iEi

IEI Technology Corp.

ROCKY-4786EVG

PICMG Pentium 4 Socket 478 800MHz FSB CPU Card

with VGA, Single GbE, SATA and USB 2.0

User Manual

Rev. 1.0 May, 2006

RoHS Lead Free

REVISION HISTORY

Title	ROCKY-4786EVG Intel Pentium 4 M/Pentium M Socket 478 CPU board	
Revision Number	Description	Date of Issue
1.0	Initial release	May 2006

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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

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Chapter

1

Introduction

1.1 ROCKY-4786EVG CPU Board Overview

The PICMG 1.0 form factor ROCKY-4786EVG Pentium 4 CPU platform is fully equipped with a high performance processor and advanced multi-mode I/Os. The ROCKY-4786EVG is designed for system manufacturers, integrators, and VARs that want performance, reliability, and quality at a reasonable price.

1.1.1 ROCKY-4786EVG CPU Board Applications

The ROCKY-4786EVG CPU board has been designed for use in industrial applications where board expansion is critical and operational reliability is essential.

1.1.2 ROCKY-4786EVG CPU Board Benefits

Some of the ROCKY-4786EVG 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-4786EVG CPU Board Features

Some of the ROCKY-4786EVG CPU board features are listed below:

- Complies with PICMG 1.0
- Complies with RoHS
- Supports socket 478 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-4786EVG CPU Board Overview
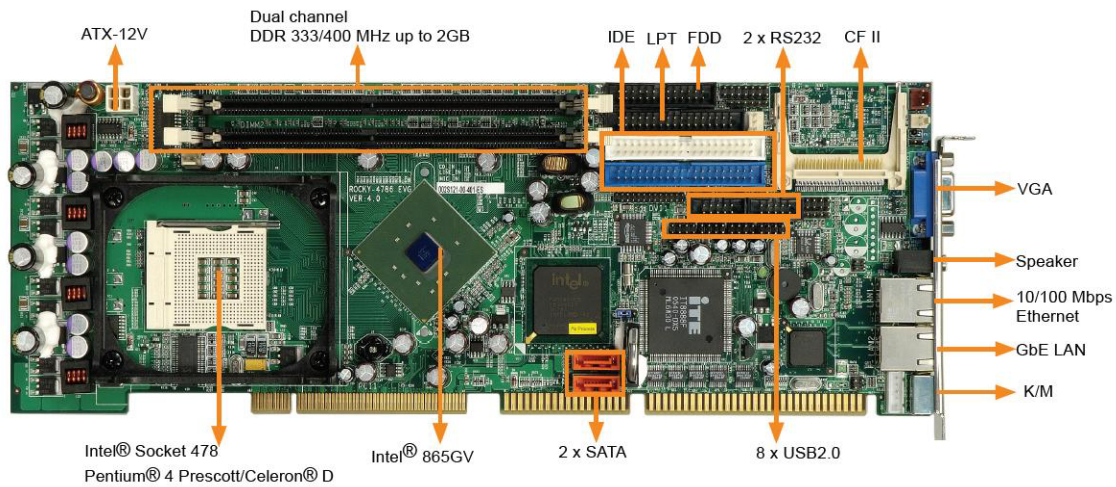
Figure 1-1 ROCKY-4786EVG CPU Board Overview

1.2.1 ROCKY-4786EVG CPU Board Connectors

The ROCKY-4786EVG 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
- 8 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/Mouse connector

The ROCKY-4786EVG 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 Error! Reference source not found.. These connectors are fully described in **Chapter 2**.

![NOTE icon] **NOTE:**

There are no configuration jumpers or connectors on the soldering side.

1.2.2 Technical Specifications:

ROCKY-4786EVG CPU board technical specifications are listed in **Table-1-1**. Detailed descriptions of each specification can be found in **Chapter 2**.

SPECIFICATION	
CPUs Supported	Intel® Pentium® 4 Intel® Celeron® D
Chipsets	Northbridge: Intel® 865GV Southbridge: Intel® ICH5
I/O Controller	ICH5
Graphics Support	Intel® Extreme Graphic II integrated graphic engine
Memory	Two DDR memory modules (Max. 2GB)
PCI Bus Interface	33MHz, Revision 2.3
Serial ATA (SATA)	Two SATA channels with 1.5GB/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) or 10/100BaseT**
BIOS	**AMI flash BIOS**
Physical Dimensions	**38.0cm x 12.5cm (width x length)**
Operating Temperature	**Minimum: 0ºC (32°F)** **Maximum: 60°C (140°F)**
Audio Interfaces	**One Audio Codec '97 (AC'97) version 2.2 connector**

Table-1-1: Technical Specifications

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Chapter

2

Detailed Specifications

2.1 Compatible IEI Backplanes

The ROCKY-4786EVG 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-4786EVG CPU board.

