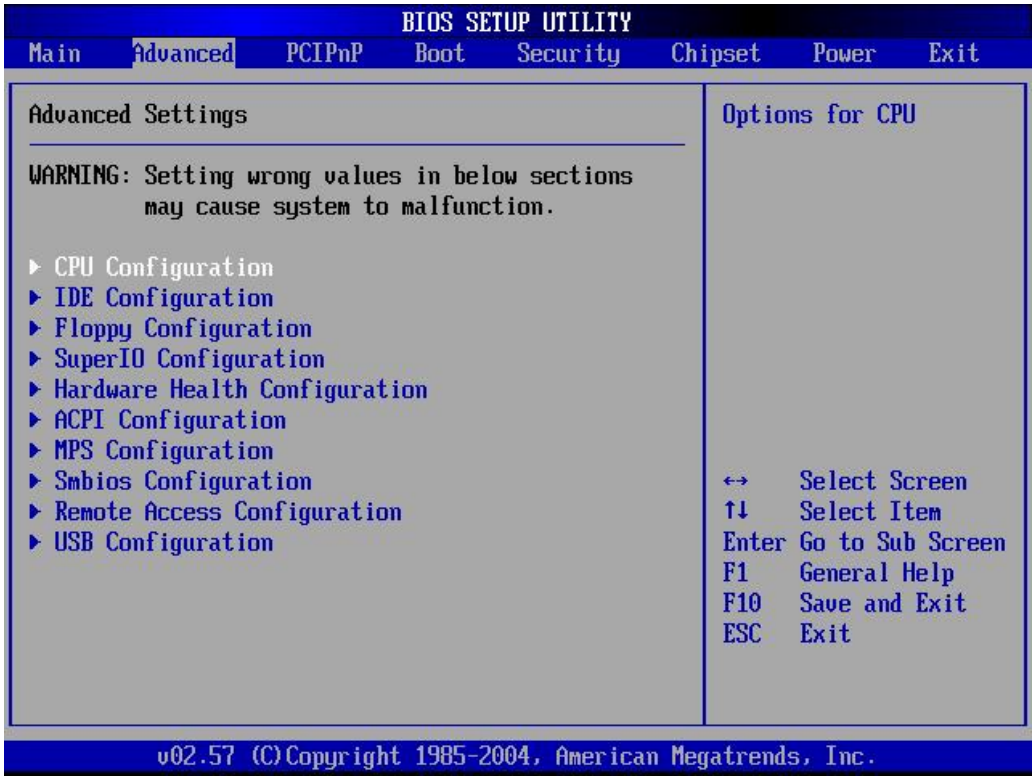
5.3 Advanced

The **Advanced** menu (**BIOS Menu 2**) allows you to access CPU and peripheral device configuration options 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 you make are compatible with your hardware.

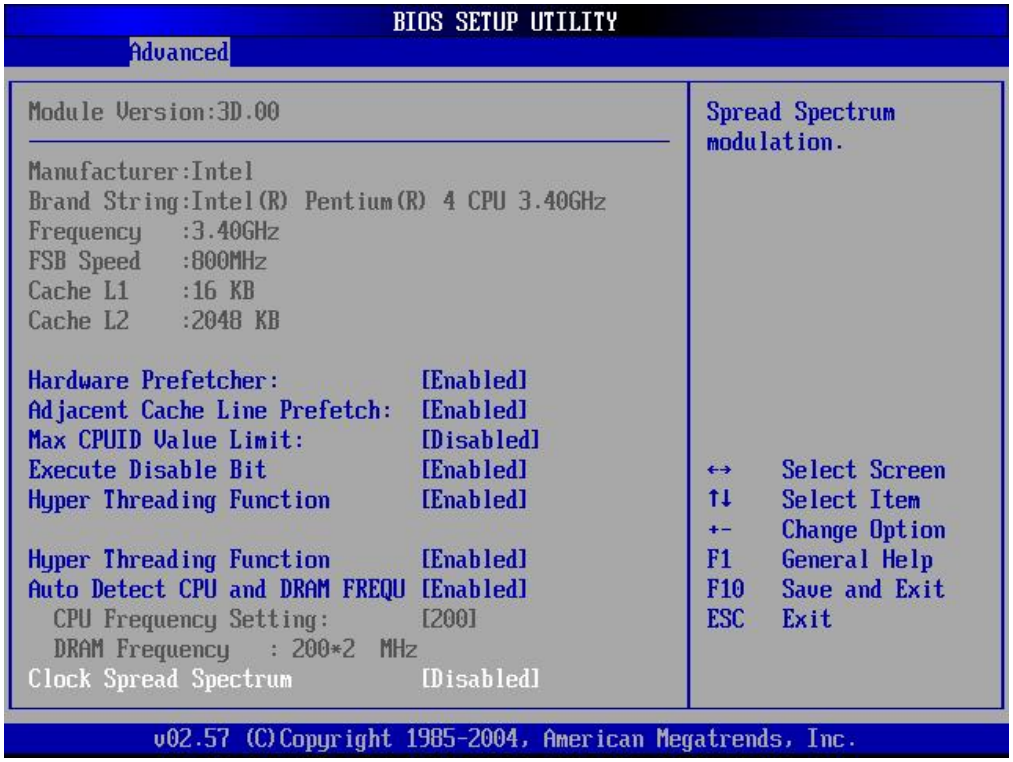
- **CPU Configuration** (see **Section 5.3.1**)
- **IDE Configuration** (see **Section**)
- **Floppy Configuration** (see **Section 5.3.3**)
- **SuperIO Configuration** (see **Section 5.3.4**)
- **Hardware Health Configuration** (see **Section**)
- **ACPI Configuration** (see **Section 5.3.6**)
- **MPS Configuration** (see **Section 5.3.6.2**)
- **Remote Access Configuration** (see **Section 5.3.8**)
- **USB Configuration** (see **Section 0**)



BIOS Menu 2: Advanced

5.3.1 CPU Configuration

The **CPU Configuration** menu **(BIOS Menu 3**) shows detailed CPU specifications and CPU configuration options.



BIOS Menu 3: CPU Configuration [Advanced]

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

The following **CPU Configuration** menu items can be configured.

- Hardware Prefetcher
- Adjacent Cache Line Prefetch
- Max CUPID Value Limit
- Execute Disable Bit
- Hyper Threading Technology

➔ **Ratio CMOS Setting [18]**

The **Ratio CMOS Setting** sets the ratio between the core clock and the FSB frequency. The following configuration options are available:

- 18

NOTE:

If an invalid ratio has been entered to this field, BIOS will restore it to the previous state.

➔ **Max CUPID Value Limit [Disabled]**

NOTE:

If your OS is NT, this value must be set to enabled.

➔ **Disabled** (Default) Disables legacy OSes that cannot support CPUs with extended CUPID functions from booting up

➔ **Enabled** Enables legacy OSes that cannot support CPUs with extended CUPID functions to boot up

➔ **Execute Disable Bit [Enabled]**

The **Execute Disable Bit** configuration option is a hardware configuration feature that protects the CPU from a buffer overflow attack. It is recommended that you enable this option.

➔ **Disabled** Forces the XD feature flag to always return to 0

➔ **Enabled** (Default) Does not force the XD feature flag to return to 0

➔ **Hardware Prefetcher [Enabled]**

The **Hardware Prefetcher** BIOS option allows you to set the CPU prefetching data feature.

➔ **Disabled**		Does not allow the Hardware Prefetcher Disable feature to be enabled or disabled.
➔ **Enabled**	(Default)	Allows the Hardware Prefetcher Disable feature to be either enabled or disabled

➔ **Adjacent Cache Line Prefetch [Enabled]**

The **Adjacent Cache Line Prefetch** BIOS option allows you to set the CPU prefetching data feature.

➔ **Disabled**		Does not allow the Adjacent Cache Line Prefetch Disable feature to be enabled or disabled
➔ **Enabled**	(Default)	Allows the Adjacent Cache Line Prefetch Disable feature to be either enabled or disabled

➔ **Hyper Threading Function [Disabled]**

➔ **Disabled**	(Default)	Disables the use of hyper threading technology
➔ **Enabled**		Enables the use of hyper threading technology

➔ **Auto Detect CPU and DRAM FREQU [Enabled]**

The **Auto Detect CPU and DRAM FREQU** BIOS option allows you to enable the system to automatically set the CPU and DRAM frequency or make these settings yourself.

➔ **Disabled**	(Default)	You manually select the CPU and DRAM frequecy
➔ **Enabled**		System automatically detects the CPU and DRAM frequecy

➔ **CPU Frequency Setting [200]**

The **CPU Frequency Setting** BIOS option is not user configurable. The setting indicates the frequency of the CPU. This setting will only be configurable when the **Auto Detect CPU and DRAM FREQU** BIOS option is disabled.

➔ **CPU/DRAM Frequency Ratio [1:1]**

The **CPU/DRAM Frequency Ratio** BIOS option allows you to set the ratio between the **CPU Frequency Setting** (CFS) stipulated above (previous configuration option) and the RAM speed. This setting will only be configurable when the **Auto Detect CPU and DRAM FREQU** BIOS option is disabled.

➔	**1:1**	(Default)	The RAM runs at the same speed as the FSB
➔	**2:3**		The RAM runs at CFS x 3/2
➔	**10:9**		The RAM runs at CFS x 9/10
➔	**3:4**		The RAM runs at CFS x 4/3
➔	**3:5**		The RAM runs at CFS x 5/3
➔	**4:5**		The RAM runs at CFS x 5/4
➔	**5:6**		The RAM runs at CFS x 6/5
➔	**8:9**		The RAM runs at CFS x 9/8
➔	**2:1**		The RAM runs at CFS x ½
➔	**3:2**		The RAM runs at CFS x 2/3
➔	**5:2**		The RAM runs at CFS x 2/5
➔	**4:3**		The RAM runs at CFS x ¾
➔	**5:3**		The RAM runs at CFS x 3/5
➔	**5:4**		The RAM runs at CFS x 4/5
➔	**6:5**		The RAM runs at CFS x 5/6

➔ **DRAM Frequency [200*2 MHz]**

The **DRAM Frequency** is not user configurable but reflects the DRAM frequency setting after the **CPU/DRAM Frequency Ratio** (described above) has been set. This setting will only appear when the **Auto Detect CPU and DRAM FREQU** BIOS option is disabled.

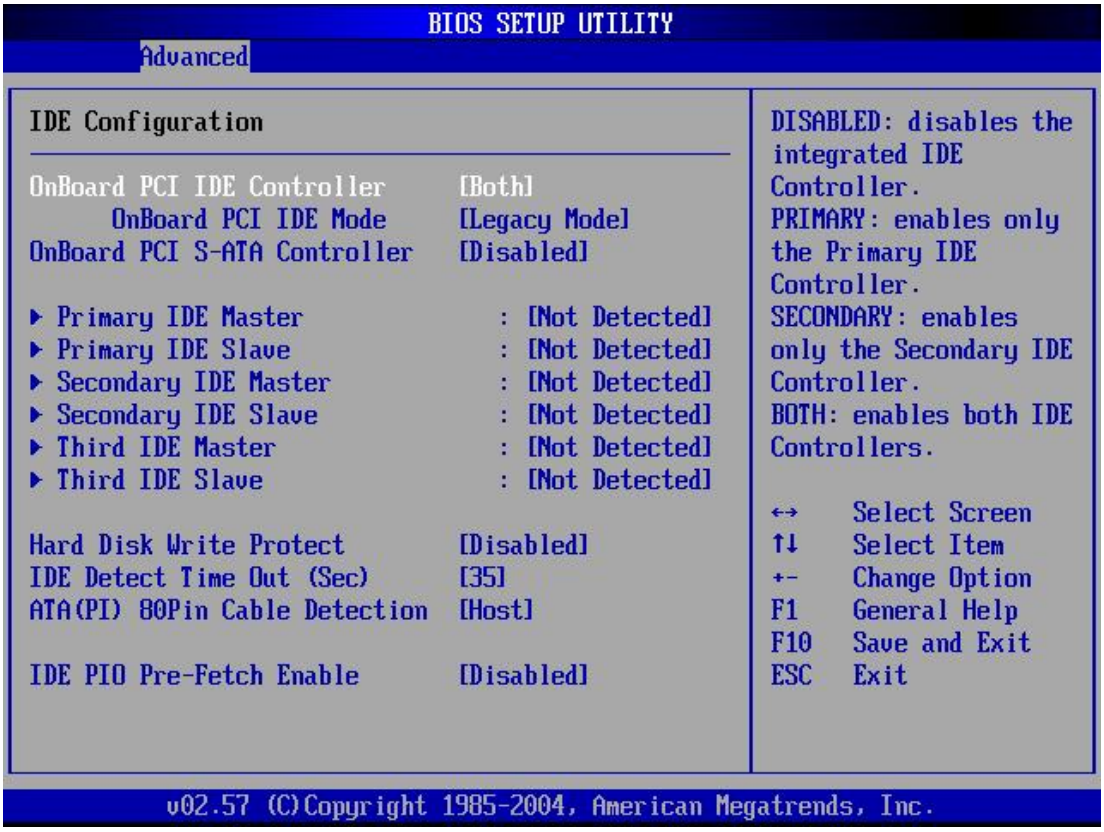
➔ **Clock Spread Spectrum [Disabled]**

The **Clock Spread Spectrum** BIOS option can help to improve CPU EMI issues.

➔	**Disabled**	(Default)	The clock spread spectrum is disabled
➔	**Enabled**		The clock spread spectrum is enabled

5.3.2 IDE Configuration

The **IDE Configuration** menu (**BIOS Menu 4**) allows you to set or change the configurations for the IDE devices installed in the system.



BIOS Menu 4: IDE Configuration [Advanced]

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

The **OnBoard PCI IDE Controller** BIOS option specifies 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 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.

➔ **Onboard PCI IDE Mode [Legacy Mode]**

The **Onboard PCI IDE Mode** BIOS option allows you to set the running mode for the PCI IDE.

➔ **Legacy Mode** (Default) The PCI IDE mode will be the same as the IDE mode

➔ **Native Mode** The PCI IDE mode will be the native mode

➔ **Onboard PCI S-ATA Controller**

The **Onboard PCI S-ATA Controller** option allows you to set the onboard SATA controller. If you wish to use the RAID function (see **Appendix E**) you must set this option in the **RAID** mode.

➔ **Disabled** (Default) The onboard PCI SATA controller is disabled

➔ **Native Mode** The SATA controller is set as an IDE device with ID at 0181h

➔ **Raid Mode** The SATA controller is set as a RAID device with ID at 0181h

➔ **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 will be detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master

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

The IDE Configuration menu (**BIOS Menu 4**) allows you to set or change 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** appear.

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

The **Hard Disk Write Protect** BIOS option allows you to protect your hard disks from being overwritten. This menu item will only be 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) [5]**

The **IDE Detect Time Out (Sec)** BIOS option allows you to specify the maximum time (in seconds) the AMI BIOS will search for IDE devices. This allows you to fine-tune 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” (the default setting).

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

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.

The **ATA (PI) 80Pin Cable Detection** BIOS option allows you to determine how the IDE cable will be 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.

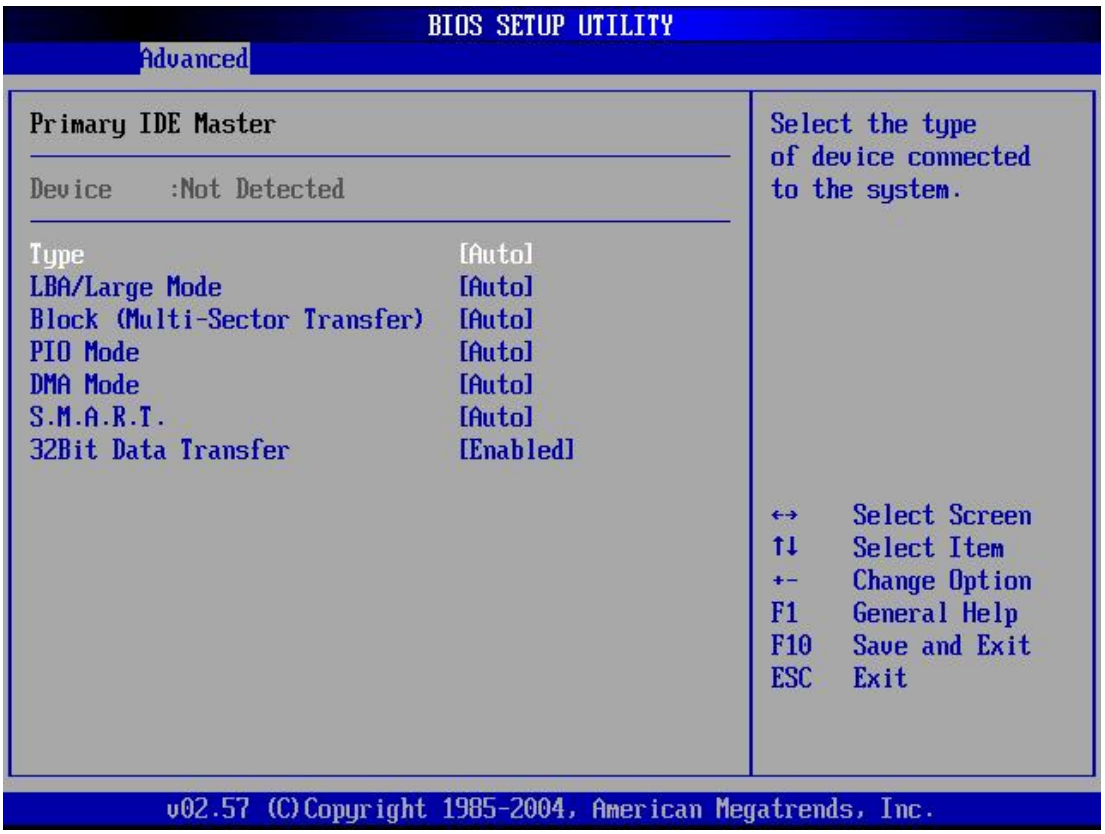
➔ **IDE PIO Pre-Fetch Enable [Disabled]**

The **IDE PIO PreFetch Enable** BIOS Option allows you to set the IDE controller to prefetch IDE data.

➔	**Disabled**	(Default)	IDE controller cannot prefetch data
➔	**Enabled**		IDE controller can prefetch data

5.3.2.1 IDE Master, IDE Slave

IDE Master and IDE Slave configuration options for both primary and secondary IDE devices are shown in the BIOS menu below.



BIOS Menu 5: IDE Master and IDE Slave Configuration [Advanced/IDE 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.)
- **Vendor**: Lists the device manufacturer
- **Size**: The size of the device.

- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block Mode**: 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.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

➔ **Type [Auto]**

The **Type** BIOS option determines the type of device that the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) has completed.

➔ **Not Installed** Selecting this value prevents the BIOS from searching for an IDE disk drive on the specified channel.

➔ **Auto** (Default) This selection enables the BIOS to auto detect 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 will 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]**

The **LBA/Large Mode** BIOS option allows you to disable or auto detect 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** This selection prevents the BIOS from using the LBA mode control on the specified channel.

➔ **Auto** (Default) This option allows the BIOS to auto detect the LBA mode control on the specified channel.

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

➔ **Disabled** Selecting this option prevents the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device will occur one sector at a time.

➔ **Auto** (Default) Selecting this value to allows the BIOS to auto detect the device support for Multi-Sector Transfers on the specified channel. If supported. Select this value to allow the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to the memory. The data transfer to and from the device will occur multiple sectors at a time.

➔ **PIO Mode [Auto]**

The **PIO Mode** option allows you 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) This setting allows the BIOS to auto detect 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]**

The **DMA Mode** BIOS selection allow you to you to adjust the DMA mode options.

- **Auto** (Default) The BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
- **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
- **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps
- **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
- **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps

- **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔ **S.M.A.R.T [Auto]**

Self-Monitoring Analysis and Reporting Technology (SMART) feature can help predict impending drive failures. The **S.M.A.R.T** BIOS option allows you to enable or disable this function.

- **Auto** (Default) BIOS to auto detects if the hard disk drive supports S.M.A.R.T. Use this setting if the IDE disk drive support cannot be determined.
- **Disabled** Select this value to prevent the BIOS from using the SMART feature.
- **Enabled** Select this value to allow the BIOS to use the SMART feature on support hard disk drives.

➔ **32Bit Data Transfer [Enabled]**

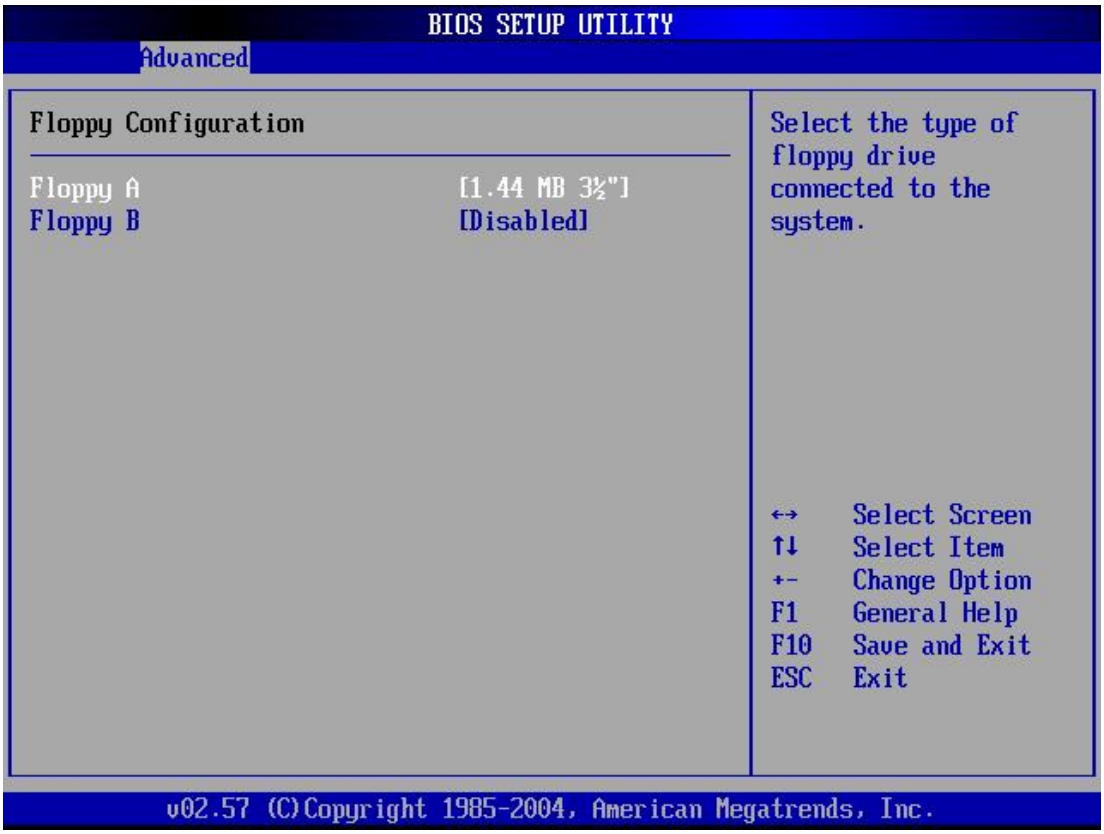
The **32Bit Data Transfer** BIOS option allows you to enable or disable 32-bit data transfers.

➔ **Disabled**		Prevents the BIOS from using 32-bit data transfers.
➔ **Enabled**	(Default)	Allows BIOS to use 32-bit data transfers on support hard disk drives.

5.3.3 Floppy Configuration

The **Floppy Configuration** menu (**BIOS Menu 6**) determines the type of floppy drive installed in the system. The Floppy Configuration menu has two configurable items: Floppy A and Floppy B. Both Floppy A and Floppy B have the same configuration options listed below.