Mfg.	Model	Max. Speed	L2 Cache	Max. FSB	Socket
Intel®	Pentium® 4 (P4) Prescott	3.4GHz	2MB	800MHz	478
Intel®	Celeron D	3.33GHz	256KB	533MHz	478

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 socket 478 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**:　Intel® 865GV
- **Southbridge**:　Intel® ICH5

The following two sections (**Section 2.3.2** and **Section 2.3.3**) list some of the features of the 865GV and the ICH5 chipsets. For more information on these two chipsets please refer to the Intel website.

2.3.2 Intel® 865GV Northbridge Chipset

The Intel® 865GV northbridge chipset comes with the following features:

- 800/533/400 MHz system bus
- Supports Hyper-Threading Technology
- Intel® Extreme Graphics 2 technology
- Intel® Accelerated Hub Architecture
- Dual-Channel DDR 400/333/266 SDRAM
- Integrated High-speed USB* 2.0
- Dual independent Serial ATA* controllers
- Ultra ATA 100/66/33
- AC '97 controller
- Intel® Communication Streaming Architecture
- Low-power sleep mode

2.3.3 ICH5 Southbridge Chipset

The ICH5 southbridge chipset comes with the following features:

- PCI Bus Interface
- Integrated LAN Controller
- Integrated Serial ATA Host Controllers
- Integrated IDE Controller
- USB 2.0

- AC-Link for Audio and Telephony Codecs
- Interrupt Controller
- High-Precision Event Timers
- 1.5 V operation with 3.3 V I/O
- Timers Based on 82C54
- Integrated 1.5 V Voltage Regulator (INTVR) for the Suspend wells
- Power Management Logic
- External Glue Integration
- Flash BIOS I/F supports BIOS Memory size up to 8 Mbytes
- Low Pin Count (LPC) I/F
- Enhanced DMA Controller
- Real-Time Clock
- System TCO Reduction Circuits
- SMBus
- GPIO

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.
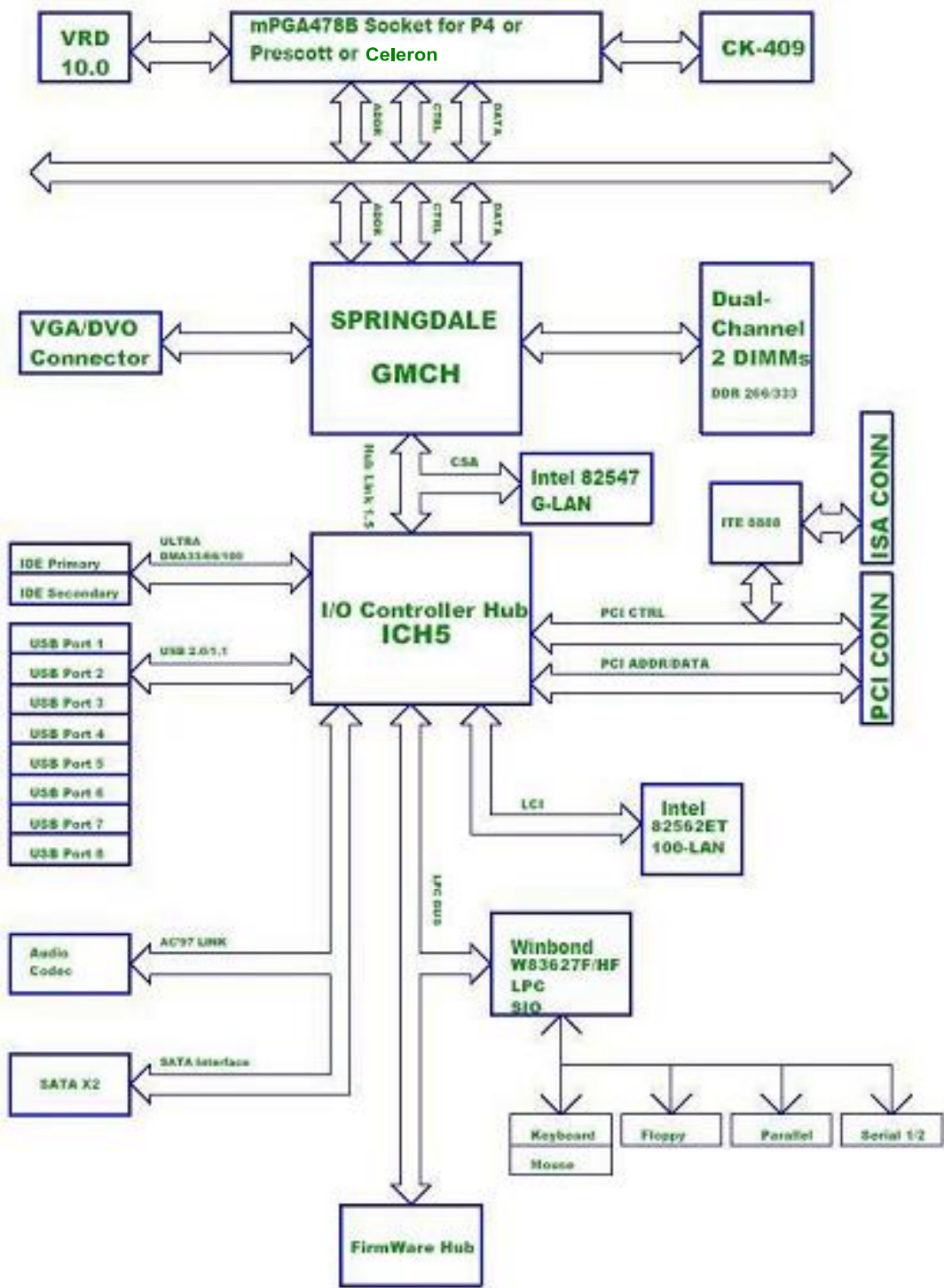
Figure-2-1: Data Flow Block Diagram