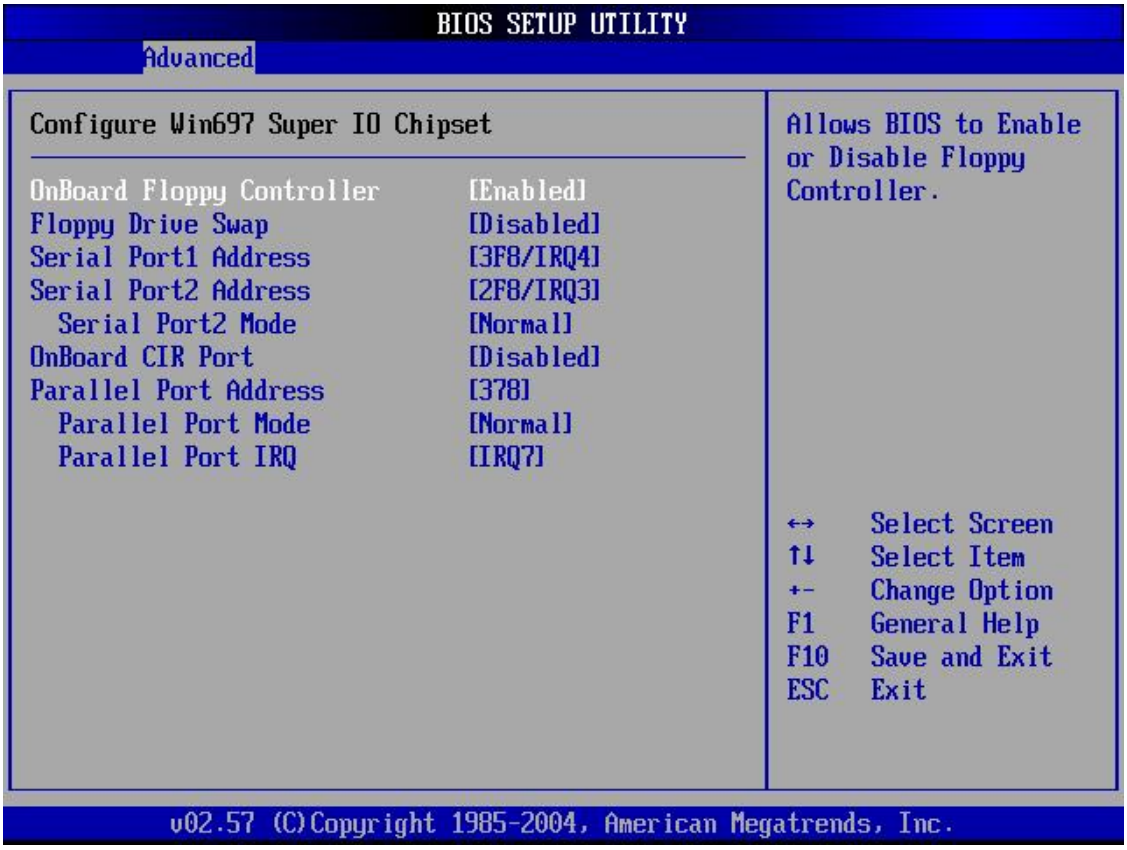
- Disabled
- 360KB, 5.25 in
- 1.2MB, 5.25 in
- 720KB, 3.5 in
- 1.44MB, 3.5 in (Default)
- 2.88MB, 3.5in



BIOS Menu 6: Floppy Configuration [Advanced]

5.3.4 Super IO Configuration

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



BIOS Menu 7: Super IO Configuration [Advanced]

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

- ➔ **Disabled** Allows BIOS to disable the floppy controller
- ➔ **Enabled** (Default) Allows BIOS to enable the floppy controller

➔ **Floppy Drive Swap [Disabled]**

- ➔ **Disabled** (Default) Cannot designate A or B to a floppy drive without changing the physical connection
- ➔ **Enabled** Can designate A or B to a floppy drive without changing the physical connection

➔ **Serial Port1 Address [3F8/IRQ4]**

The **Serial Port1 Address** option allows BIOS 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]**

The **Serial Port2 Address** option allows BIOS 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 Address [2F8/IRQ3]**

This option allows BIOS to select the base addresses for Serial Port 2

➔ **Disabled**		No base address is assigned to Serial Port 2
➔ **2F8/IRQ3**	(Default)	Serial Port 1 base address is 2F8/IRQ3
➔ **3E8/IRQ4**		Serial Port 1 base address is 2F8/IRQ3

➔ **2E8/IRQ3** Serial Port 1 base address is 2F8/IRQ3

➔ **Serial Port2 Mode [Normal]**

Allows BIOS to select the mode for Serial Port 2

➔ **Normal** (Default) Serial Port 1 mode is normal

➔ **IrDA** Serial Port 1 mode is IrDA

➔ **ASK IR** Serial Port 1 mode is ASK IR

➔ **Parallel Port Address [Disabled]**

This option allows BIOS to select the base addresses for the Parallel Port

➔ **Disabled** (Default) No base address is assigned to the Parallel Port

➔ **378** 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]**

The **Parallel Port Mode** selection allows you to select the mode the parallel port will operate in.

➔ **Normal** (DEFAULT) The normal parallel port mode is the standard mode for parallel port operation.

➔ **Bi-directional** In the bi-directional mode the parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits of the status register.

➔ **EPP** The parallel port will operate 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+EPP** The parallel port will operate 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

The parallel port will also be compatible with EPP devices described above

➔ **Parallel Port IRQ [IRQ7]**

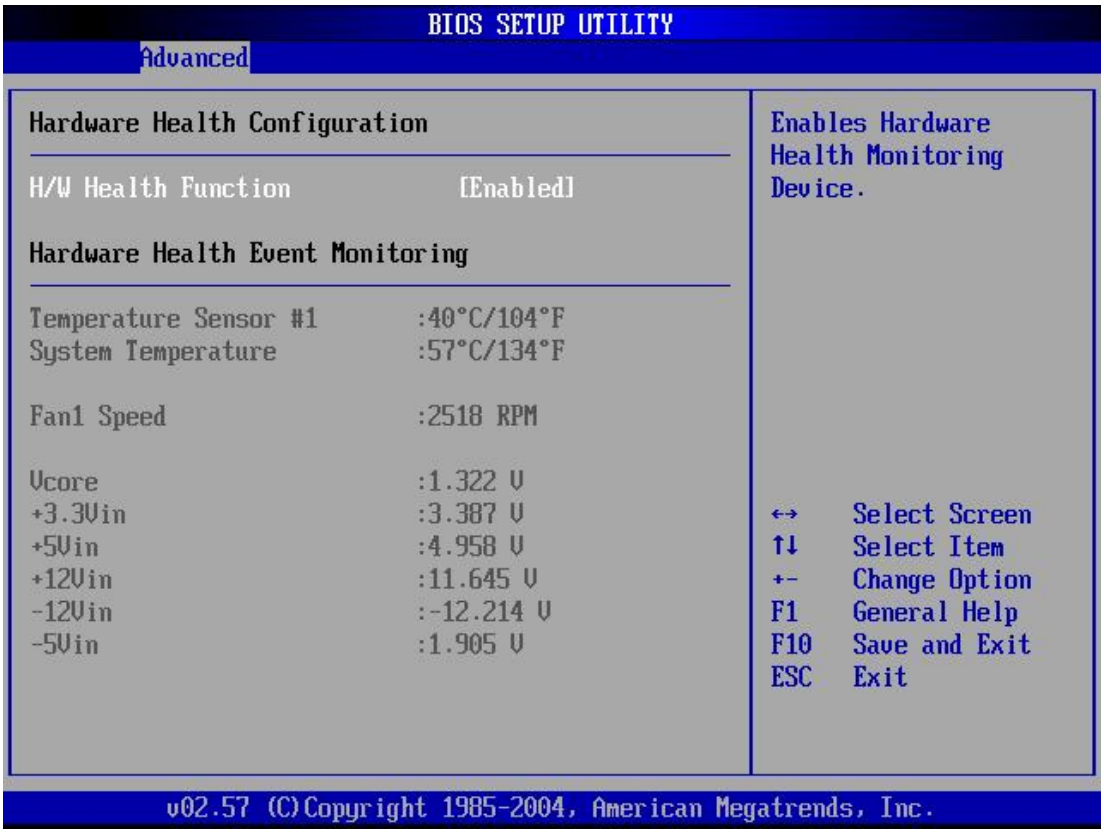
The **Parallel Port IRQ** selection allows you to set the parallel port interrupt address.

➔ **IRQ5** IRQ5 is assigned as the parallel port interrupt address

➔ **IRQ7** (DEFAULT) IRQ7 is assigned as the parallel port interrupt address

5.3.5 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 8**) allows you to change the configuration for the H/W Health Function and shows you the operating temperature, fan speeds and system voltages.



BIOS Menu 8: Hardware Health Configuration [Advanced]

➔ **H/W Health Function [Enabled]**

➔ **Disabled** Disables the health monitoring function

➔ **Enabled** (Default) Enables the health monitoring function

If the **H/W Health Function** is enabled different system parameters and values are shown.

The system parameters that are monitored are:

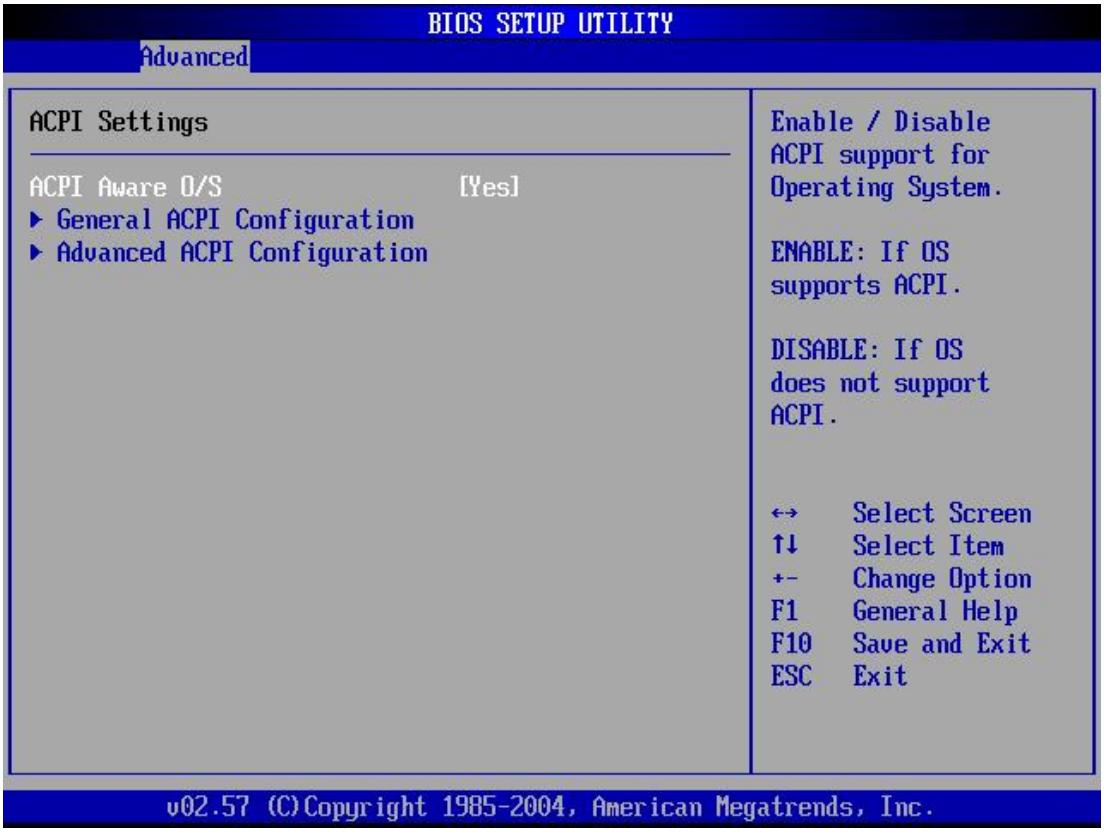
- **System Temperatures**: The following system temperatures are monitored
  - System Temperature
  - CPU Temperature

- **Fan Speeds**: The CPU cooling fan speed is monitored.
  - CPU Fan Speed

- **Voltages**: The following system voltages are monitored
  - Vcore
  - +3.30Vin
  - +5.00Vin
  - +12Vin
  - –12Vin
  - –5Vin

5.3.6 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 9**) allows you to configure the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.



BIOS Menu 9: ACPI Configuration [Advanced]

➔ **ACPI Aware O/S [Yes]**

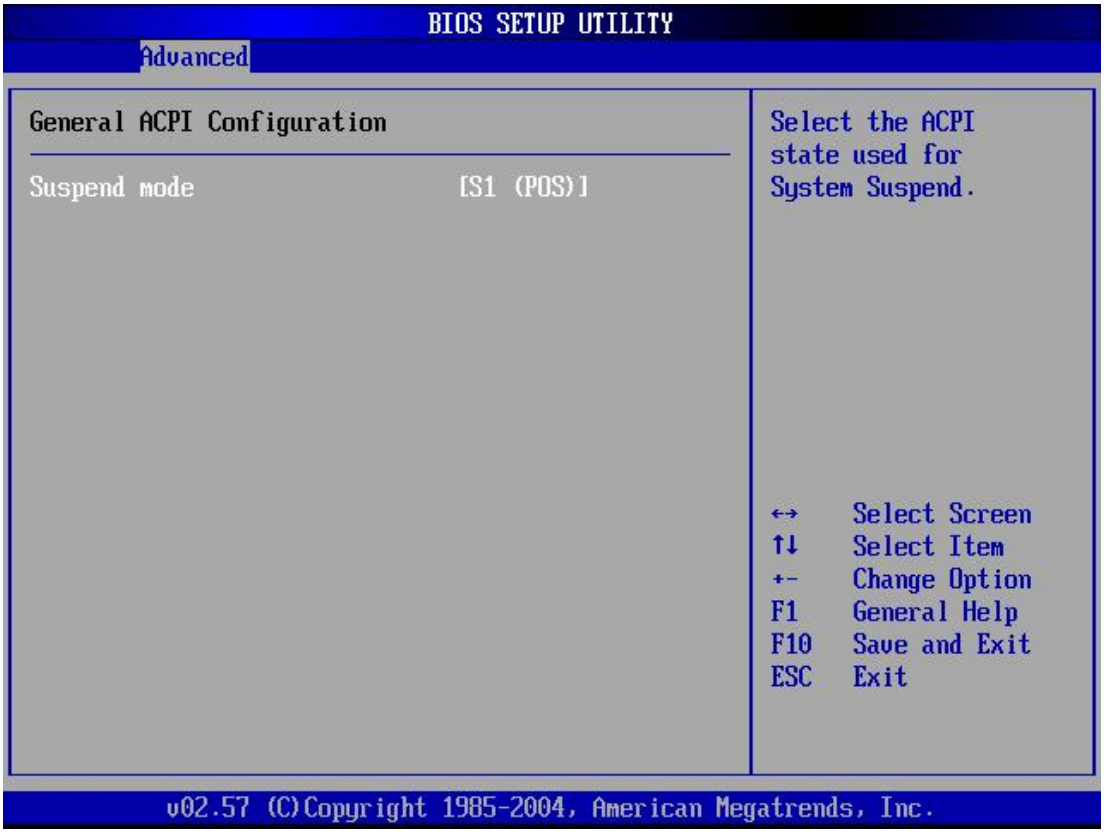
ACPI Aware O/S can only be configured if your OS complies with the ACPI standard. Windows 98, Windows 2000, and Windows XP all comply with ACPI.

➔ **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

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



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

➔ **Suspend Mode [S1(POS)]**

The **Suspend Mode** BIOS option allows you to specify the sleep state your system will enter when it is not being used.

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

➔ **S3 (STR)** System appears off. The CPU has no power; RAM is in slow refresh; the power supply is in a reduced power mode.

➔ **Repost Video on S3 Resume [No]**

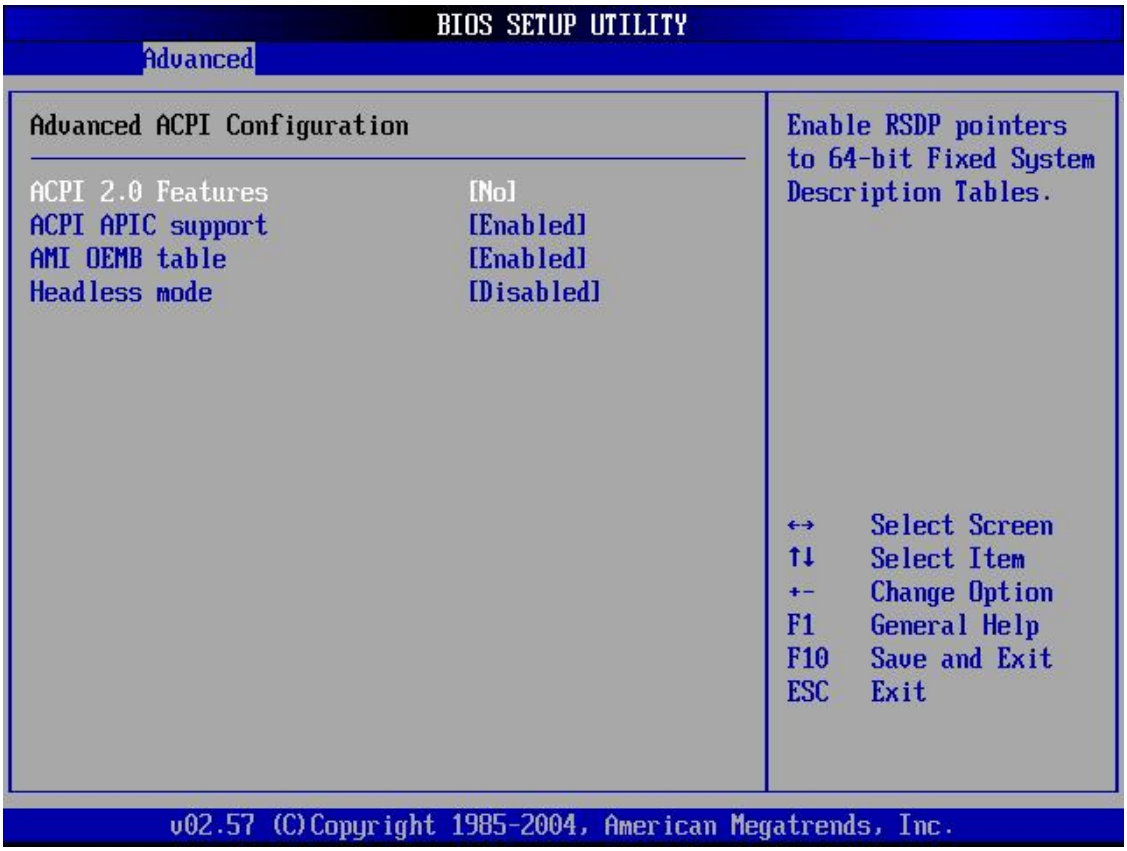
The **Repost Video on S3 Resume** BIOS option only appears if the S3 (STR) suspend mode state is selected. This option allows you to determine whether the VGA BIOS post will be invoked after the system is roused from an S3 (STR) suspend state.

➔ **No** (Default) The VGA BIOS post is not invoked

➔ **Yes** The VGA BIOS post is invoked

5.3.6.2 Advanced ACPI Configuration

The Advanced ACPI Configuration menu (BIOS Menu 10) allows you to select the ACPI state when the system is suspended.



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

➔ **ACPI 2.0 Features**

The **ACPI 2.0 Features** BIOS option allows you to enable the ACPI (Advanced Configuration and Power Interface) features. By enabling this feature the system RSDP (Root System Description Pointer) will be able to obtain physical addresses for other 64-bit fixed system description tables.

➔ **No** (Default) RSDP pointers to 64-bit fixed systems will not be provided to the system

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

➔ **ACPI APIC Support [Enabled]**

The **ACPI APIC Support** BIOS option allows you to you 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. It provides the physical address of the RSDT. The RSDT itself is identified in memory because it starts with the signature "RSDT."

- ➔ **Disabled** (Default) Pointers to the APIC APIC table will not be provided in the RSDT
- ➔ **Enabled** A pointers to the APIC APIC table will be provided in the RSDT

➔ **AMI OEMB table [Enabled]**

The **AMI OEMB table** BIOS option allows you to add a pointer to an OEMB table in the RSDT table and the Extended System Description Table (XSDT), which accommodates physical addresses of description headers that are larger than 32-bits. Notice that both the XSDT and the RSDT can be pointed to by the RSDP structure.

- · ➔ **Disabled** (Default) Pointers to the AMI OEMB table will not be provided in the RSDT and the XSDT
- ➔ **Enabled** Pointers to the AMI OEMB table will be provided in the RSDT and the XSDT

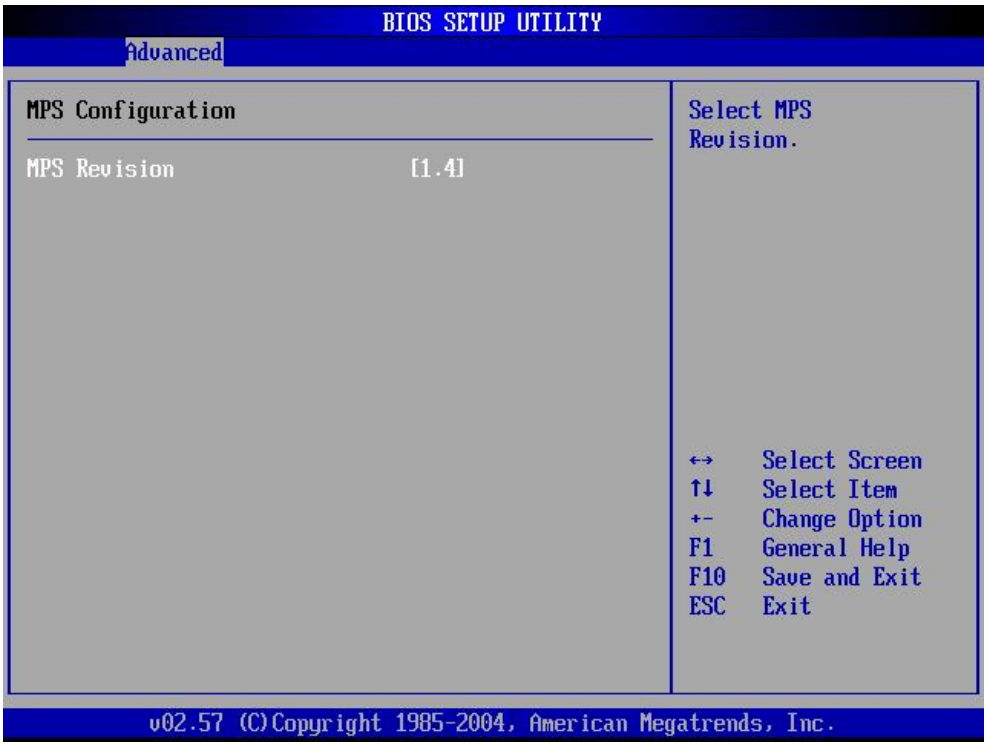
➔ **Headless Mode [Disabled]**

The **Headless Mode** to update the ACPI FACP (Fixed ACPI Description Table) to indicate headless operations, i.e. a computer without a monitor, keyboard and mouse.

- ➔ **Disabled** (Default) The FACP is not updated to indicate headless mode
- ➔ **Enabled** The FACP is updated to indicate headless mode

5.3.7 MPS Configuration

The **MPS Configuration** menu (**BIOS Menu 12**) allows you to configure the multi-processor table.



BIOS Menu 12: MPS Configuration [Advanced]

➔ **MPS Revision [1.1]**

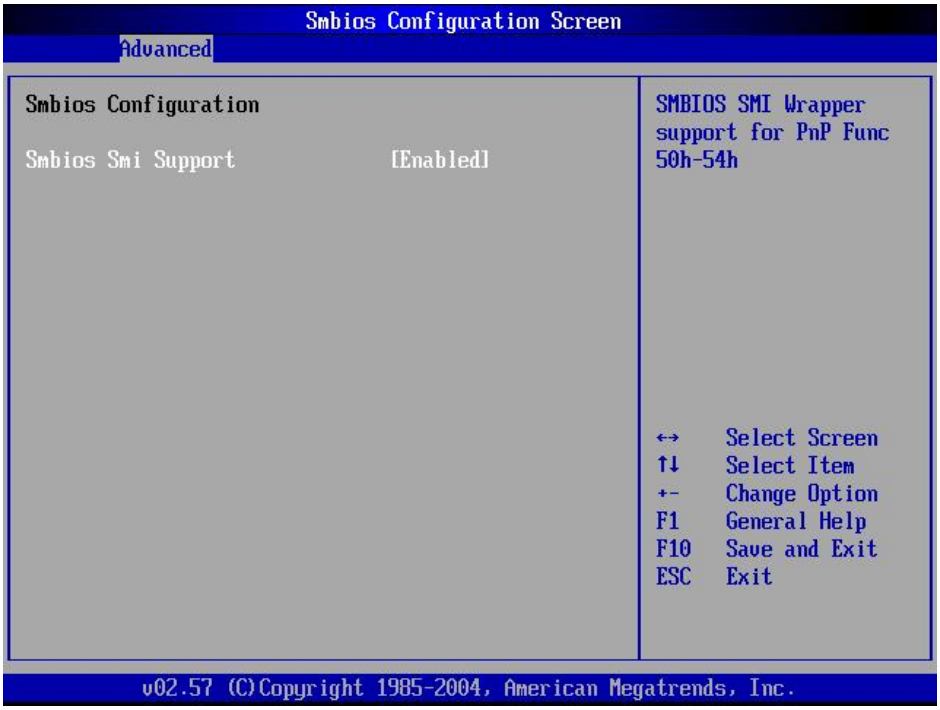
The **Multiprocessor Specification (MPS) for OS** specifies the MPS version to be used.

➔ **1.1** (Default) MPS version 1.1 is used

➔ **1.4** MPS version 1.4 is used

5.3.8 Smbios

The **Smbios** configuration menu (**BIOS Menu 14**) allows you to configure SMBIOS parameters.



BIOS Menu 13: Remote Access Configuration [Advanced]

➔ **Smbios Smi Support [Enabled]**

The **Smbios Smi Support** allows you to specify support for the SMBIOS SMI wrapper for the PnP function 50h – 54h.

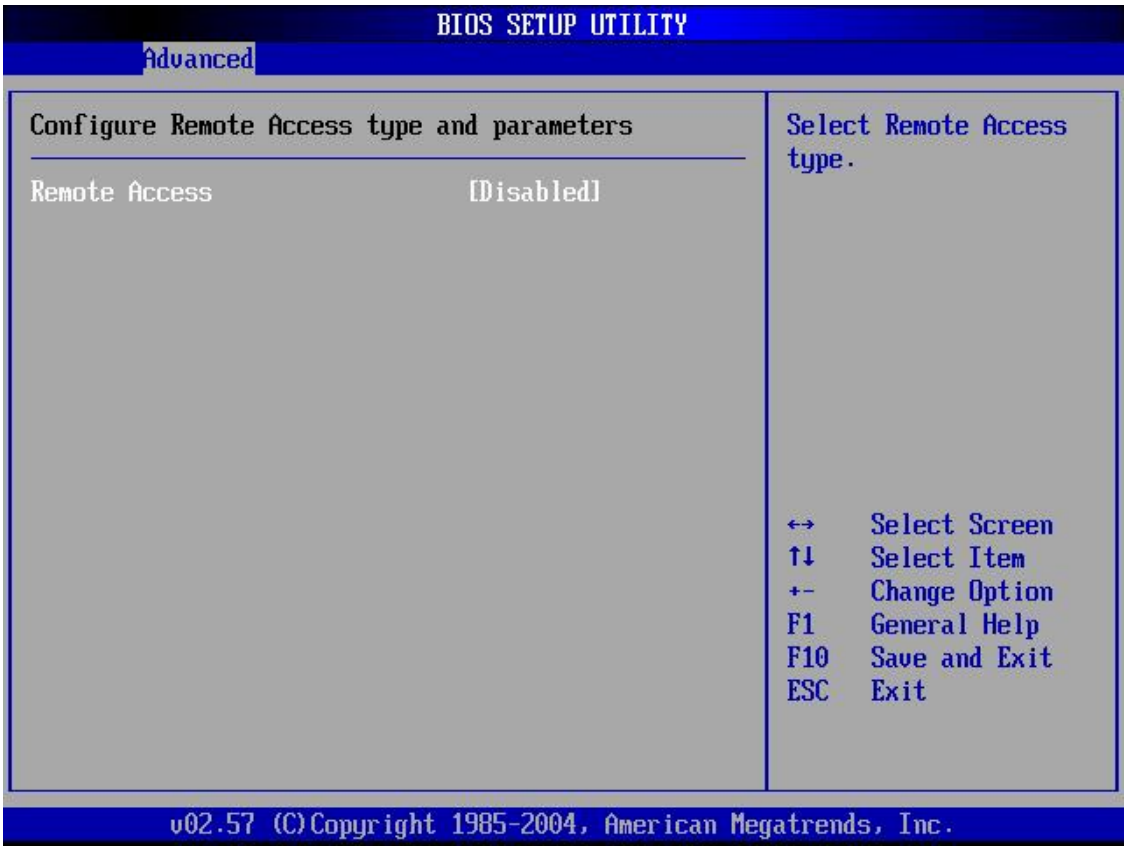
➔ **Enabled** (Default) SMBIOS SMI wrapper for the PnP function 50h – 54h supported

➔ **Disabled** SMBIOS SMI wrapper for the PnP function 50h – 54h not supported

5.3.9 Remote Access Configuration

The **Remote Access Configuration** menu (**BIOS Menu 14**) allows you to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature

and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 14: Remote Access Configuration [Advanced]

➔ **Remote Access [Disabled]**

➔ **Disabled** (Default) If selected, no configuration options will appear.

➔ **Enabled** If selected the remote access configuration options shown below will appear:

- ➔ **Serial Port Number**
- ➔ **Serial Port Mode**
- ➔ **Flow Control**

➔ **Redirection after BIOS POST**

➔ **Terminal Type**

➔ **VT-UTF8 Combo Key Support**

These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

The **Serial Port Number** BIOS option allows you to select which serial port will be used for the remote access.

➔	**COM1**	(Default)	System is remotely accessed through COM1
➔	**COM2**		System is remotely accessed through COM2

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

➔ **Serial Port Mode [115200 8,n,1]**

The **Serial Port Mode** designates baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 (DEFAULT)
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

NOTE:

Identical baud rate setting must be set to the host (a management computer running a terminal software) and the slave

➔ **Flow Control [None]**

The **Flow Control** BIOS option reports the flow control method for the console redirection application.

➔ **None**	(Default)	No control flow,
➔ **Hardware**		Hardware is set as the console redirection
➔ **Software**		Software is set as the console redirection

➔ **Redirection After BIOS POST [Always]**

➔ **Disabled**		Turns off the redirection after POST
➔ **Boot Loader**		Redirection is active during POST and during Boot Loader
➔ **Always**	(Default)	Redirection is always active (Some OSes may not work if set to Always)

➔ **Terminal Type [ANSI]**

The **Terminal Type** BIOS option allows you to specify the remote terminal type.

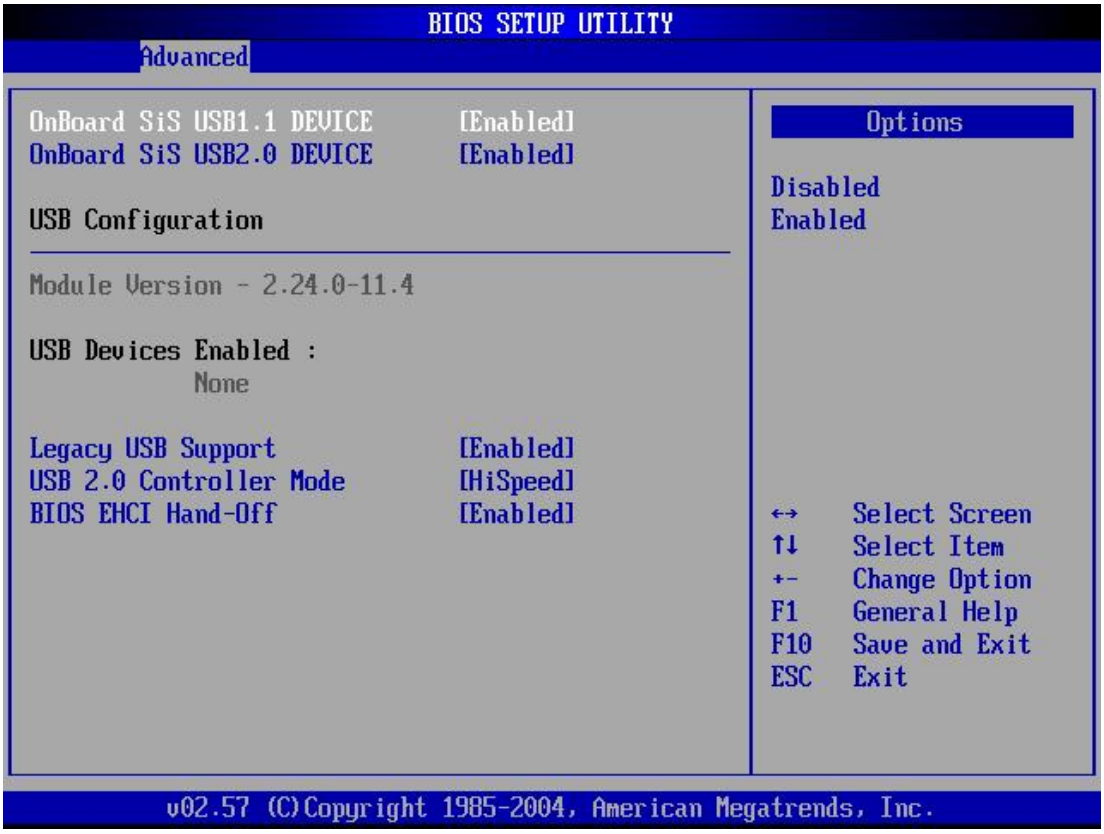
➔ **ANSI**	(Default)	The target terminal type is ANSI
➔ **VT100**		The target terminal type is VT100
➔ **VT-UTF8**		The target terminal type is VT-UTF8

➔ **VT-UTF8 Combo Key Support [Disabled]**

➔ **Disabled**	(Default)	Disables the VT-UTF8 terminal keys
➔ **Enabled**		Enables the VT-UTF8 combination key. Support for ANSI/VT100 terminals

5.3.10 USB Configuration

The **USB Configuration** menu (**BIOS Menu 15**) gives you information on the USB configuration and allows you to configure some USB features.



BIOS Menu 15: USB Configuration [Advanced]

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

The Onboard **SiS USB1.1 DEVICE** BIOS option allows you to enable or disable the onboard SiS USB1.1 controller. If disabled, you will not be able to use USB1.1 devices on the system.

➔ **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]**

The Onboard **SiS USB2.0 DEVICE** BIOS option allows you to enable or disable the onboard SiS USB2.0 controller. If disabled, you will not be able to use USB2.0 devices on the system.

➔ **Disabled** USB 2.0 interface is disabled and cannot be used.

➔ **Enabled** (Default) USB 2.0 interface is enabled and can be used.

➔ **USB Configuration**

The USB Configuration field shows the system USB configuration. The items listed are:

- Module Version: x.xxxxx.xxxxx

➔ **USB Devices Enabled:**

Lists the USB devices that are enabled on the system

➔ **Legacy USB Support [Disabled]**

The **Legacy USB Support** BIOS option refers to USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard will 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 on the system.

➔ Disabled (Default) Legacy USB support disabled

➔ Enabled Legacy USB support enabled

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

The **USB2.0 Controller Mode** BIOS option allows you to set the speed of the USB2.0 controller.

➔ **FullSpeed** The controller is capable of operating at full speed (12Mbits/second)

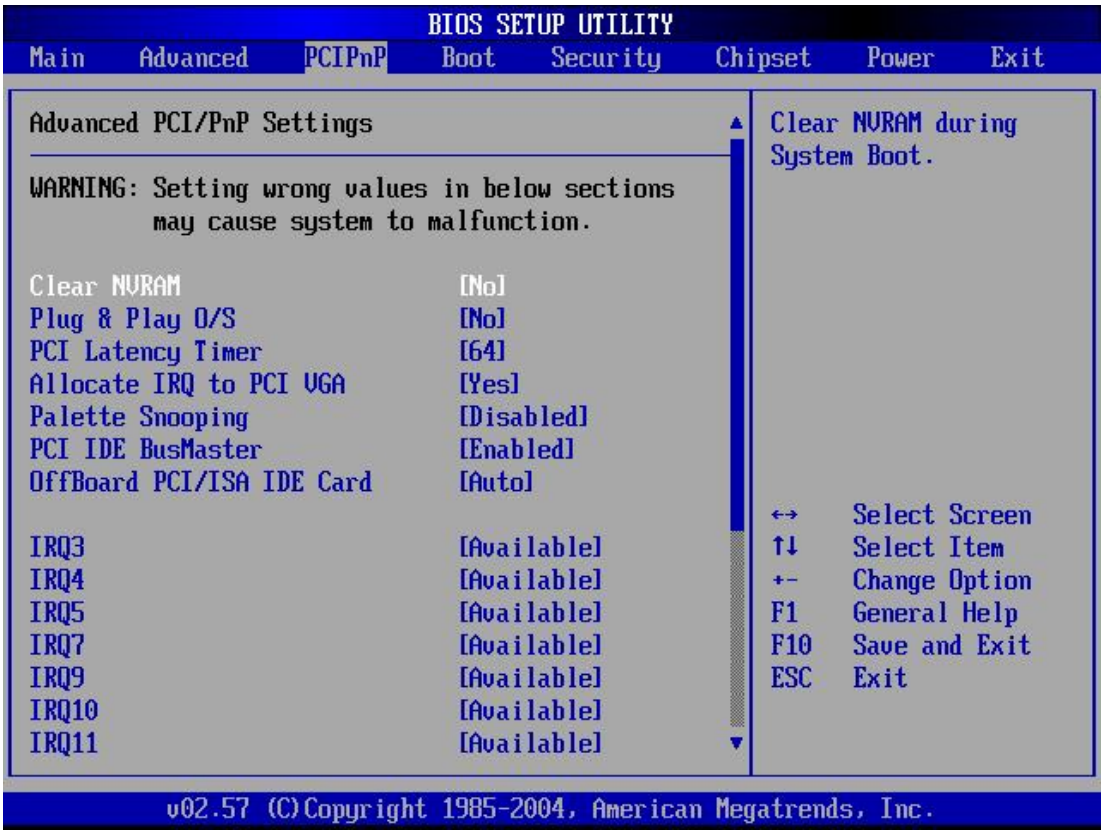
➔ **HiSpeed** (Default) The controller is capable of operating at high speed (480Mbits/second)

5.4 PCI/PnP

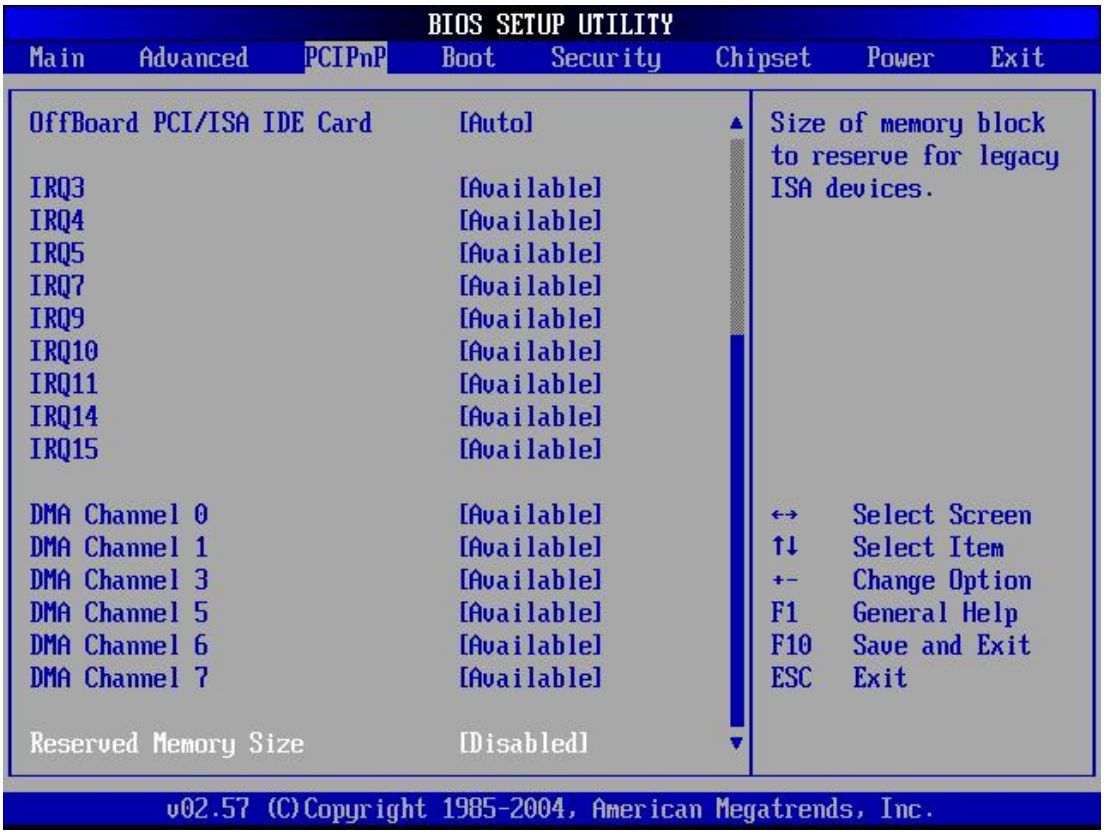
The **PCI/PnP** menu (**BIOS Menu 15**) allows you to configure advanced PCI and PnP settings.

WARNING!

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



BIOS Menu 16: PCI/PnP Configuration [Part 1]



BIOS Menu 17: PCI/PnP Configuration [Part 2]

➔ **Clear NVRAM [No]**

The **Clear NVRAM** option allows you to specify whether the contents of the NVRAM (Non-Volatile RAM) 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]**

The **Plug & Play O/S** BIOS option allows you to determine whether the Plug and Play devices connected to your system will be 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]**

The values stipulated in the PCI Latency Timer are 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]**

The Allocate IRQ to PCI VGA option allows you 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]**

The **Palette Snooping** BIOS option allows you 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.

➔ **No** PCI devices are informed that an ISA based Graphics device is installed in the system so the ISA based Graphics card will function correctly. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with your adapter card manual first, before modifying the default settings in the BIOS.

➔ **PCI IDE BusMaster [Disabled]**

The **PCI IDE BusMaster** BIOS option allows you to enable or prevent the use of PCI IDE busmastering. The Optimal and

➔ **Disabled** (Default) Busmastering is prevented

➔ **No** IDE controller on the PCI local bus has mastering capabilities

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

The **OffBoard PCI/ISA IDE Card** BIOS option allows you to select the OffBoard PCI/ISA IDE Card to be selected.

➔ **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]**

➔ **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]**

➔ **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]**

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

➔ **Disabled** (Default) No memory block reserved for legacy ISA devices

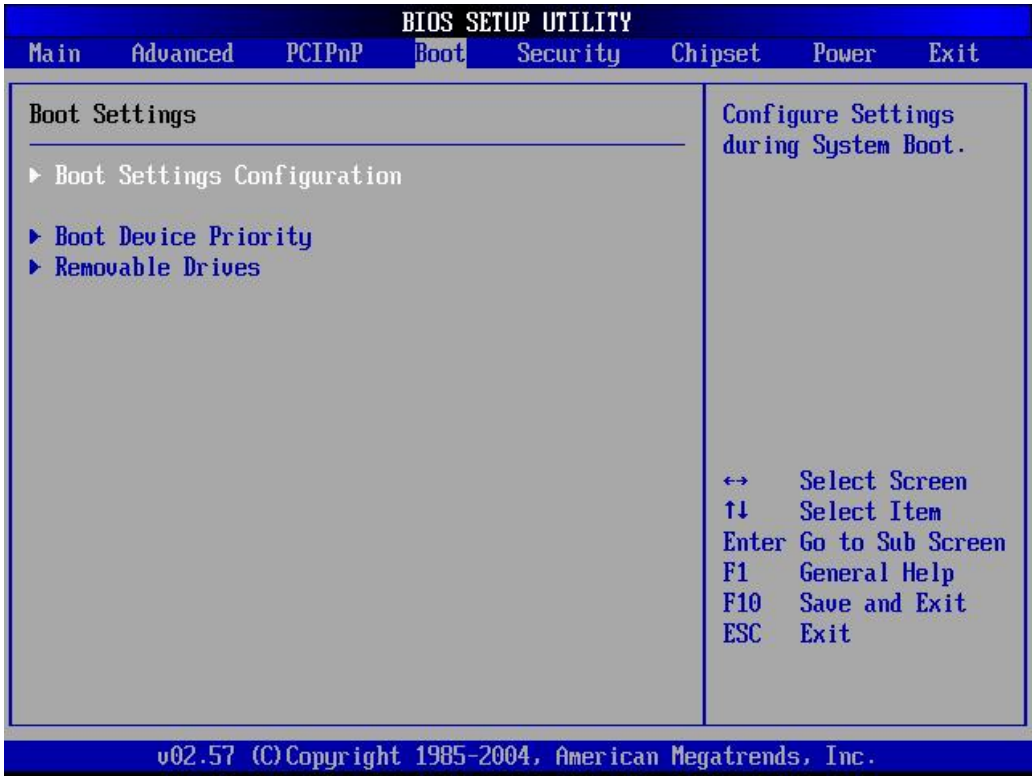
➔ **16K** 16KB reserved for legacy ISA devices

➔ **32K** 32KB reserved for legacy ISA devices

➔ **64K** 54KB reserved for legacy ISA devices

5.5 Boot

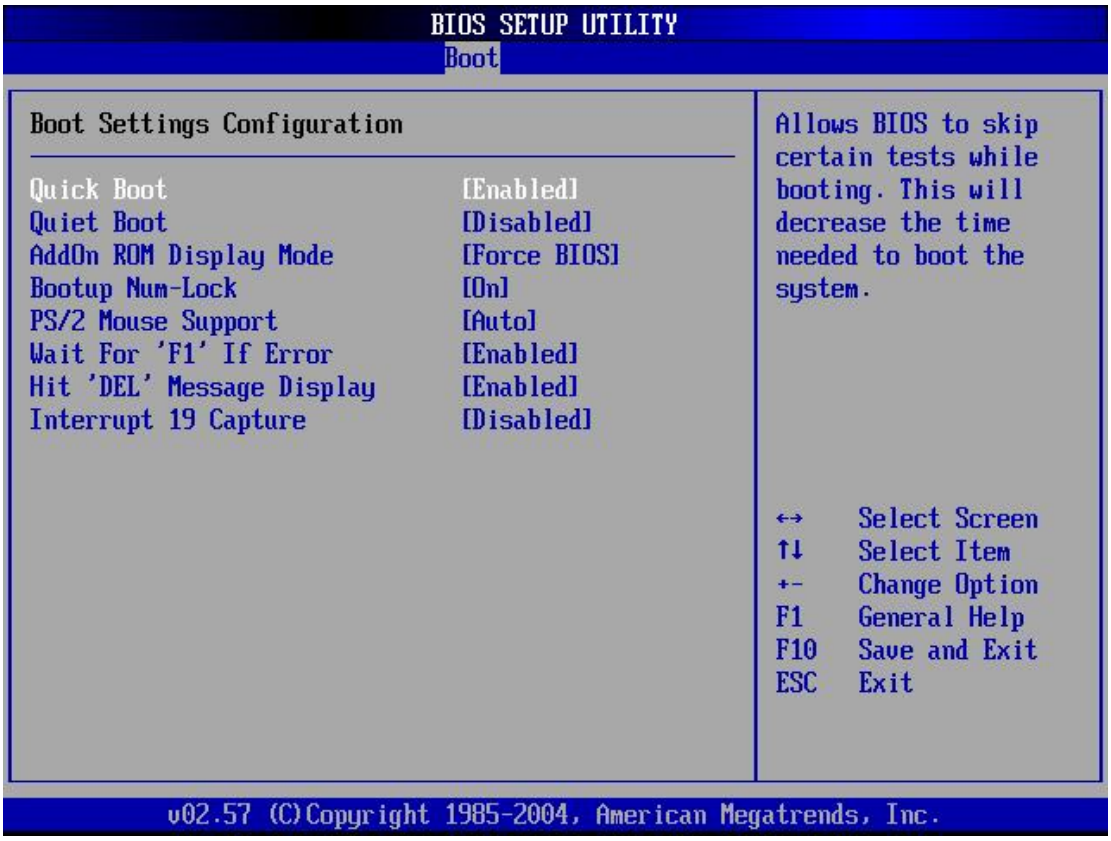
The **Boot** menu (**BIOS Menu 18**) allows you to configure system boot options.



BIOS Menu 18: Boot

5.5.1 Boot Settings Configuration

The **Boot Settings Configuration** menu (**BIOS Menu 18**) allows you to configure advanced system boot options.



BIOS Menu 19: Boot Settings Configuration [Boot]

➔ **Quick Boot [Enabled]**

The **Quick Boot** BIOS option allows you to make the computer speed up the boot process.

➔ **Disabled** System will not skip any POST procedures

➔ **Enabled** (Default) Allows system to skip some POST procedures to decrease the system boot time

➔ **Quiet Boot [Disabled]**

The **Quiet Boot** BIOS option allows the boot up screen options to be modified between POST messages or an OEM logo.

➔ **Disabled** (Default) Displays normal POST messages

➔ **Enabled** Displays OEM Logo instead of POST messages

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

The **AddOn ROM Display Mode** option allows add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS** (Default) Allows the computer system to force a third party BIOS to display during system boot.

➔ **Keep Current** Allows the computer system to display the information during system boot.

➔ **Bootup Num-Lock [On]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to 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 will light 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 will be lit.

➔ **PS/2 Mouse Support [Enabled]**

The **PS/2 Mouse Support** BIOS option allows the PS/2 mouse support to be adjusted.

➔ Disabled Disables PS/2 mouse support and prevents the PS/2

mouse port from using system resources.

➔ Enabled (Default) Allows the system to use a PS/2 mouse.

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

The **Wait For 'F1' if Error** option allows you to specify how the system will respond when the system detects an error on boot up.

➔ **Disabled** If there is an error when booting up, the system will not wait for user intervention but will continue 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 will wait 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]**

The **Hit "DEL" Message Display** option allows you to specify whether the instruction to hit the delete button to enter BIOS during POST will appear or not.

➔ Disabled No message displayed during POST

➔ Enabled (Default) Displays "Press DEL to run Setup" message in POST

➔ **Interrupt 19 Capture [Disabled]**

The **Interrupt 19 Capture** ROM BIOS option allows optional ROMs such as network controllers to trap BIOS interrupt 19.

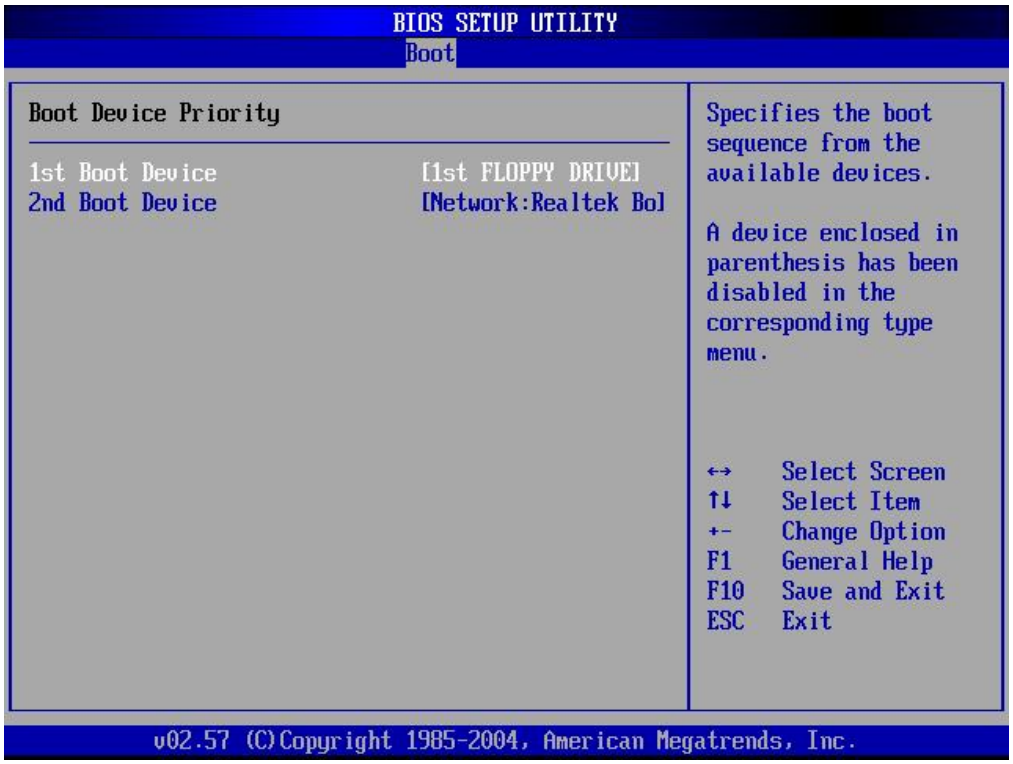
➔ **Disabled** (Default) Does not allow optional ROM to trap interrupt 19

➔ **Enabled** Allows optional ROM to trap interrupt 19

5.5.2 Boot Device Priority

The **Boot Device Priority** menu (**BIOS Menu 20**) specifies the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD



BIOS Menu 20: Boot Device Priority Settings [Boot]

5.5.3 Hard Disk Drives

The **Hard Disk Drives** menu is similar to the **Removable Drives BIOS Menu 21** 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 will be shown. For example, if only two HDDs are connected only "**1st Drive**" and "**2nd Drive**" will be listed.

You will then be able to select the boot sequence from the available devices. If you select the "**1st Drive**" option a list of available HDDs will be shown. Select the first HDD you wish the system to boot from. If you do not wish to boot from the "**1st Drive**" you may also disable it.

5.5.4 Removable Drives

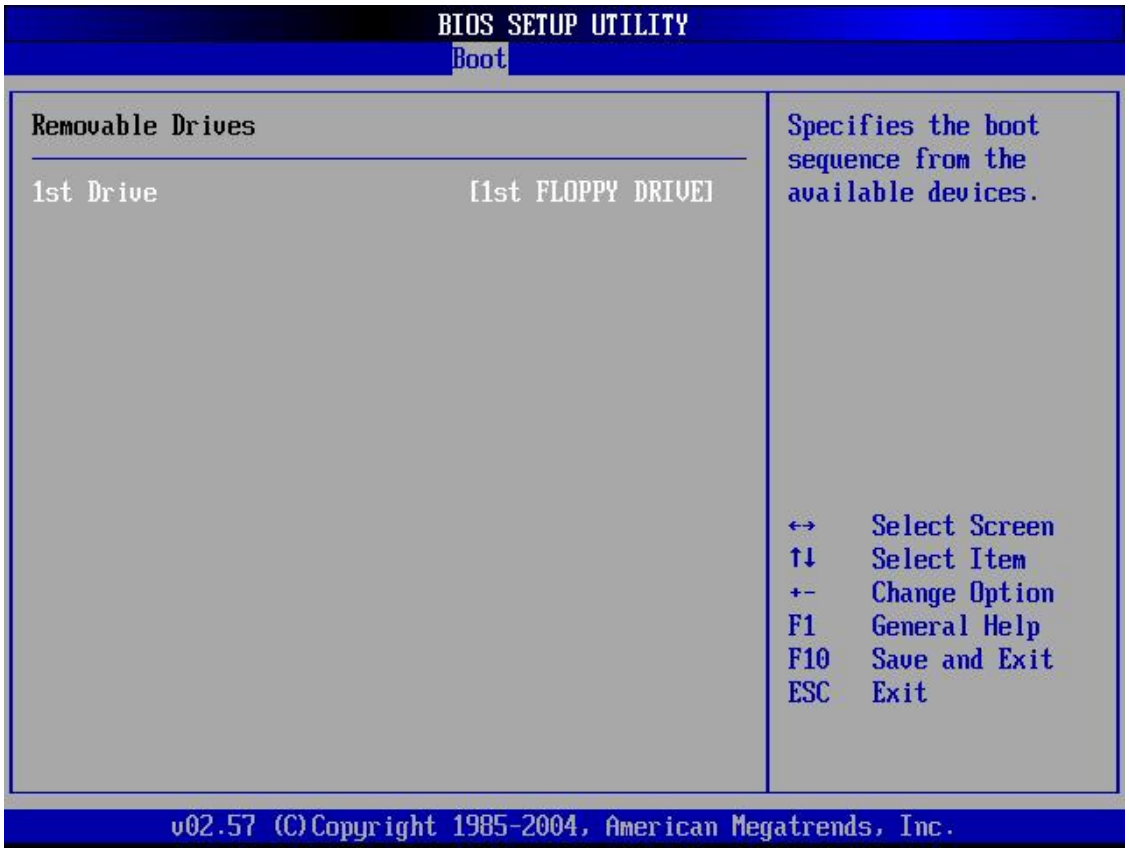
The **Removable Drives** menu (**BIOS Menu 21**) specifies the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

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

NOTE:

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

You will then be able to select the boot sequence from the available devices. If you select the "**1st Drive**" option a list of available FDDs will be shown. Select the first FDD you wish the system to boot from. If you do not wish to boot from the "**1st Drive**" you may also disable it.



BIOS Menu 21: Removable Drives [Boot]

5.5.5 CD/DVD Drives

The **CD/DVD Drives** menu is similar to the **Removable Drives BIOS Menu 21** 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)]

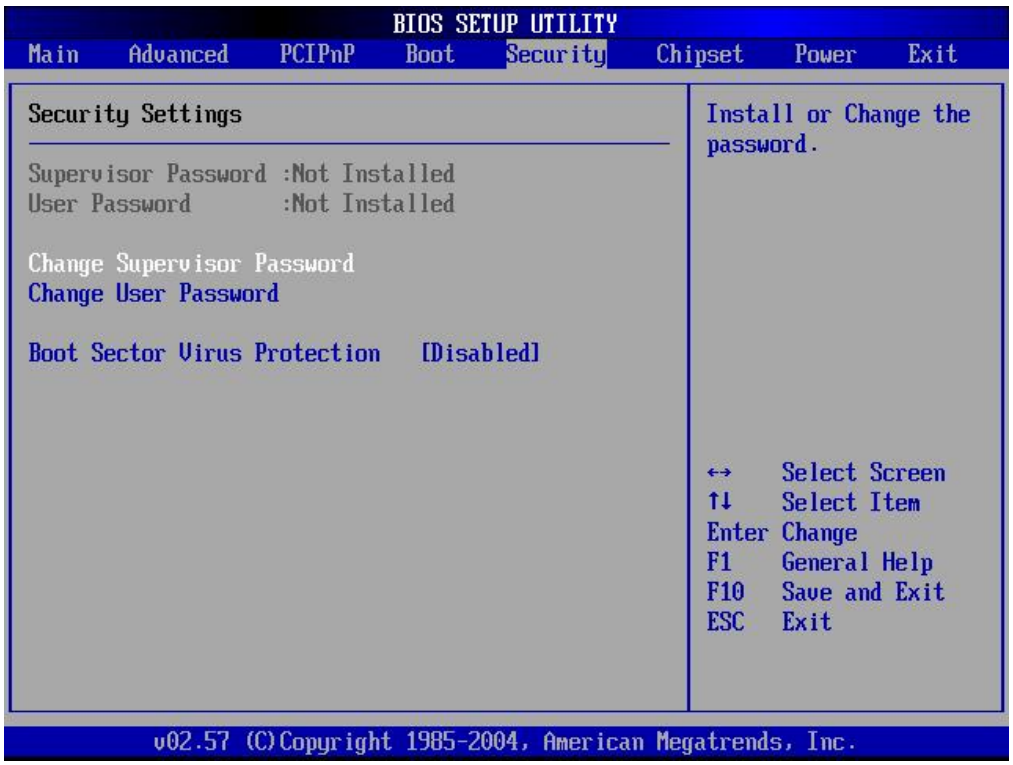
NOTE:

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

You will then be able to select the boot sequence from the available devices. If you select the "**1st Drive**" option a list of available HDDs will be shown. Select the first HDD you wish the system to boot from. If you do not wish to boot from the "**1st Drive**" you may also disable it.

5.6 Security

The **Security** menu (**BIOS Menu 22**) allows you to configure the system security settings including passwords.



BIOS Menu 22: Security

➔ **Change Supervisor Password**

The default setting for the **Change Supervisor Password** is **Not Installed**. If you wish to install a supervisor password, select this field and enter the password. After the password has been added, **Install** will appear next to **Change Supervisor Password**.

➔ **Change User Password**

The default setting for the **Change User Password** is **Not Installed**. If you wish to install a user password, select this field and enter the password. After the password has been added, **Install** will appear next to **Change User Password**.

➔ **Boot Sector Virus Protection [Disabled]**

➔ **Disabled** (Default) Disables the boot sector virus protection

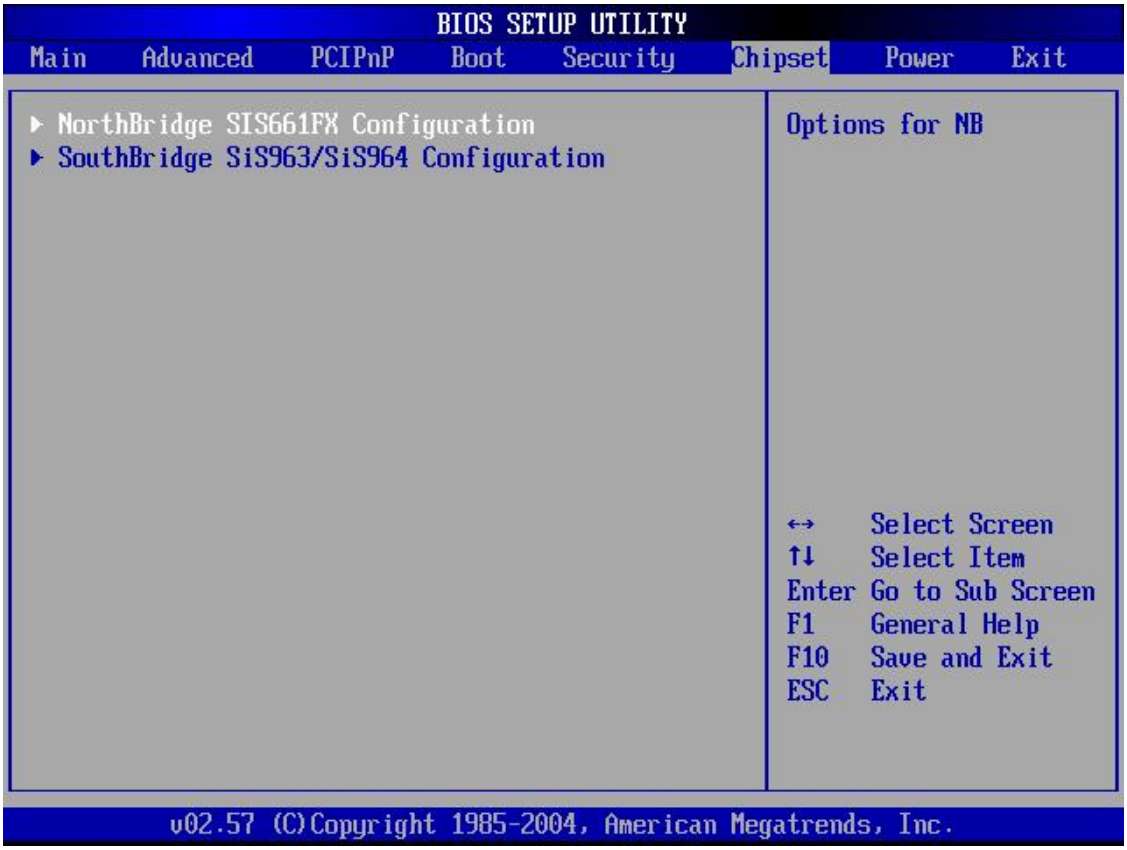
➔ **Enabled** Enables the boot sector virus protection

5.7 Chipset

The Chipset menu (BIOS Menu 23) has two sub-menus, NorthBridge SIS661FX Configuration and SouthBridge SiS964 Configuration. The NorthBridge SIS661FX Configuration menu allows you to configure the northbridge chipset and the SouthBridge SiS964 Configuration menu allows you to configure the southbridge chipset.

WARNING!

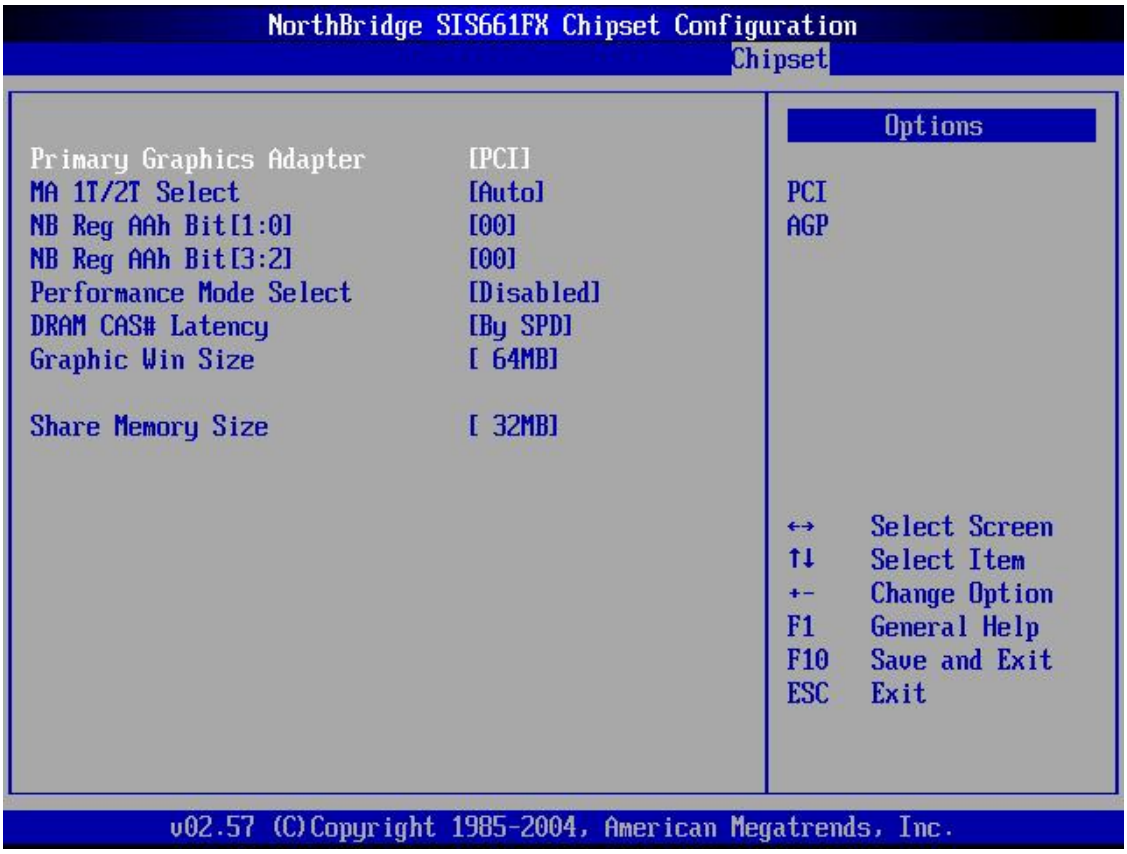
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 23: Chipset

5.7.1 NorthBridge SIS661FX Configuration

The **NorthBridge SIS661FX Configuration** menu (**BIOS Menu 23**) allows you to configure the northbridge chipset.



BIOS Menu 24:NorthBridge Chipset Configuration [Chipset]

➔ **Primary Graphics Adapter [PCI]**

The **Primary Graphics Adapter** option allows you to select the graphics adapter your system will use.

➔ **PCI** (Default) PCI graphics adapter is used

➔ **AGP** AGP graphics adapter is used

➔ **MA 1T/2T Select**

The **MA 1T/2T Select** BIOS option allows you to set the lead-off time control for the DRAM read, write, and background commands.

➔ **N/B Reg AAh Bit [1:0]**

The **N/B Reg AAh Bit [1:0]** BIOS option allows you to set the Pentium 4 CPU input strobe delay control.

➔ **N/B Reg AAh Bit [3:2]**

The **N/B Reg AAh Bit [3:2]** BIOS option allows you to set the Pentium 4 CPU input data delay control.

➔ **Performance Mode Select [Disabled]**

The **Performance Mode Select** BIOS option allows you to set the tRAS to DDR400 if enabled.

➔ **DRAM CAS# Latency [By SPD]**

The **DRAM CAS# Latency** option allows you to set the CAS (Column Address Strobe) latency. The CAS latency is the number of clock cycles (or Ticks, denoted with T) between the receipt of a "read" command and when the ram chip actually starts reading. The BIOS options are as follows:

- By SPD (Default)
- 2T
- 2.5T
- 3T

➔ **Graphic Win Size [64MB]**

The **Graphic Win Size** selects 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

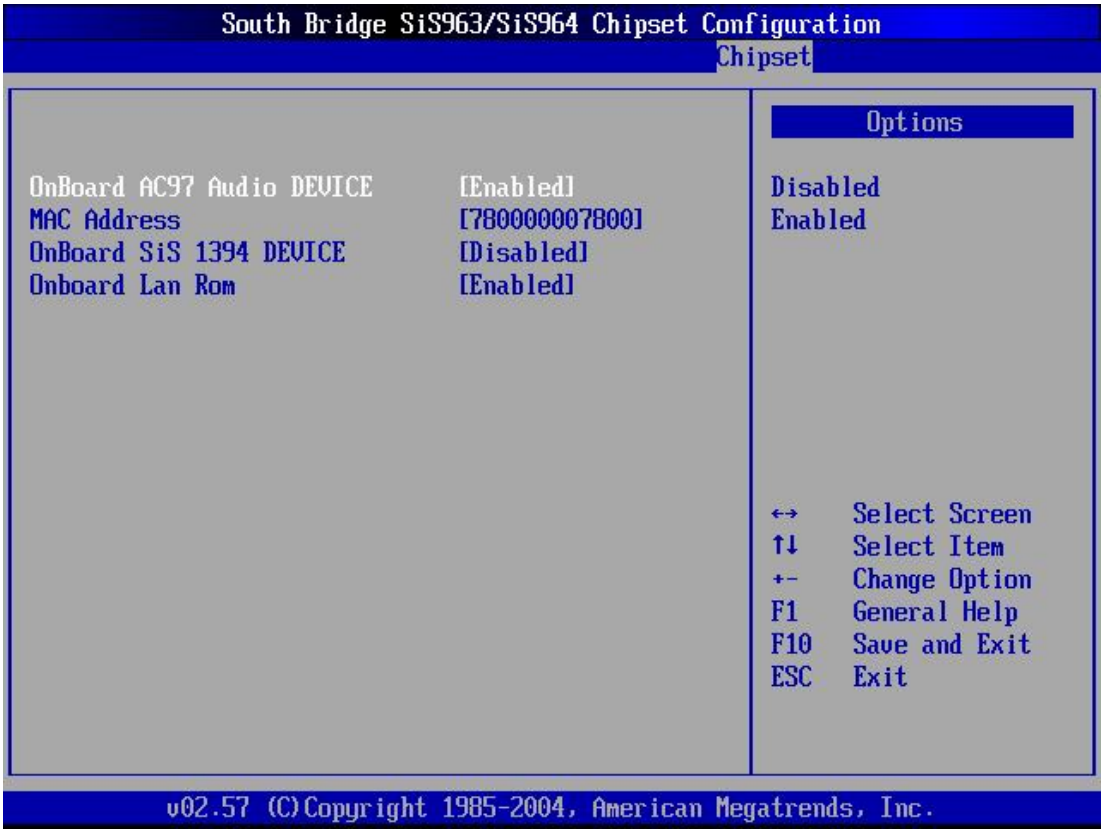
➔ **Share Memory Size [32MB]**

The Share Memory Size BIOS feature allows you to allocate the maximum amount of system memory to the integrated graphics processor. The options are:

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

5.7.2 SouthBridge SiS964 Configuration

The **SouthBridge SiS964 Configuration** menu (BIOS Menu 25) allows you to configure the southbridge chipset.



BIOS Menu 25:SouthBridge Chipset Configuration [Chipset]

➔ **OnBoard AC97 Audio DEVICE [Enabled]**

The **OnBoard AC97 Audio DEVICE** option allows you to enable or disable the AC'97 CODEC.

➔ **Enabled**	(Default)	The onboard AC'97 automatically detected and enabled
➔ **Disabled**		Onboard AC'97 manually disabled

➔ **MAC Address [780000007800]**

The **MAC Address** option allows you to type in the hexadecimal MAC (media access control) address. Select **MAC Address** and type in the desired address.

➔ **OnBoard SiS 1394 Device [Disabled]**

The **OnBoard SiS 1394 Device** option allows you to enable or disable SiS 1394 device.

➔ **Disabled**	(Default)	The SiS 1394 device is disabled
➔ **Auto**		The SiS 1394 device is automatically detected

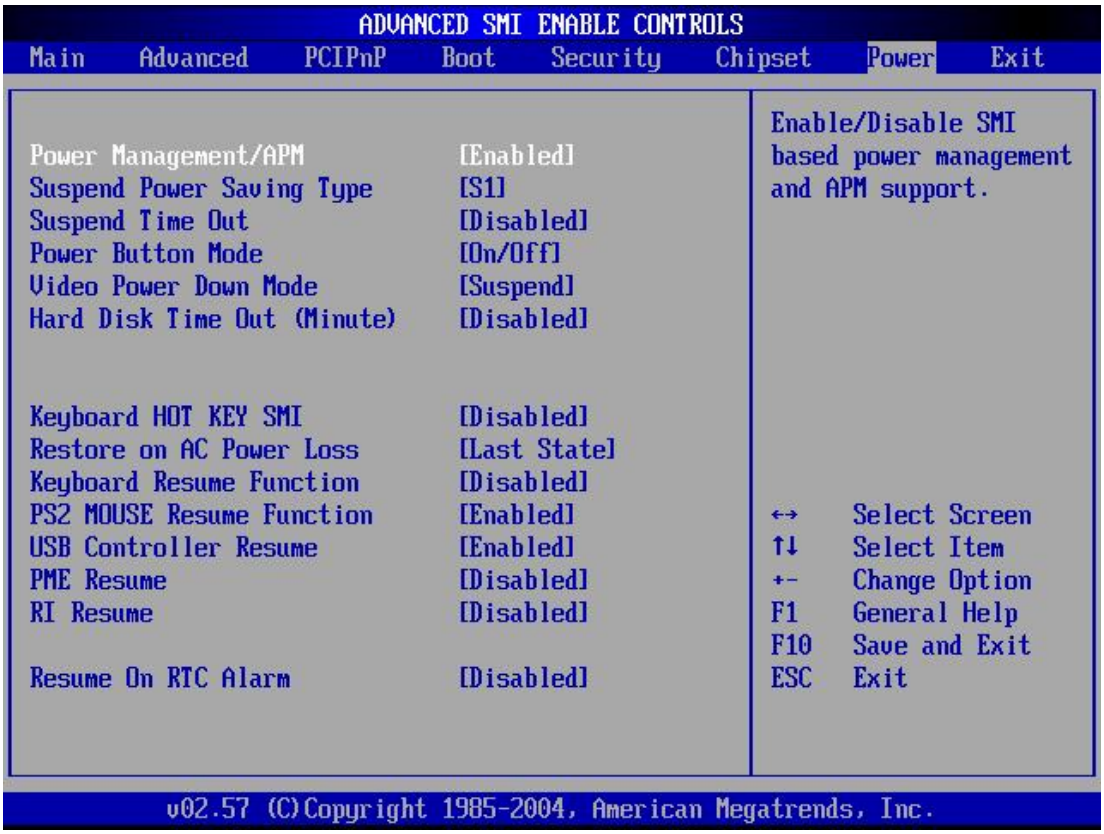
➔ **OnBoard Lan ROM [Enabled]**

The **OnBoard Lan DEVICE** option allows you to enable or disable the onboard LAN.

➔ **Enabled**	(Default)	The onboard LAN device automatically detected and enabled
➔ **Disabled**		Onboard LAN device manually disabled

5.8 Power Key

The **Power** menu (**BIOS Menu 26**) allows you to configure advanced power management options.



BIOS Menu 26:Power

➔ **Power Management/APM [Enabled]**

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

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

➔ **Enabled** (Default) Enables the APM feature

➔ **Suspend Power Saving Type [S1]**

The **Suspend Power Saving Type** BIOS option allows you to select the system power saving mode.

➔ **S1** In this sleep state all the system clocks, with the exception of the RTC are stopped. Upon any wake-up event, the system hardware must restart all the system clocks.

➔ **C1** (Default) The CPU powers down into a lower power state and the processor is able to maintain the context of the system caches.

➔ **Suspend Time Out [Disabled]**

The **Suspend Time Out** option allows you to specify what length of time without activity on certain components will place those components in a suspended state. The options are listed below:

- Disabled (DEFAULT)
- 1 Min
- 2 Min
- 4 Min
- 8 Min
- 10 Min
- 20 Min
- 30 Min
- 40 Min
- 50 Min
- 60 Min]

➔ **Power Button Mode [On/Off]**

The **Power Button Mode** BIOS option allows you to specify how the power button functions.

➔ **On/Off** (Default) When the power button is pressed the system is either turned on or off

➔ **Suspend** When the power button is pressed the system goes into suspend mode

➔ **Video Power Down Mode [Disabled]**

The **Video Power Down Mode** BIOS option allows you to specify in what system mode the video device can be turned off.

➔ **Disabled**	(Default)	The Video cannot be turned off in the Suspend or Standby mode
➔ **Standby**		The video can be turned off in the Standby mode
➔ Suspend		The video can be turned off in the Suspend mode

➔ **Hard Disk Time Out [Disabled]**

The **Hard Disk Time Out** option allows you to specify how long the computer must wait for no activity before the HDD powers down. If you disable this option the HDD will not power down. The following settings can be made.

- Disable (Default)
- 1 Min
- 2 Min
- 3 Min
- 4 Min
- 5 Min
- 6 Min
- 7 Min
- 8 Min
- 9 Min
- 10 Min
- 11 Min
- 12 Min
- 13 Min
- 14 Min
- 15 Min

➔ **Keyboard HOT KEY SMI [Disabled]**

➔ **Disabled** (Default)

➔ **Enabled**

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

The **Restore on AC Power Loss** BIOS option allows you to specify what state the system will return into if there is a sudden loss of power to the system.

➔ **Power Off**		The system will remain turned off
➔ **Power On**		The system will turn on
➔ **Last State**	(Default)	The system will return to its previous state. If it was on, it will turn itself on. If it was off, it will remain off.

➔ **Keyboard Resume Function [Disabled]**

The **Keyboard Resume Function** BIOS option allows you to specify if the system will be roused from a suspended or standby state when there is activity on the keyboard.

➔ **Disabled**	(Default)	Wake event not generated by keyboard activity
➔ **Any Key**		Wake event generated when activity is detected on any keyboard key
Specific Key		Wake event generated when activity is detected on a specific keyboard key
Keyboard password wakeup		Wake event generated when a keyboard password is entered. If this option is selected, a new BIOS option **Password Key Enter** will appear underneath it. Select this option, hit enter, and type in the password.

➔ **PS2 MOUSE Resume Function [Disabled]**

The **PS2 MOUSE Resume Function** BIOS option allows you to specify if the system will be roused from a suspended or standby state when there is activity on the PS/2 mouse.

➔ **Disabled** (Default) Wake event not generated by PS/2 mouse activity

➔ **Enabled** Wake event generated by PS/2 mouse activity

➔ **USB Controller Resume [Disabled]**

The **USB Controller Resume** BIOS option allows you to specify if the system will be roused from a suspended or standby state when there is activity on the USB controller.

➔ **Disabled** (Default) Wake event not generated by USB controller activity

➔ **Enabled** Wake event generated by USB controller activity

➔ **PME Resume [Disabled]**

The **PME Resume** BIOS option allows you to specify if the system will be roused from a suspended or standby state when there is activity on the PCI PME (power management event) controller.

➔ **Disabled** (Default) Wake event not generated by PCI PME controller activity

➔ **Enabled** Wake event generated by PCI PME controller activity

➔ **RI Resume [Disabled]**

The **RI Resume** BIOS option allows you to specify if the system will be roused from a suspended or standby state when there is activity on the RI (ring in) modem line. That is, the system will be roused by an incoming call on a modem.

➔ **Disabled** (Default) Wake event not generated by an incoming call

➔ **Enabled** Wake event generated by an incoming call

➔ **Resume On RTC Alarm [Disabled]**

The **Resume On RTC Alarm** allows you to determine when the computer will be roused from a suspended state.

➔ **Disabled** (Default) The real time clock (RTC) cannot generate a wake event

➔ **Enabled** If selected, the following will appear with values that can be selected:

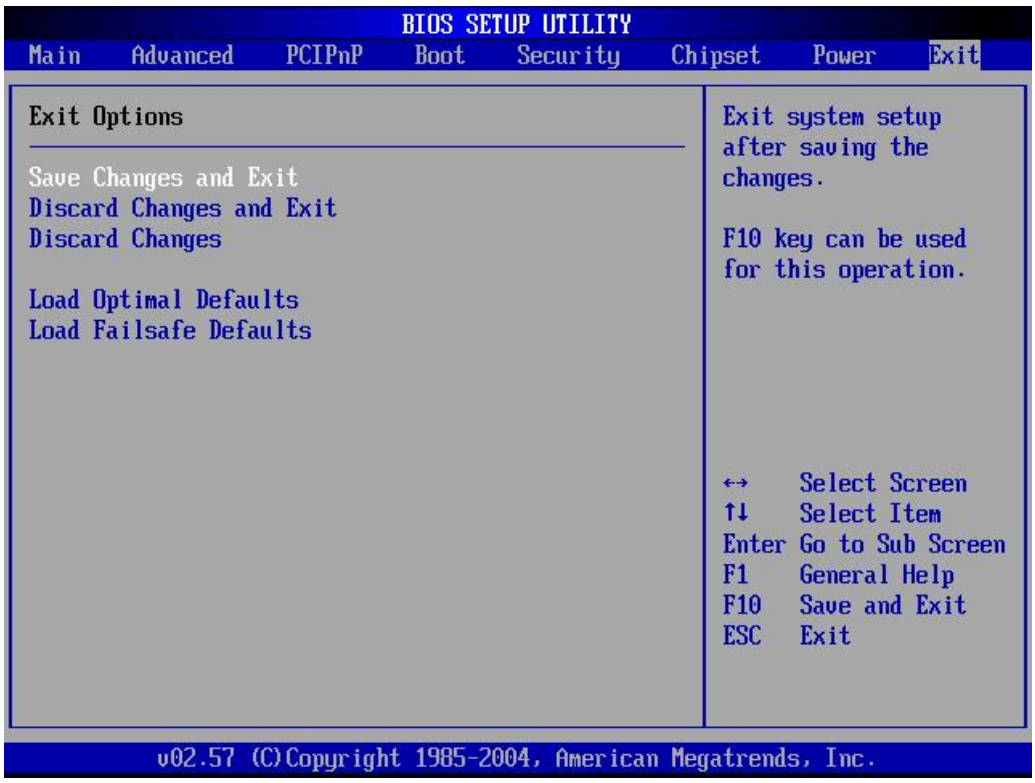
➔ **RTC Alarm Date (Days)**

➔ **System Time**

After setting the alarm, the computer will turn itself on from a suspend state when the alarm goes off.

5.9 Exit

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



BIOS Menu 27:Exit

➔ **Save Changes and Exit**

If you have finished making the configuration changes and wish to save them and exit the BIOS menus, select this option.

➔ **Discard Changes and Exit**

If you have finished making configuration changes but do not want to save them and you want to exit the BIOS menus, select this option.

➔ **Discard Changes**

If you have finished making configuration changes but do not want to save them but still want to continue working with BIOS, select this option.

➔ **Load Optimal Defaults**

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

Chapter

6

Software Drivers

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 ROCKY-6614 CPU card has six software drivers:

- **AGP Driver** in the **AGP 121** directory
- **Realtek AC'97 CODEC driver** in the **A3.79** directory
- **SiS chipset driver** in the **Chipset_VGA 3.72logo** directory
- The **AGP Pack driver** in the **Chipset_VGA 3.72logo \AGPPack** directory
- **SiS IDE driver** in the IDE R204a directory
- **81xx LAN Driver** (10/100 LAN) in the **LAN\81xx** directory
- **LAN driver** (for GbE LAN) In the **lan\RTL81698169S(B)8110S(B)\LanSetup_v1.80.635.051018** directory
- **RAID Utility** in the **RAID 304c** directory. The RAID Driver Installation is fully described in **Appendix E**.

All four 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

6.2 AGP Driver Installation

To install the AGP driver, please follow the steps below:

Step 1: Insert the CD into the system that contains the ROCKY-6614 CPU card. Open the **AGP 121** directory and locate the icon for the **Setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 2: The "**StartingInstallShield Wizard**" in **Figure 6-1**appears.

Figure 6-1: StartingInstallShield Wizard Screen

Step 3: The "**Preparing Setup**" window in **Figure 6-2** appears next.

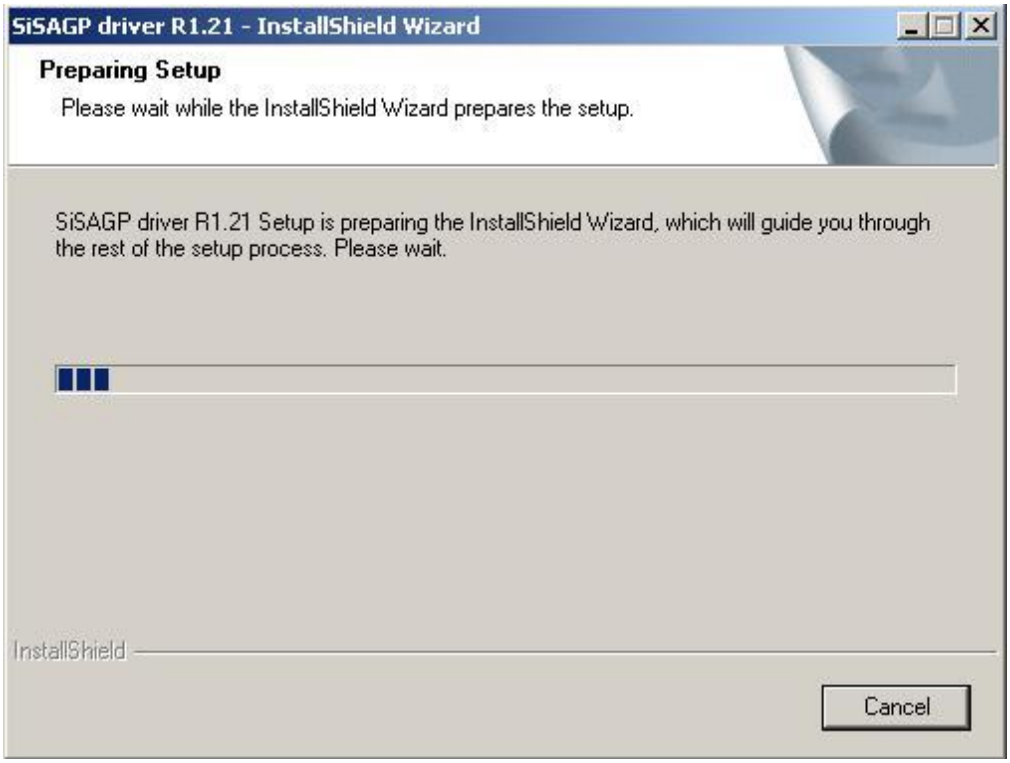


Figure 6-2: Preparing Setup Screen

Step 4: The "**Install Shield**" window in **Figure 6-3** appears next. If you wish to continue installing the AGP pack driver, click "**NEXT**."

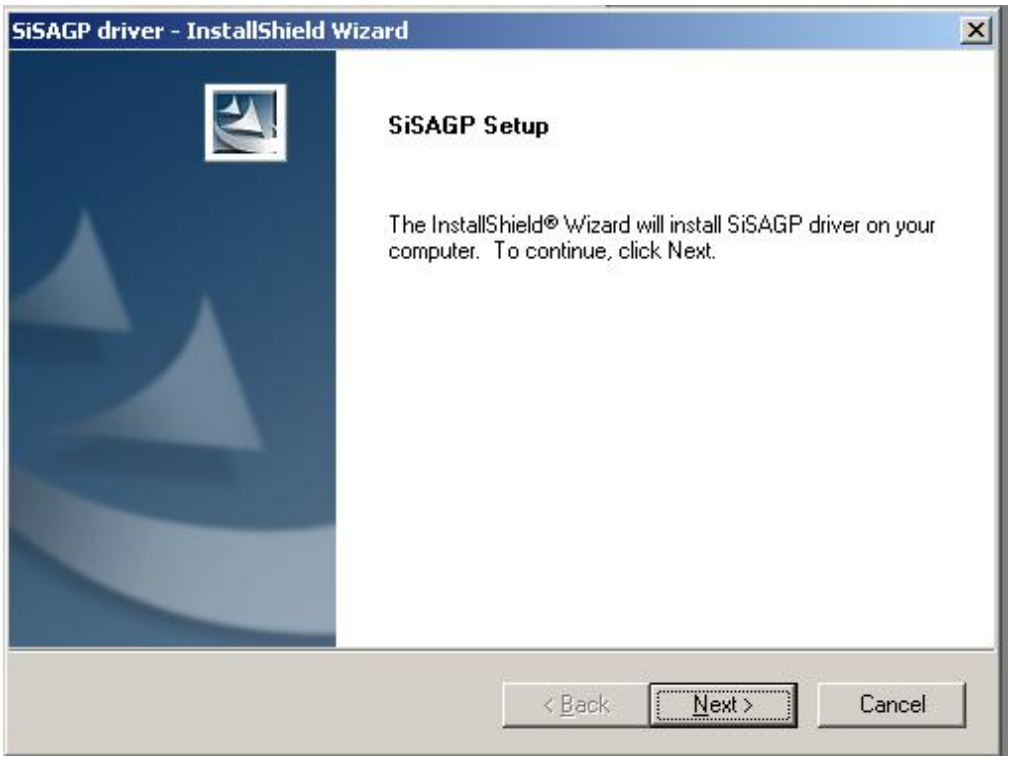


Figure 6-3: Install Shield Screen

Step 5: The installation shield will then start to extract and install files as shown in **Figure 6-4**.

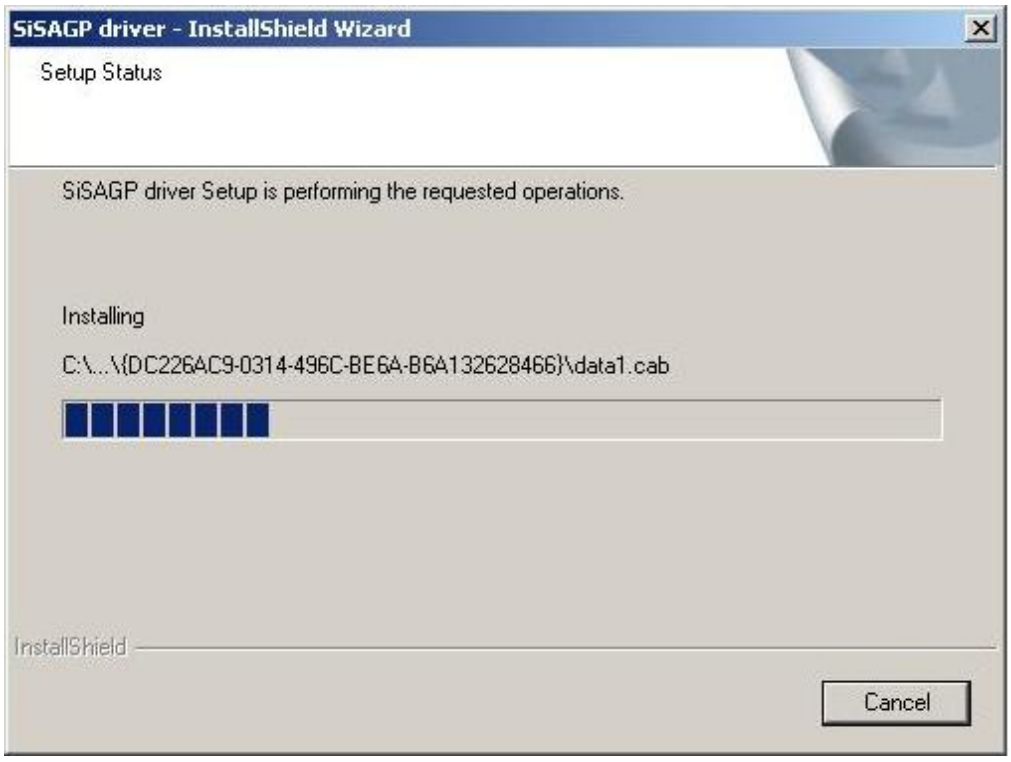


Figure 6-4: Installing Screen

Step 6: Once the installation process is complete, you will be asked if you wish to restart your computer or if you want to restart your computer (see **Figure 6-19**). Select the option you prefer and click "**FINISH**" to complete the installation process.

Figure 6-5: Restart the Computer

6.3 RealTek Audio Driver Installation

To install the RealTek AC'97 Audio driver, please follow the steps below:

Step 1: Insert the CD into the system that contains the ROCKY-6614 CPU card. Open the CD folder and locate the **AUDIO DRIVER A3.79** directory. Open the directory and look for icon for the **setup.exe** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 2: Once you double click the **Setup** icon, the install shield wizard for the audio driver starts. See **Figure 6-6.**

Figure 6-6: Audio Driver Install Shield Wizard Starting

Step 3: The RealTek Audio Setup prepares the install shield to guide you through the rest of the setup process. See **Figure 6-7**.

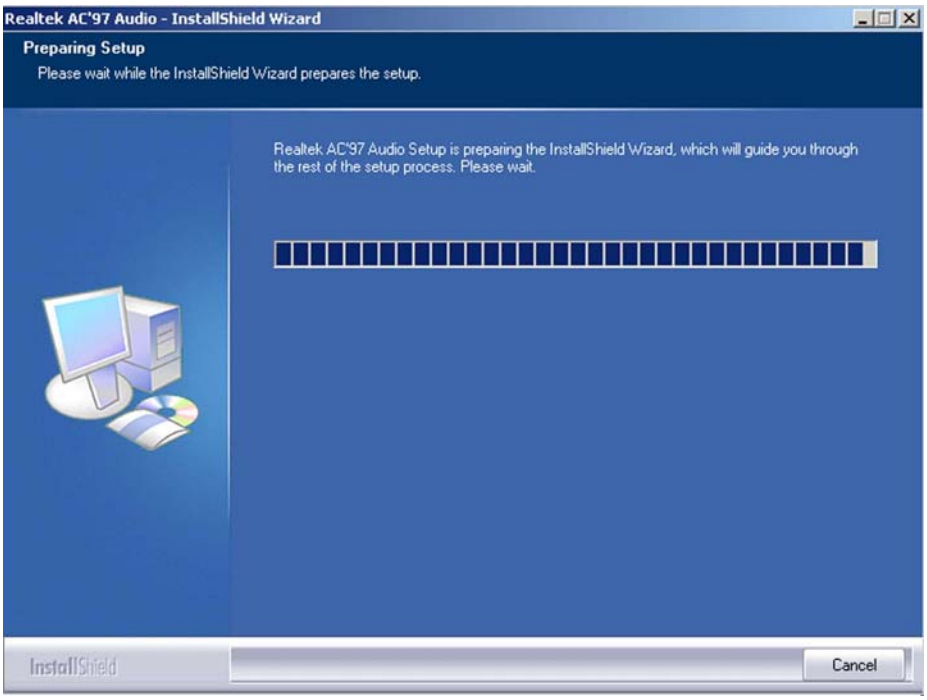


Figure 6-7: Audio Driver Setup Prerparation

Step 4: After install shield is prepared, the welcome screen shown in **Figure 6-8** appears. To continue the installation process, click the "**NEXT**" button. The install shield starts to configure the new software as shown in **Figure 6-9**.

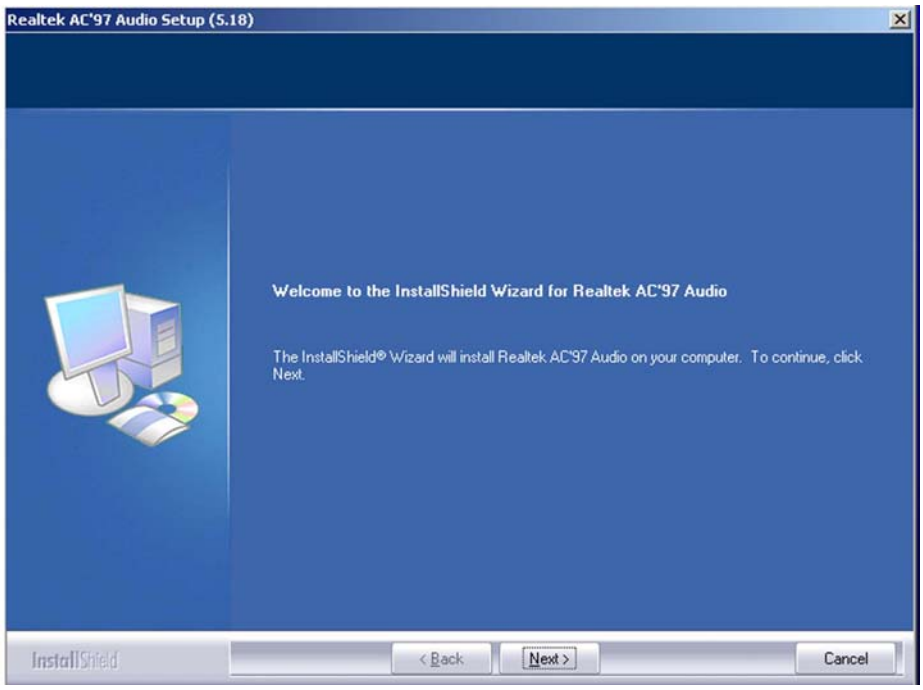


Figure 6-8: Audio Driver Welcome Screen

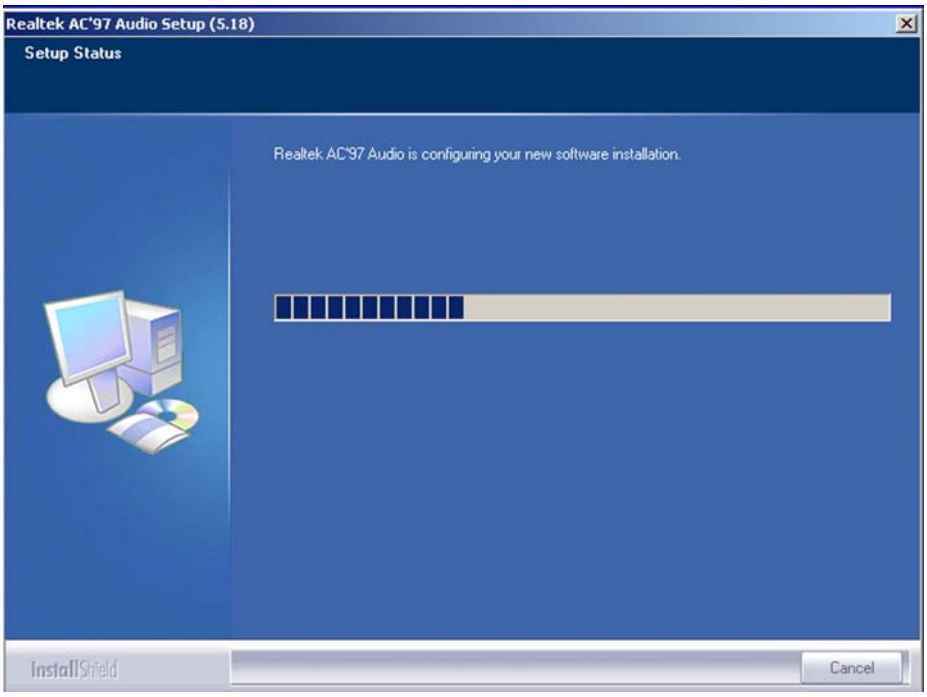


Figure 6-9: Audio Driver Software Configuration

Step 5: At this stage the "**Digital Signal Not Found**" screen shown in **Figure 6-10**

appears. To continue the installation process, click the "**YES**" button. The installation notice shown below will appear.

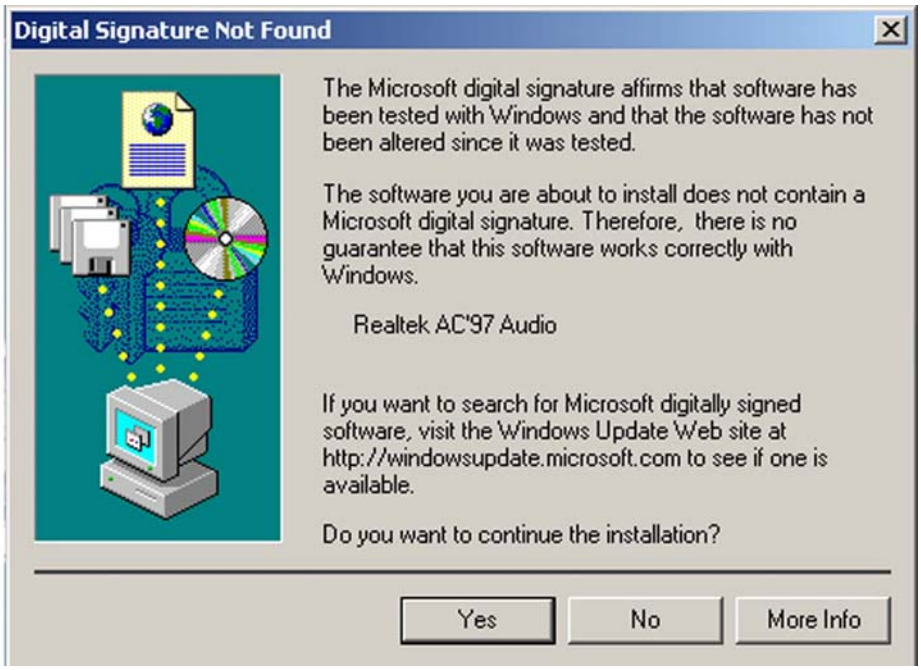


Figure 6-10: Audio Driver Digital Signal

Step 6: At this stage the clicking the "**YES**" button in **Figure 6-10** appears, the installation of the driver begins. See **Figure 6-11**.

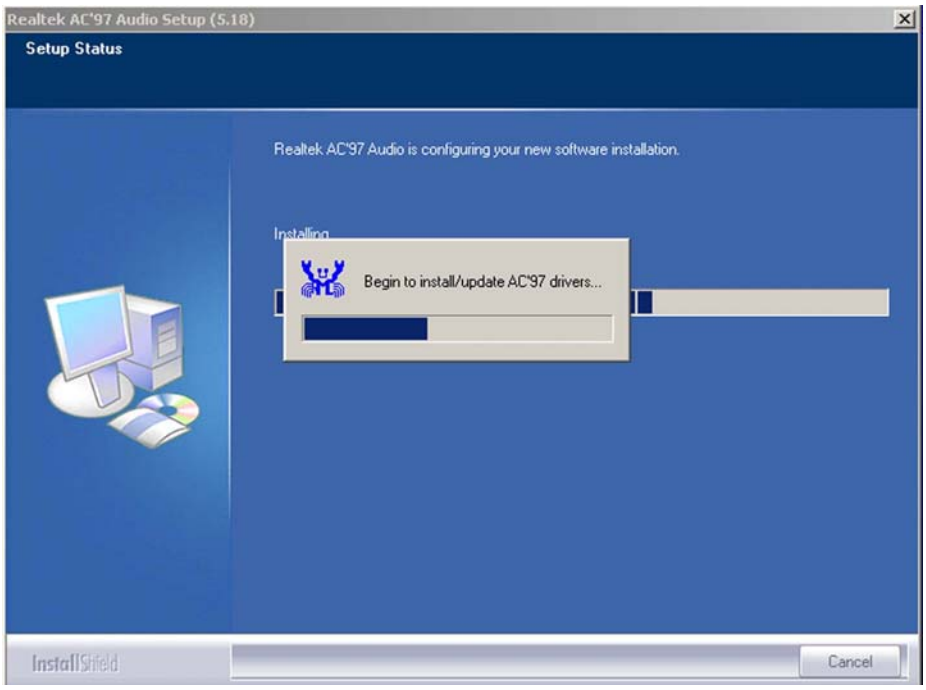


Figure 6-11: Audio Driver Installation Begins

Step 7: After the driver installation process is complete, a confirmation screen shown in **Figure 6-12** appears

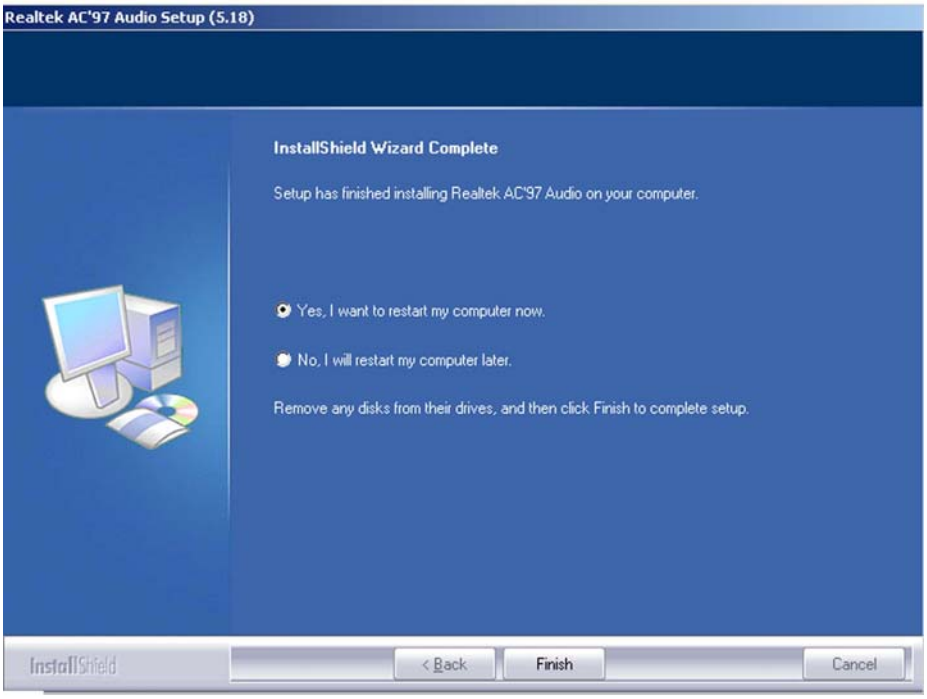


Figure 6-12: Audio Driver Installation Complete

Step 8: The confirmation screen shown in **Figure 6-12** 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 SiS VGA Utilities Driver

To install the **SiS VGA Utilities driver** in the **Chipset_VGA 3.72logo** directory please follow the steps below:

Step 1: Insert the CD into the system that contains the ROCKY-6614 CPU card. Open the **Chipset_VGA 3.72logo** directory and locate the icon for the **setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 2: Once you double click the **setup** icon, a welcome screen shown in **Figure 6-13** appears.

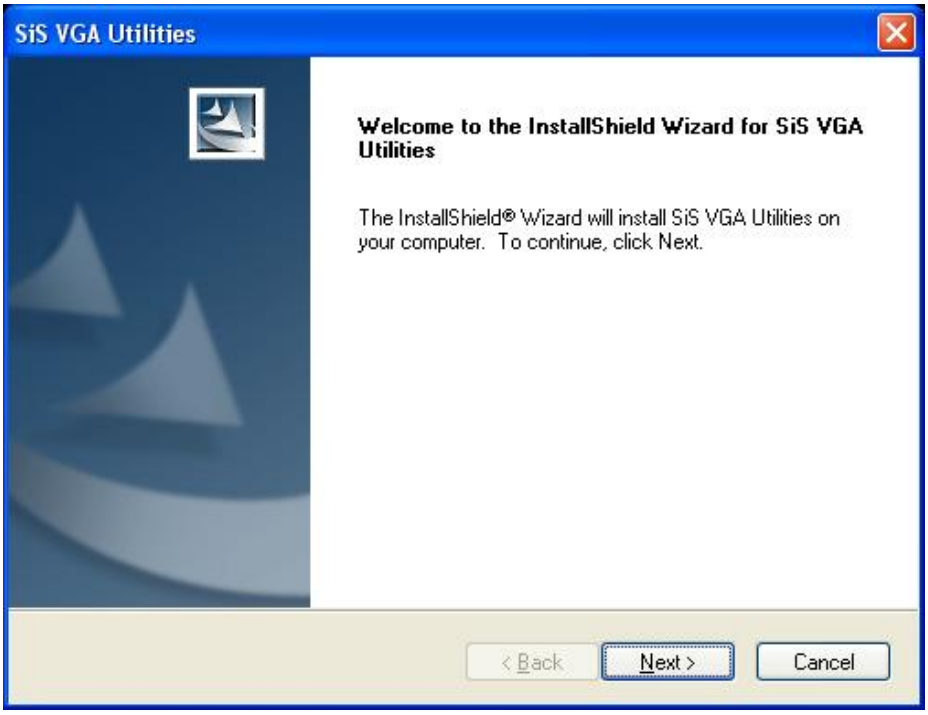


Figure 6-13: VGA Utilities Welcome Screen

Step 3: You then select the setup type (see **Figure 6-14**). Once the setup type is selected, click on the **NEXT** button in the setup type menu (see **Figure 6-14**).

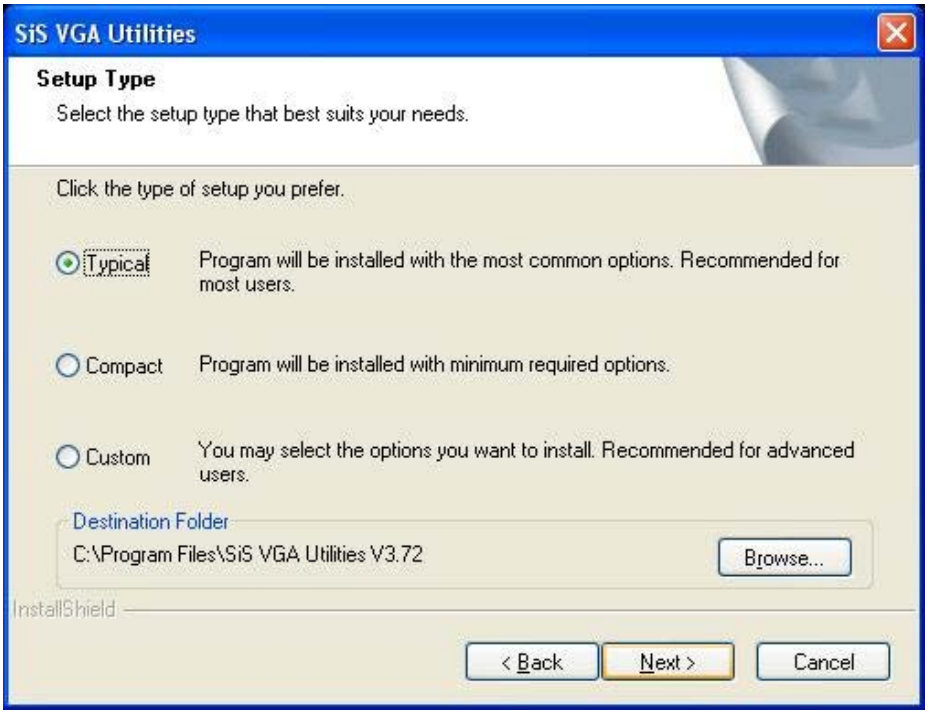


Figure 6-14: Select Setup Installation Type

Step 4: You are then prompted to select a folder to copy the files in (see **Figure 6-15**).

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

Figure 6-15: Select Folders to Copy Files

Step 5: Before the files are copied, you can review you selected settings (see **Figure 6-16**). Once you have completed reviewing your settings, click on the **NEXT** button.

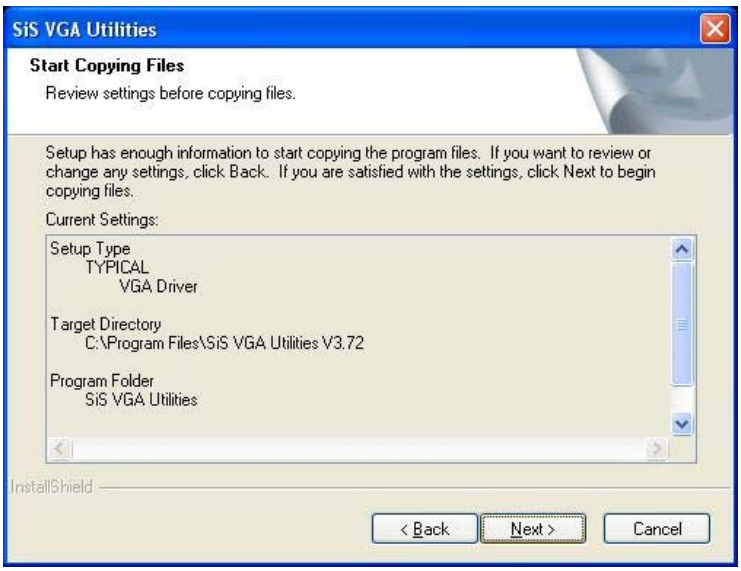


Figure 6-16: Review Settings

Step 6: The driver installation will then start.

Step 7: Once the installation is complete, you will be prompted to read the Read Me file. (see **Figure 6-17**)

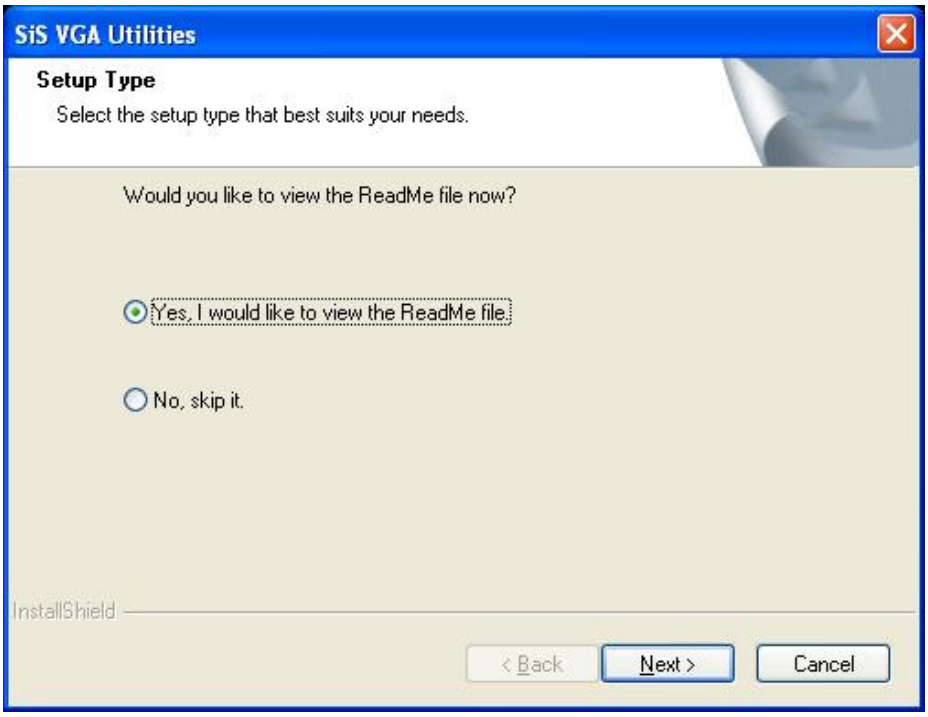


Figure 6-17: Read ReadMe File

Step 8: 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.

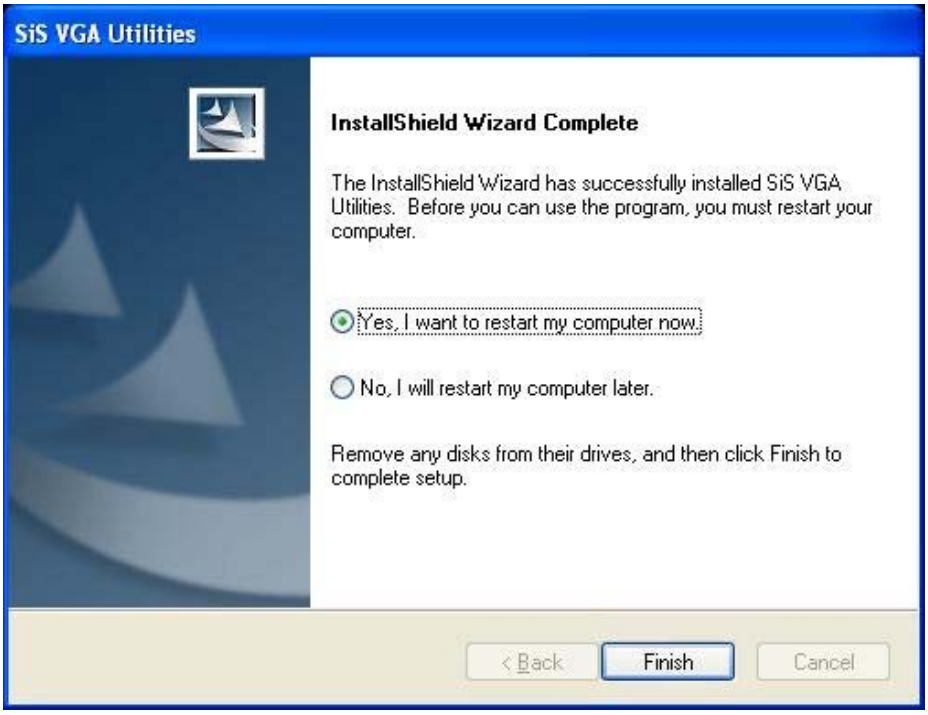


Figure 6-18: Restart the Computer

6.5 SiS IDE Driver Installation

To install the **SiS IDE driver** in the IDE R204a directory please follow the steps below:

Step 9: Insert the CD into the system that contains the ROCKY-6614 CPU card. Open the **IDE R204a** and locate the icon for the **setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 10: Once you double click the **setup** icon, you are prompted to select a language as shown in **Figure 6-19**.

Figure 6-19: Select a Language

Step 11: After you select a language a welcome screen shown in **Figure 6-20** appears.

To continue the installation, click the "**NEXT**" button.

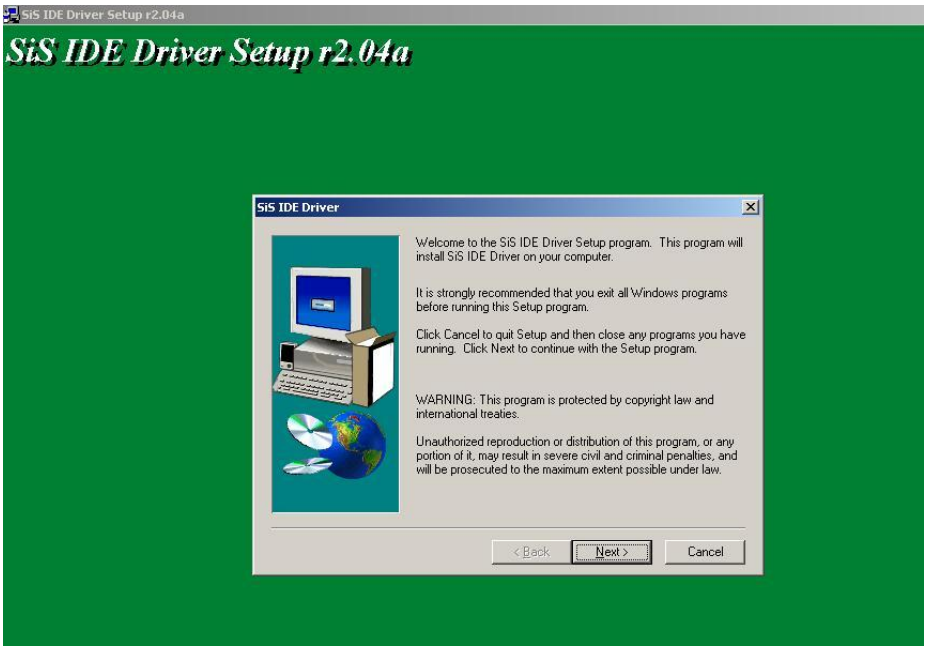


Figure 6-20: Welcome Screen

Step 12: You are then prompted to select an OS as shown in **Figure 6-21**.

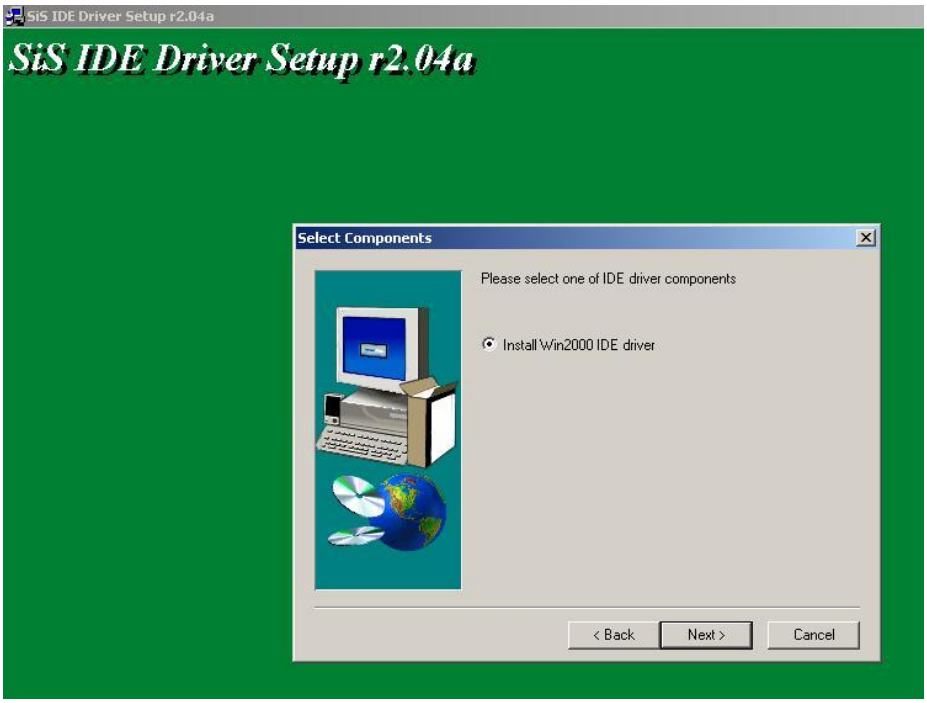


Figure 6-21: Chipset Driver Readme File Information

Step 13: Select an OS and click on the "**NEXT**" button to initiate driver installation. The installation screen shown in **Figure 6-22** appears.

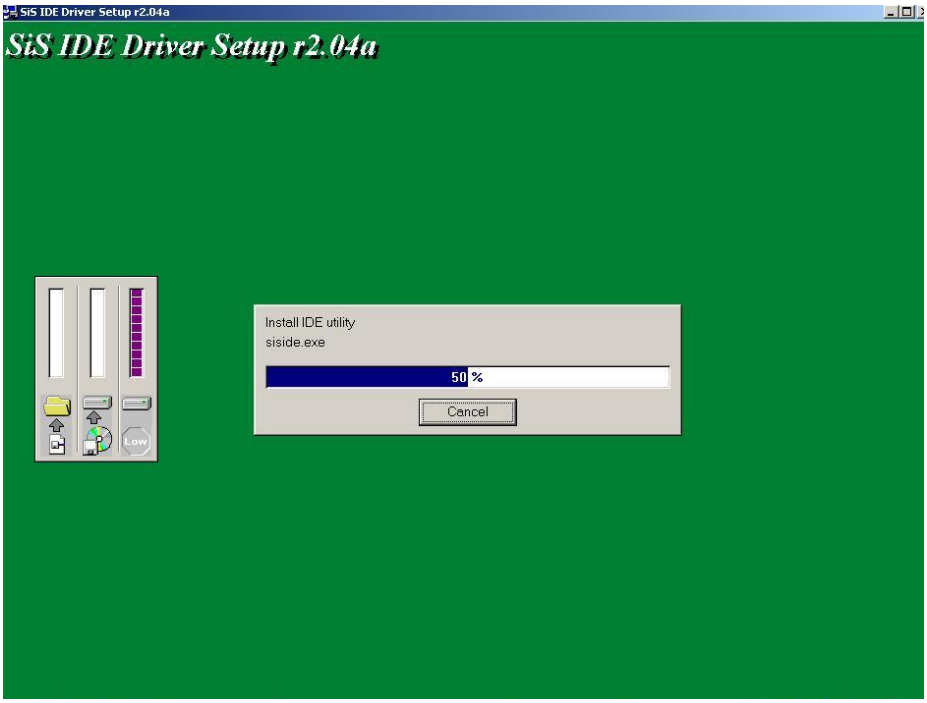


Figure 6-22: Chipset Driver Installation Complete

Step 14: After the installation is complete you will be prompted to restart your computer now or later.

6.6 LAN Driver Installation

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

Step 1: Insert the CD into the system that contains the ROCKY-6614 driver. Open the **lan\RTL81698169S(B)8110S(B)\LanSetup_v1.80.635.051018** directory and locate the icon for the **Setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 2: Once you double click the **Setup** icon, a **Welcome** screen shown in **Figure 6-24** will appear.

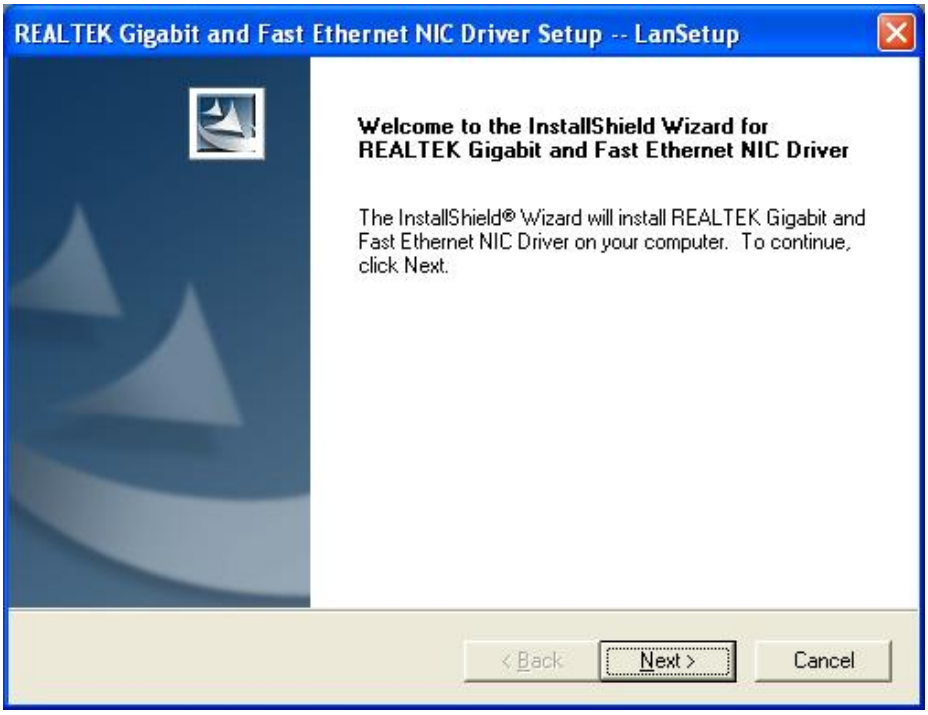


Figure 6-23: LAN Driver Welcome Screen

Step 3: To continue installing click "**Next.**" The driver will be installed and a confirmation screen at the end of the installation will appear. (See **Figure 6-24**)

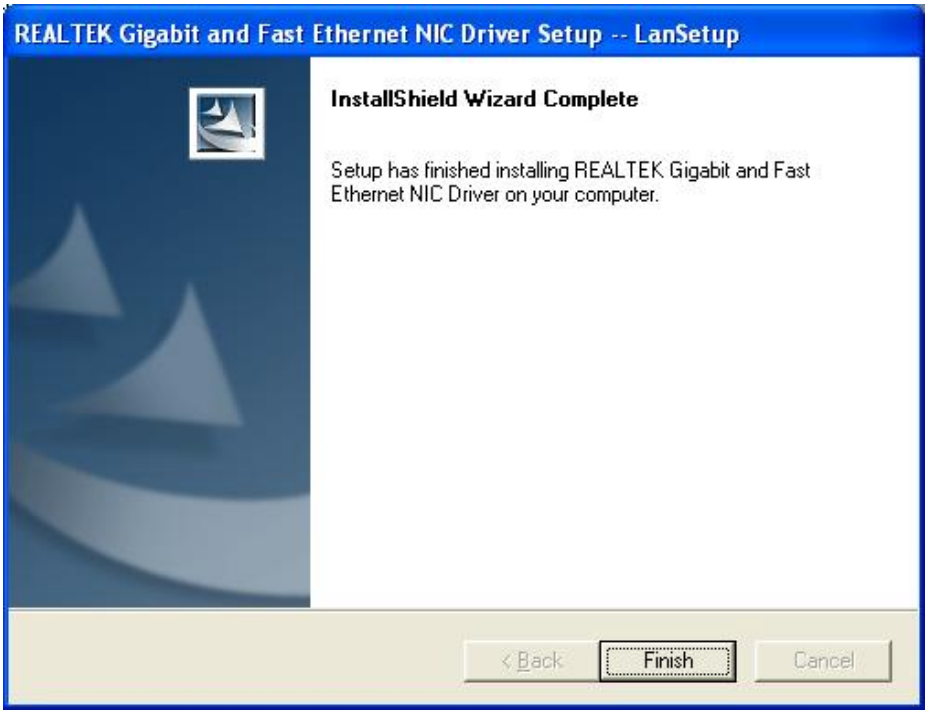


Figure 6-24: LAN Driver Installation Complete

THIS PAGE IS INTENTIONALLY LEFT BLANK

Appendix

A

BIOS Configuration Options

A.1 BIOS Configuration Options

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

THIS PAGE IS INTENTIONALLY LEFT BLANK

Appendix

B

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. It is recommended you contact IEI support or visit our website 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 will either perform 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

You have to 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 will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer will be disabled if you set the time-out value to be 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 will reset.

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 YOUR APPLICATION PROGRAM HERE
;
        CMP      EXIT_AP, 1     ;is your application over?
        JNE      W_LOOP         ;No, restart your application

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

THIS PAGE IS INTENTIONALLY LEFT BLANK

Appendix

C

Address Mapping

C.1 IO 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	Intel(R) 82915 Graphics Controller
3C0-3DF	Intel(R) 82915 Graphics Controller
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table C-1: IO 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

THIS PAGE IS INTENTIONALLY LEFT BLANK

Appendix

D

External AC'97 Audio CODEC

D.1 Introduction

The audio functionalities of the ROCKY-6614 CPU come with an onboard Realtek ALC655 16-bit, full duplex AC'97 2.3 compatible audio CODEC with 48KHz sampling rate. The CODEC is accessed through one phone jack connector and two three pin headers including:

1. A LINE input shared with surround output
2. A MIC input shared with Center and LFE output
3. A LINE output
4. A MIC input line.

The ALC655 supports host/soft audio from Intel ICHx chipsets as well as audio controller based VIA/SIS/Ali/ATI chipset with bundled Windows series drivers (XP/ME/2000/98/NT), EAX/Direct Sound 3D/I3DL2/A3D compatible sound effect utilities supporting Karaoke, 26 kinds of environment sound emulations with 10-band equalizer, and HRTF 3D positional audio. The audio kit provides an excellent entertainment package sufficient for today's multimedia systems.

D.2 Driver Installation

The driver installation has been described in **Chapter 6**, **Section 6.3**.

After reboot, you should be able to find the sound effect configuration utility in Windows Control Panel (see **Figure D-1**); and if peripheral speakers have been properly connected, hear the sound effects.

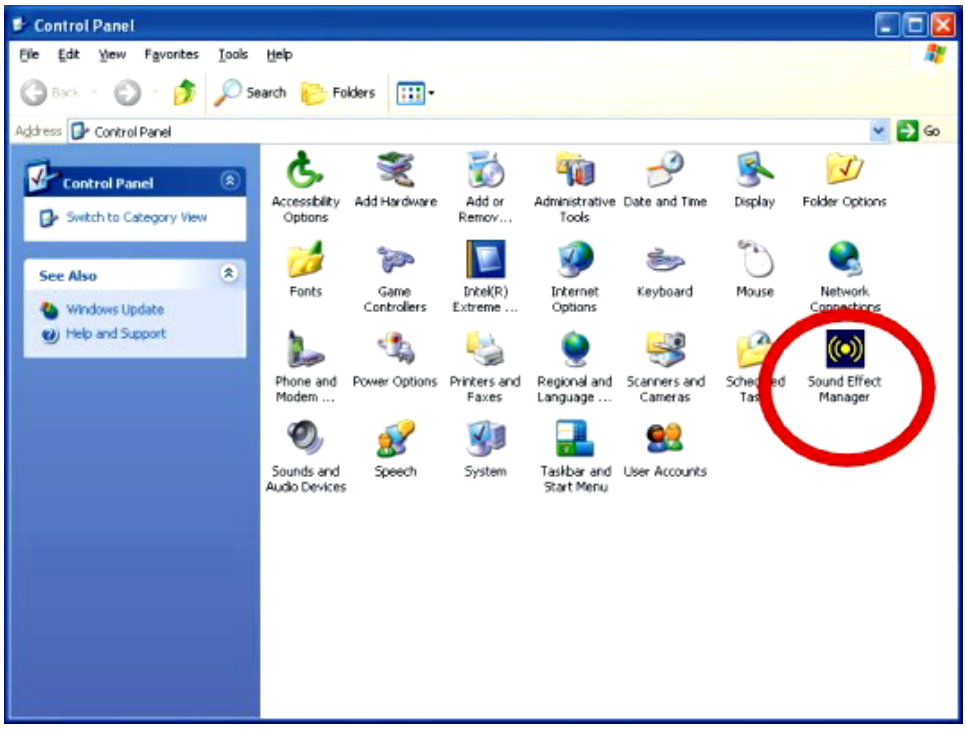


Figure D-1: Sound Effect Manager Icon

D.3 Sound Effect Configuration

After installing the audio CODEC driver, you should be able to use the multi-channel audio features now. Click the audio icon from the Notification Area from system task bar (see **Figure D-3**). The shortcut to the configuration utility is also available through the **Sound Effect Manager** icon in the **Control Panel** (**Figure D-2**).

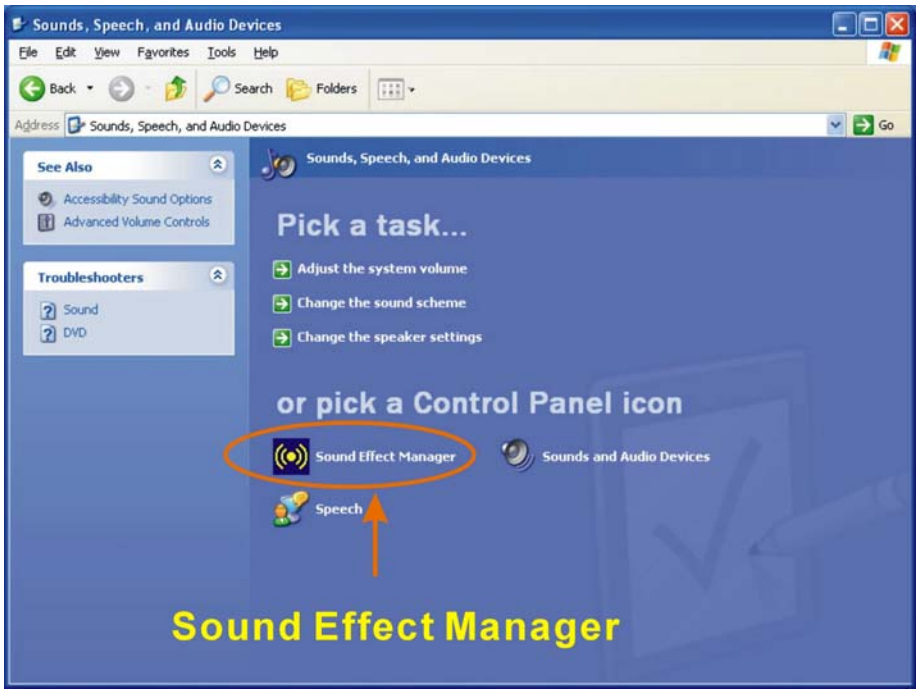


Figure D-2: Sound Effect Manager Icon [Control Panel]

Figure D-3: Sound Effect Manager Icon [Task Bar]

D.4 Sound Effect

You may select a pre-configured sound environment setting with the preset equalizer settings. You may also load an equalizer setting or make a new equalizer setting using the "**Load EQ Setting**" and "**Save Preset**" button. (See **Figure D-5**)

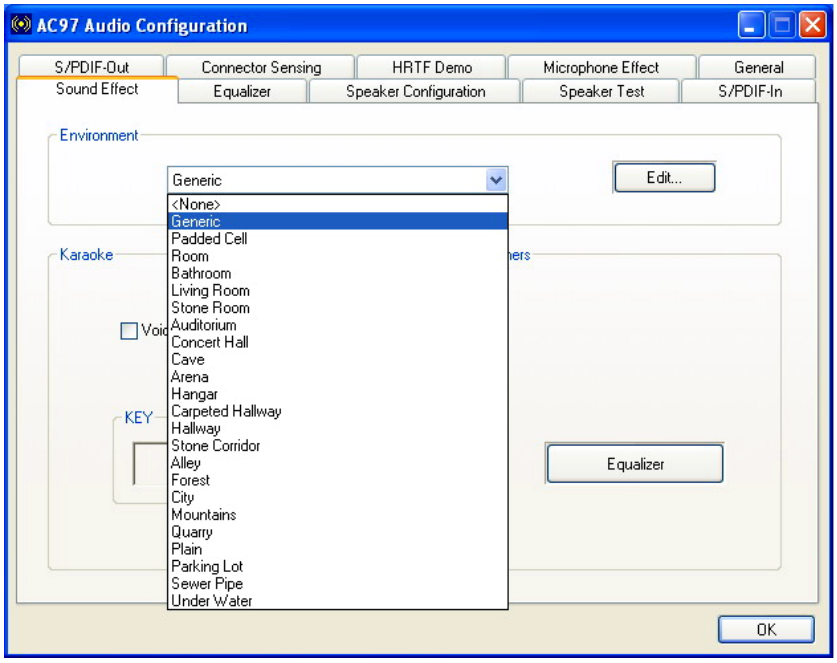


Figure D-4: Setting Sound Effects

D.5 Environment Simulation

This is the default screen whenever the configuration utility is opened.

You may select different sound environment modes by a single click on the Environment pull-down list. There are a total of 23 preset environment modes (see **Figure D-5**). You may also fine-tune the environment setting by clicking the **Edit** button on the right, which displays an editor window. Select a preset mode you want to edit. Select a preset mode, and then select one the property value from the list below by a single click. Use the scroll bar below to adjust properties setting. When the adjustment is done, click the Save button to proceed.

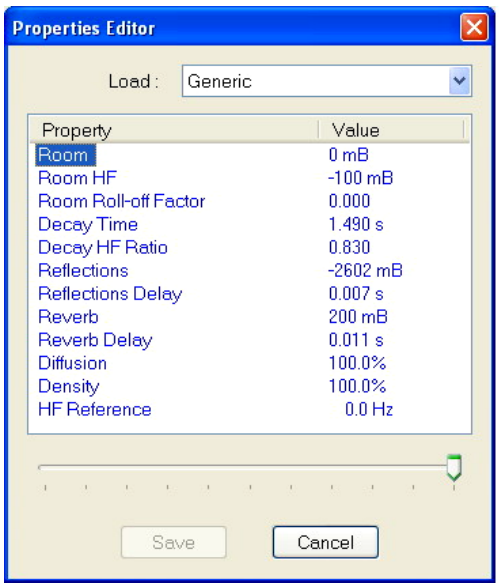


Figure D-5: Sound Effects Properties Editor

D.6 Karaoke Mode

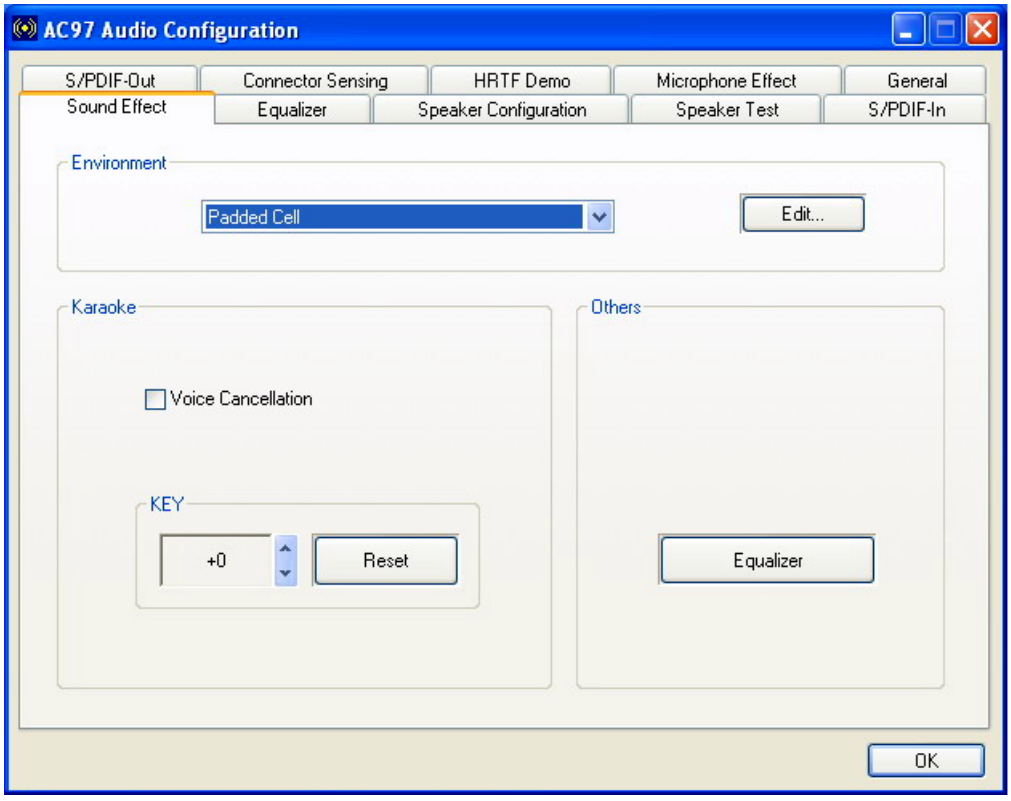


Figure D-6: Karaoke Mode

The Karaoke mode shown in **Figure D-6** allows you to eliminate the vocal of the music you play or adjust the key to accommodate your range.

The configuration options that come with the Karaoke function include:

Voice Cancellation: This checkbox, when selected, disables the vocal part of the music your play in your computer while the background music remains.

Key adjustment: Use the Up or Down arrow icons to find a key that fits your vocal range.

NOTE:

The Equalizer button on the default display brings you to the same configuration window as the Equalizer function tab on top of the window.

D.7 Equalizer Selection

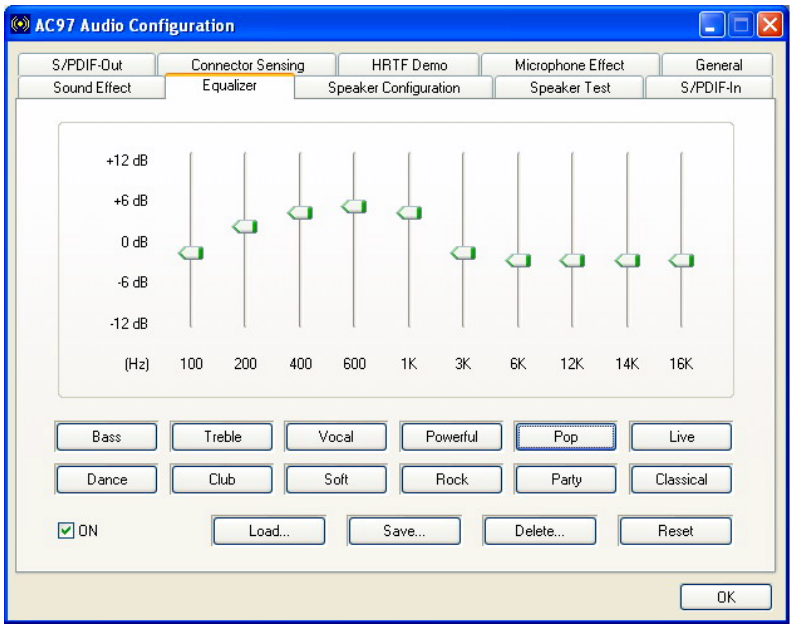


Figure D-7: Equalizer Settings

The equalizer in **Figure D-7** allows users to change sound effect parameters. The default screen shows equalized values. You may also select preset modes from the buttons below. The configurable values include 10 bands of equalizer ranging from 100Hz to 16KHz. Use the scroll bar to fine-tune, and use the **Load**, **Save**, **Delete**, and **Reset** buttons to edit your settings.

D.8 Speaker Configuration

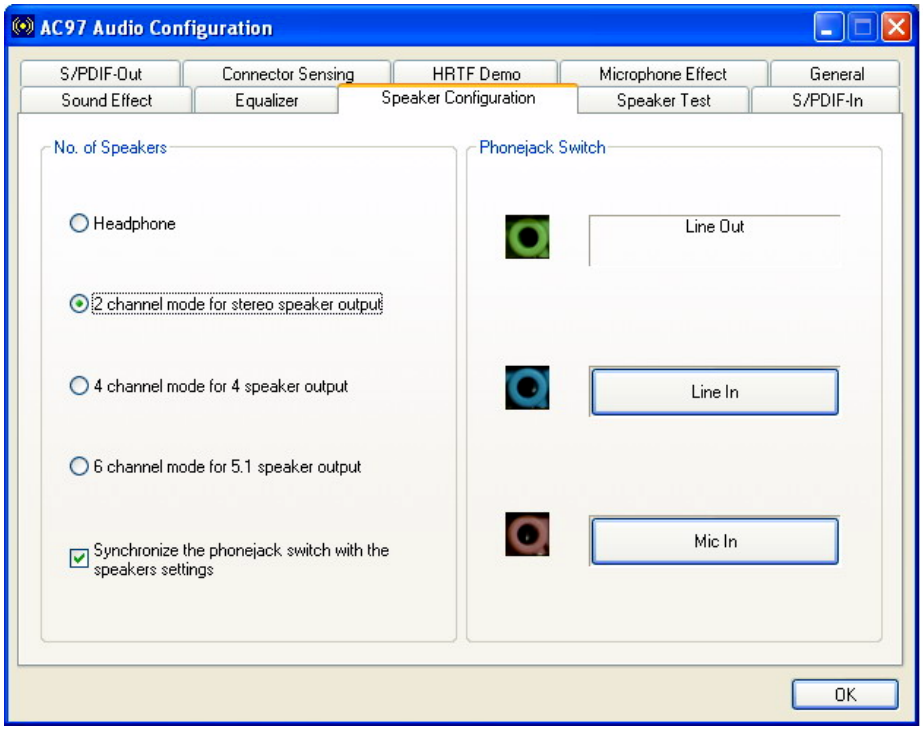


Figure D-8: Speaker Configuration

In this functional window, you can configure your multi-channel speaker settings.

Select the audio configuration from the **No. of Speakers** section on the left by clicking on one of the check circles.

The configurable options are:

- 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

Select a speaker configuration by selecting its check circle, and then click **OK** to apply the configuration change.

Connect your speakers to the corresponding phonejacks. It is recommended you write down your configuration, power off the system, and then complete the physical connections.

Select from the **Phonejack Switch** section if you want to re-define the phonejacks. Click the specific phonejack button for several times to change its input/output functionality.

D.9 Speaker Test

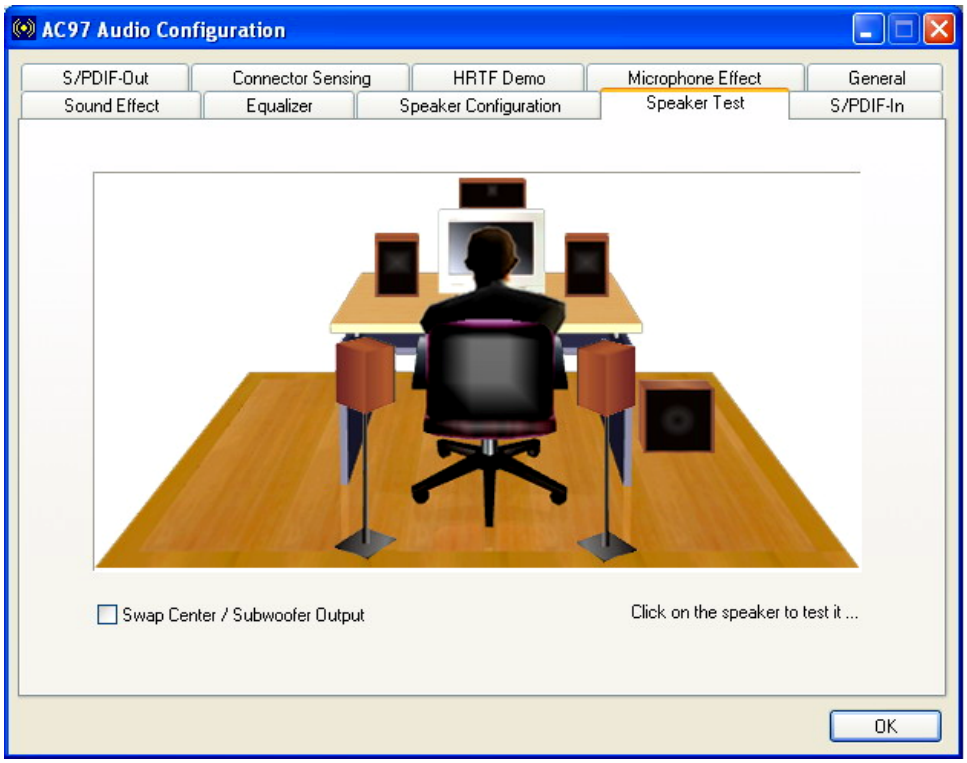


Figure D-9: Audio Configuration

The audio configuration window in **Figure D-9** allows you to test each connected speaker to see if your 4-channel or 6-channel audio operates properly. If any speaker malfunctions, you should then check the cabling or replace the malfunctioning parts.

Select each specific speaker to test its functionality. The speaker you select will be highlighted and sound should be generated.

NOTE:

1. The test scenario that appears in the **Speaker Test** window corresponds to the number of speakers you selected in the **Sound Effect** window.
2. You should select and deselect the **Swap Center/Subwoofer Output** check box to see if these two devices properly work.

D.10 S/PDIF-In & S/PDIF-Out

These functions are currently not supported.

D.11 Connector Sensing

Figure D-10: Connector Sensing

Realtek ALC655 supports Jack Sensing functionality. If an audio device is plugged into the wrong connector, a warning message will display informing users to correct the physical connections.

Click the Start button in **Figure D-10** to start the sensing. Please remember to close all running audio-related programs before executing the sensing operation.

The EZ-Connection screen in **Figure D-11** shows the result of sensing test.

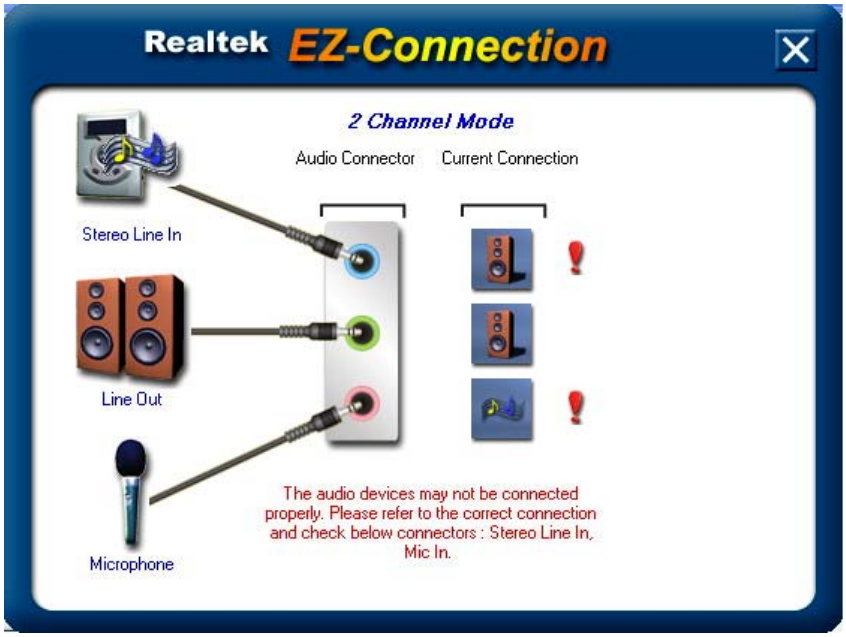


Figure D-11: EX Connection

The “Audio Connector” column shows the settings used in the “Speaker Configuration” window.

The “Current Connection” column shows the types of devices detected during test. If the result does not match the physical connection, an exclamation mark will appear. (See **Figure D-12**)

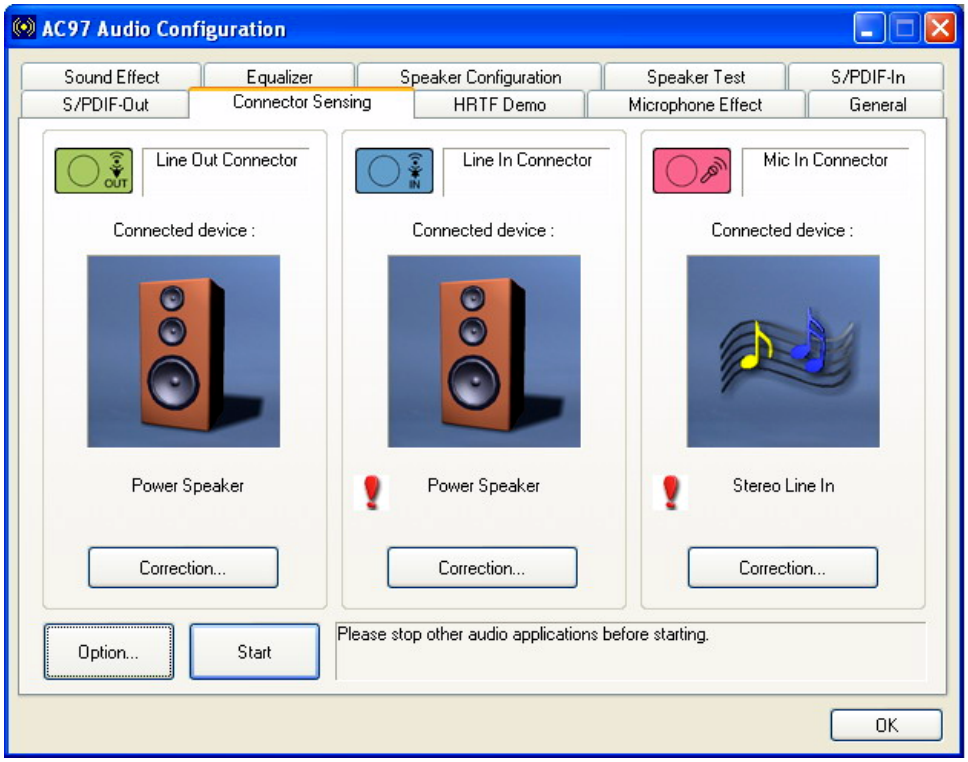


Figure D-12: Connector Sensing Test Result

After closing the EZ-Connector screen, the following window should appear showing the latest connection status.

D.12 HRTF Demo

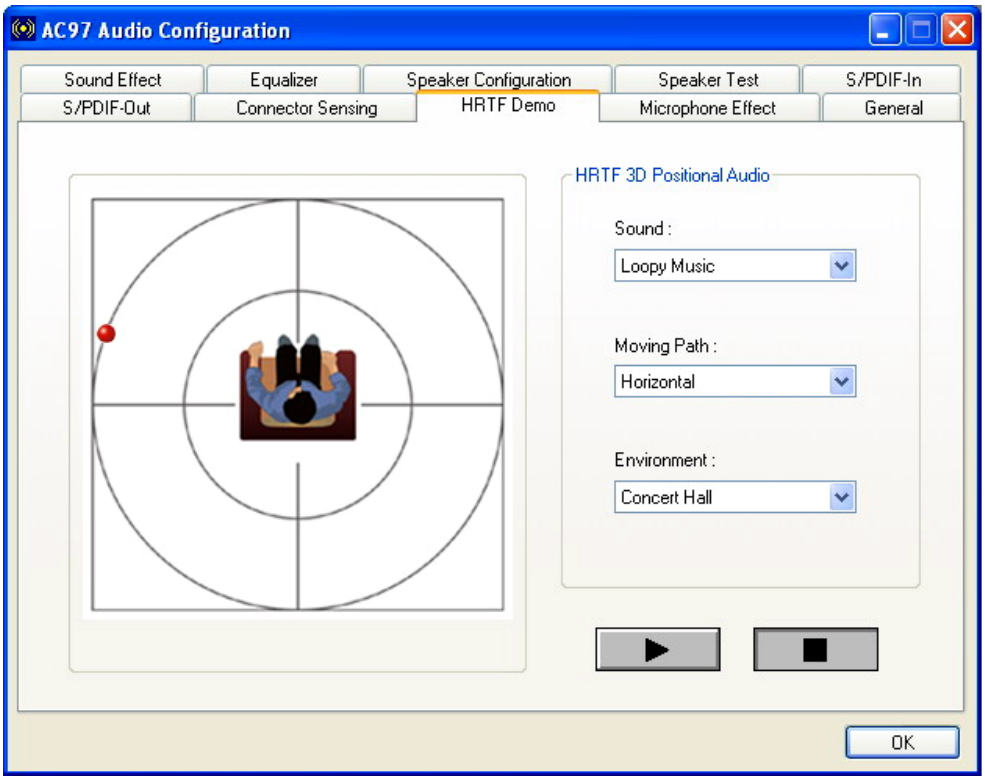


Figure D-13: HRTF Demo

The HRTF window in **Figure D-13** allows you to adjust your HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D applications. Select a preferred **Environment** mode and/or different **Sound** and **Moving Path** settings.

D.13 Microphone Effect

This window provides an option, Noise Suppression. Select its check box to enable this functionality.

D.14 General

The general window in **Figure D-14** provides information about this AC'97 audio configuration utility including **Audio Driver** version, **DirectX** version, **Audio Controller**, and **AC'97 Codec**. You may also change the language of this utility through the **Language** pull-down menu.

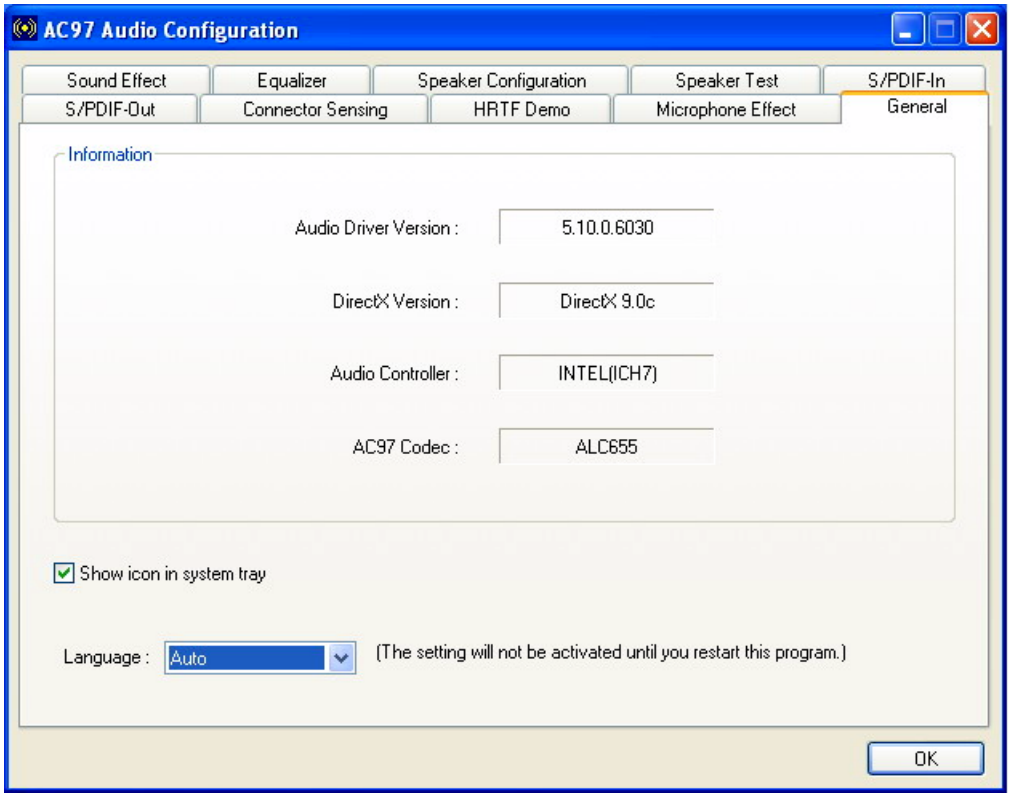


Figure D-14: General

Appendix

E

RAID Setup

E.1 Introduction

E.1.1 RAID Support

The SiS964 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 will not be lost. Although there are more RAID levels than those mentioned above, only the three RAID levels mentioned above can be implemented on your system

- JBOD stands for Just a Bunch Of Disks. This is not a RAID level and if any thing happens to one hard drive, all the information on that drive will be lost.
- RAID0 refers to disk striping. That is, 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. That means the effective storage capacity of your 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 can be retrieved 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.

Step 3: RAID drivers must be copied onto a floppy disk.

E.2.2 Copy the RAID Driver

Before you attempt to configure the RAID on your system, you must copy the RAID driver from the driver CD that came with your system onto a floppy disk. To do this, follow the steps below.

Step 1: Insert the CD into a computer.

Step 2: Open the "**ROCKY Driver**" CD directory.

Step 3: Open the **RAID 304c** directory (see **Figure E-1**).

Figure E-1: RAID 304C Subdirectory

Step 4: Select the **964_180** subdirectory (see **Figure E-2**).

Figure E-2: RAID 304C Subdirectory

Step 5: The following subdirectories will appear (see **Figure E-3**)

- Srv2003
- Win2000
- Winxp
- WS03XP64

Figure E-3: Select OS Directory Corresponding to your OS

Step 6: These directories all contain the necessary drivers for the OS you wish to use on the SATA drives. Select the directory for the OS you will use and copy all the files onto a separate floppy disk drive.

E.2.3 Install SATA Drives

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

E.2.4 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 clicking **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 (see **Section 5.3.2** on **BIOS IDE Configuration** on page 81).

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

Step 6: Save your 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 you enter the **Exit** menu, select the "**Save Changes and Exit**" menu option.

E.2.5 Configure the RAID BIOS

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

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

Step 2: You will be prompted to press <**CTRL**> and <**S**> to enter the BIOS RAID Setup Utility (see **Figure E-4**).

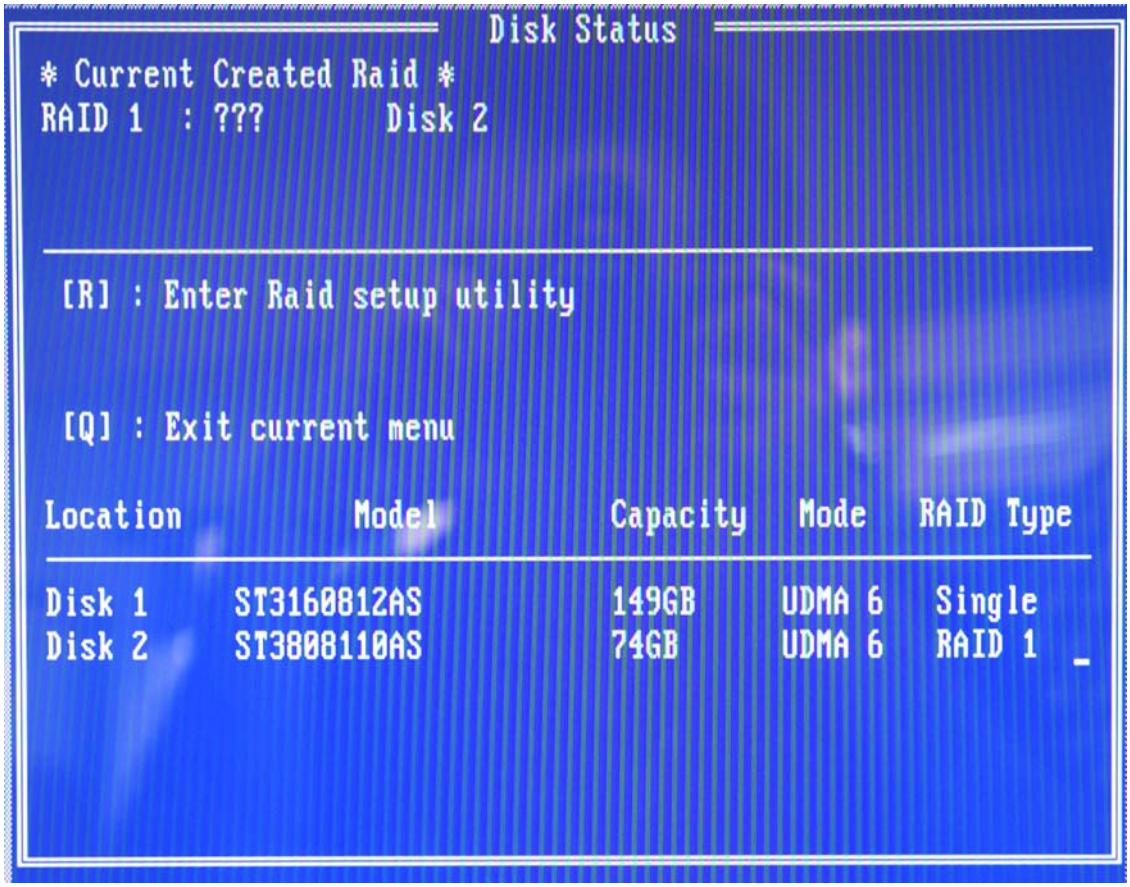


Figure E-4: BIOS RAID Utility

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

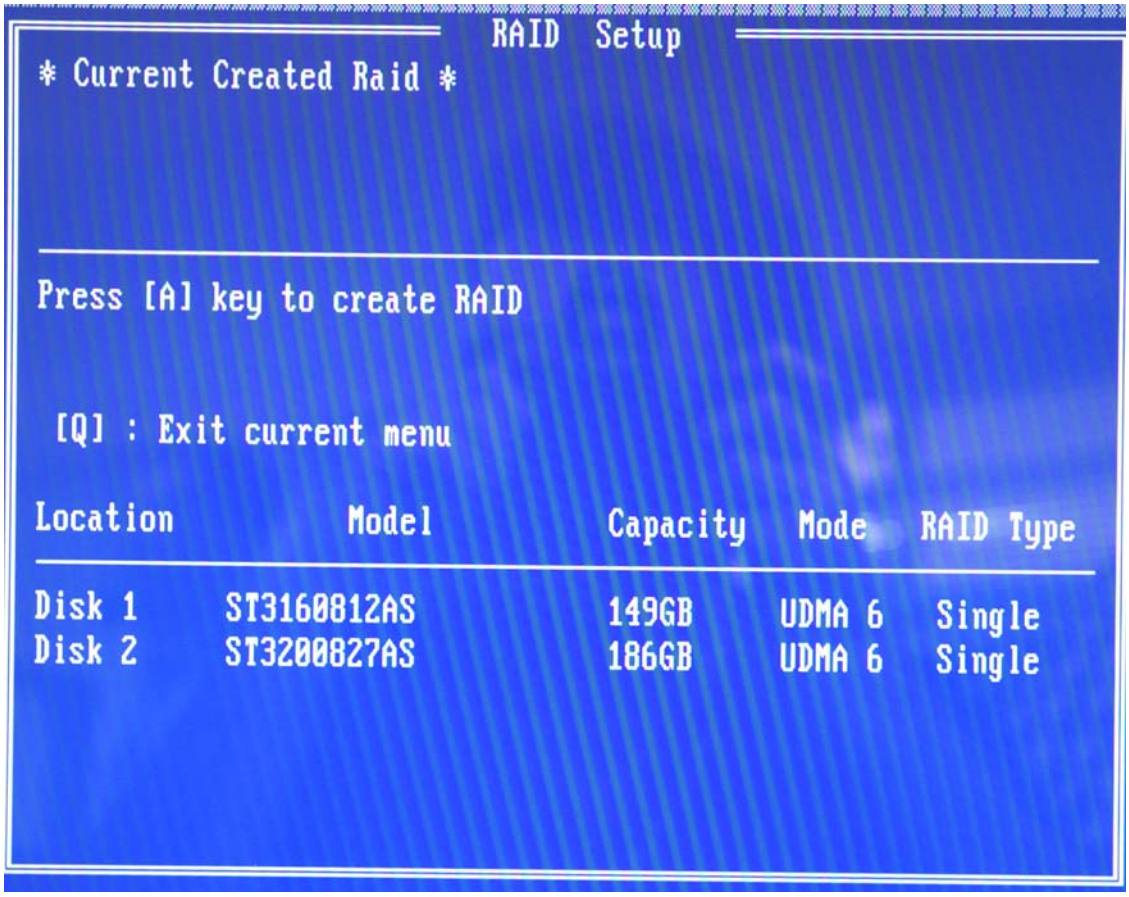


Figure E-5: Create RAID

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

Step 5: You will then be prompted to select the RAID configuration type you wish to install. JBOD, RAID0 or RAID1. Select the RAID configuration you want to use (see **Figure E-6**).

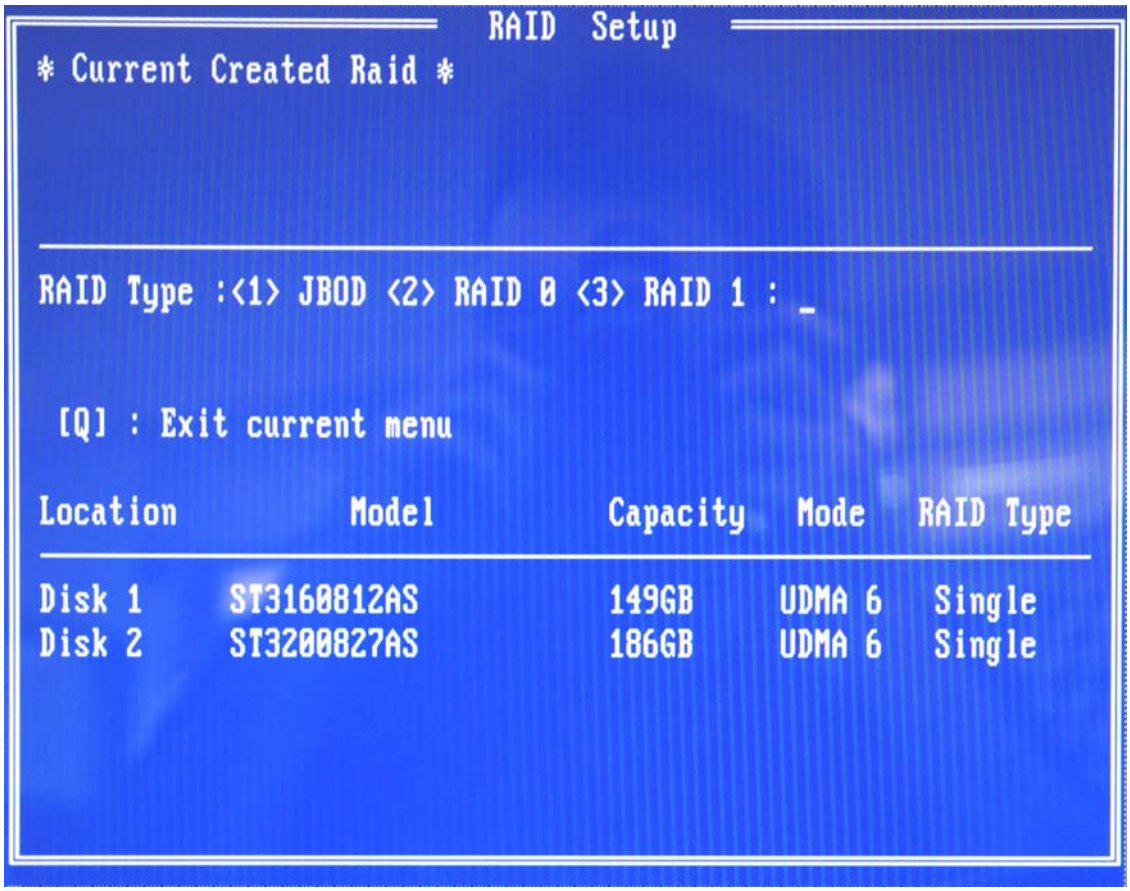


Figure E-6: Create RAID

Step 6: You will then be prompted to "**Auto Create**" or "**Manual Create**" (see **Figure E-7**).

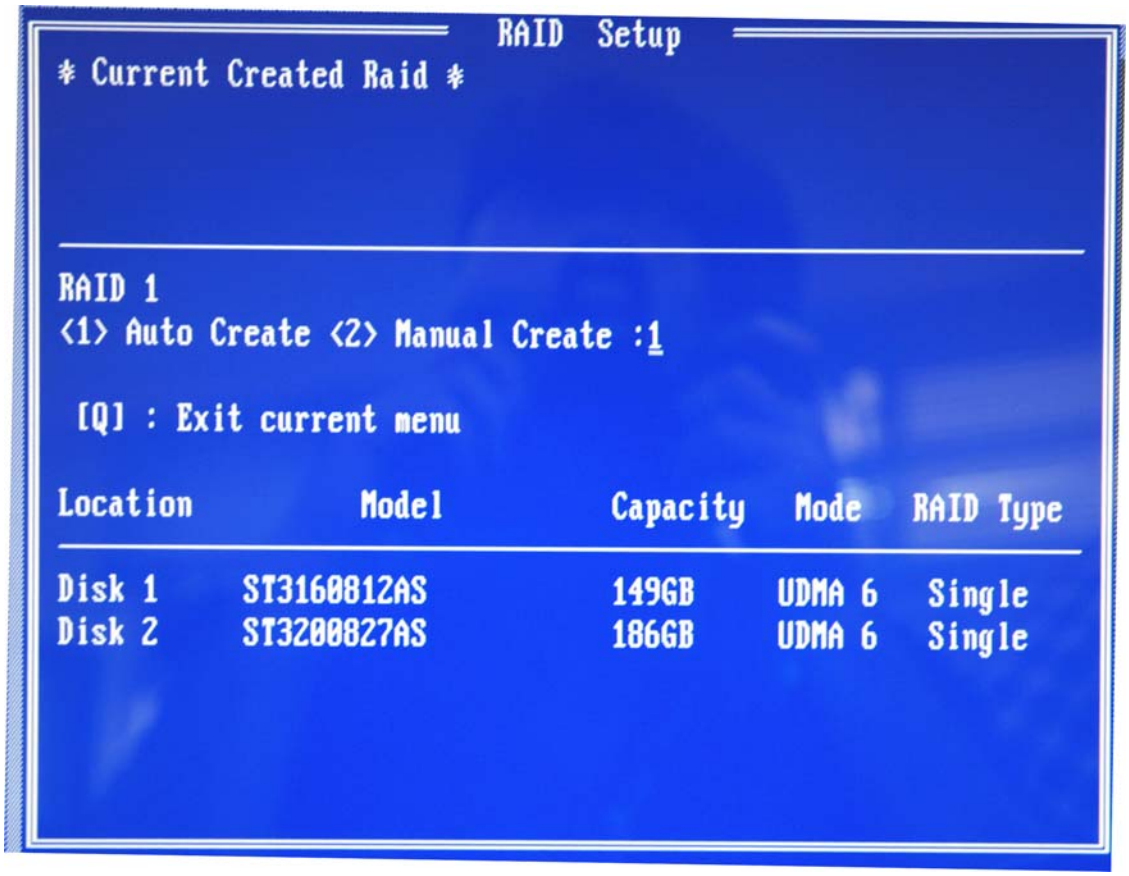


Figure E-7: Select "Auto"

Step 7: You will then be prompted to **Auto Create** or **Manual Create**. Select **Auto Create** (see **Figure E-8**).

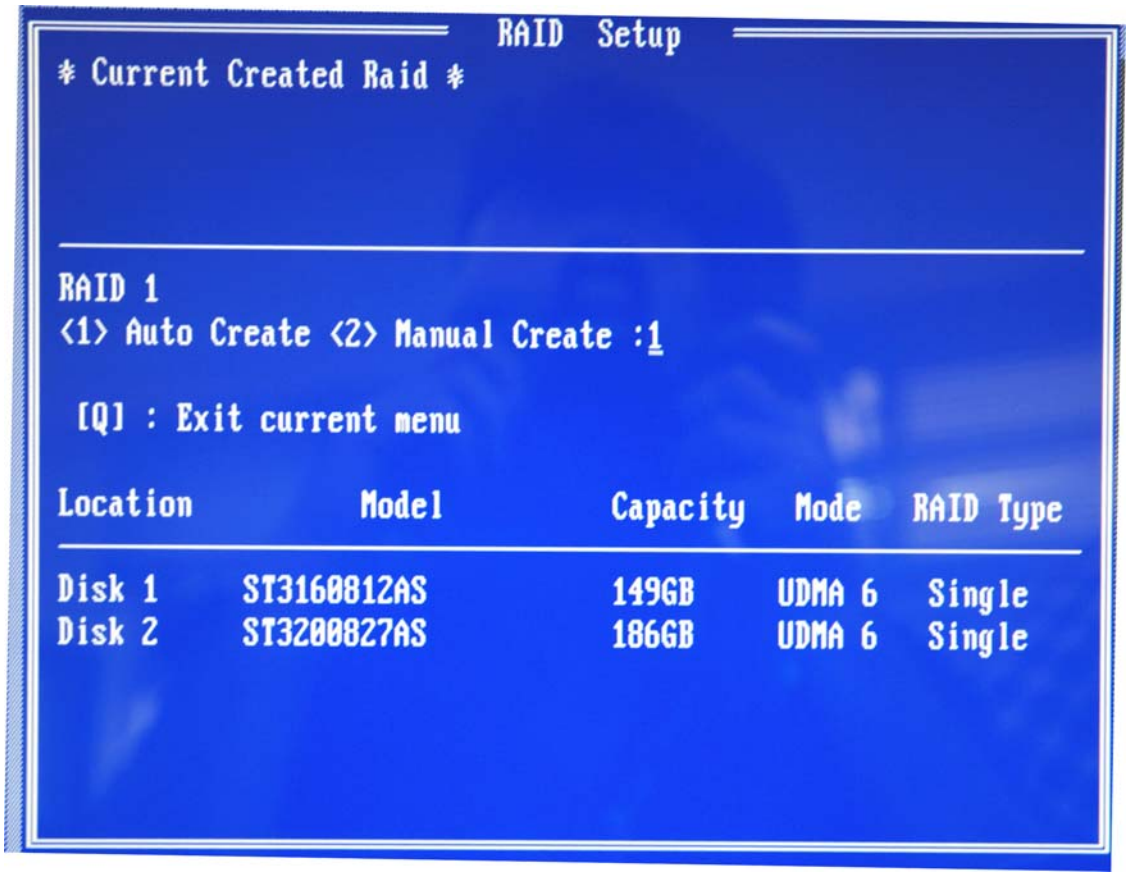


Figure E-8: Select "Auto"

Step 8: You will then be asked to **Auto create** or **manual create**. Select **Auto create**.

Step 9: After the RAID configuration is complete, save your change and exit the RAID configuration utility.

E.2.6 Install the OS

Now you will 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 your IDE device.

Step 2: Restart the system.

Step 3: You will be prompted to press "**F6**" to install the RAID controller device. You will then be prompted to press "**F2**" to continue the installation.

Step 4: You will receive a message informing you that the OS is unable to determine the

mass storage device installed on your system. At this point, insert the FDD with the copied RAID driver files into the FDD drive. The OS will access the SATA drives through this disk.

Step 5: Next, select the driver for the OS you are busy installing into the system. Once selected, press Enter.

Step 6: The OS will start to be installed into the system with the RAID drivers and the SATA drives will be configured as RAID drives as stipulated in the above selection.

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

Index