2.5 Graphics Support

The graphics features listed below are all integrated on the 865GV northbridge chipset.

- Enhanced Rapid Pixel and Texel Rendering
- Zone Rendering 2 Technology
- Dynamic Video Memory Technology v2.0
- Enhanced Intelligent Memory Management
- Enhanced 2D
  - 256-bit internal path
  - 8/16/32bpp
  - DirectDraw*, GDI, GDI+
  - Anti-aliased text support
  - Alpha blending
  - Alphas stretch blitter
  - Hardware alpha blended RGB cursor
  - Color space conversion
  - 5x2 overlay support
  - Rotate, scale and translate operations
- Enhanced 2D
  - 256-bit internal path
  - 32bpp/ 24ZorW/ 8 Stencil
  - DX7*/DX8*/OGL*1.1
  - DXTn texture compression
  - Up to 4 textures / pixel on a single pass
  - Cubic reflection map
  - Embossed/DOT3 bump mapping
  - Multi-texture
  - DOT3 bump-mapping
  - Point sprites
- Video and Display
  - DirectShow/DirectVA
  - Hardware motion compensation support for DVD playback
  - 4x2 overlay filter
  - 350 MHz DAC frequency
  - Maximum DVO pixel rate of up to 330MP/s

o   Flat panel monitors and TV-out support via AGP Digital Display (ADD) cards

o   350 MHz DAC for 1800x1440 @ 85Hz max CRT resolution or 2048x1536@60Hz max FP resolution

o   Synchronous display for dual monitor capabilities

o   350MHz RAMDAC for up to QXGA analog monitor support

o   Dual DVO ports for up to QXGA digital display support

o   Multiple display types (LVDS, DVI, TV-out, CRT)

2.6   Memory Support

The ROCKY-4786EVG CPU has two 184-pin dual inline memory module (DIMM) sockets and supports up to two un-buffered DDR DIMMs with the following specifications:

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

2.7   PCI Bus Interface Support

The PCI bus on the ROCKY-4786EVG 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 onboard Intel® 82547 GbE controller has the following features:

- CSA Port
  o   PCI-X revision 1.0a, up to 133 MHz
  o   Uses dedicated port for client LAN controller directly on MCH device
  o   High-speed interface with twice the peak bandwidth of 32-bit, 33 MHz PCI bus

- o PCI power management registers by MCH
- MAC Specific
  - o Optimized transmit and receive queues
  - o IEEE 802.3x-compliant flow-control support with software-controllable thresholds
  - o Caches up to 64 packet descriptors in a single burst
  - o Programmable host memory receive buffers (256 B to 16 KB) and cache line size (16 B to 256 B)
  - o Wide, optimized internal data path architecture
  - o 40 KB configurable Transmit and Receive FIFO buffers
  - o Descriptor ring management hardware for transmit and receive
  - o Optimized descriptor fetching and writeback mechanisms
  - o Mechanism available for reducing interrupts generated by transmit and receive operations
  - o Support for transmission and reception of packets up to 16 KB
- PHY Specific
  - o Integrated for 10/100/1000 Mb/s full- and half-duplex operation
  - o IEEE 802.3ab Auto-Negotiation and PHY compliance and compatibility
  - o State-of-the-art DSP architecture implements digital adaptive equalization, echo and crosstalk cancellation
  - o PHY cable correction and diagnostics
  - o Automatic detection of cable lengths and MDI vs. MDI-X cable at all speeds
- Host Off-Loading
  - o Transmit and receive IP, TCP, and UDP checksum off-loading capabilities
  - o Transmit TCP segmentation and advanced packed filtering
  - o IEEE 802.1Q VLAN tag insertion and stripping and packet filtering for up to 4096 VLAN tags
  - o Jumbo frame support up to 16 KB
  - o Intelligent Interrupt generation (multiple packets per interrupt)
- Manageability
  - o On-chip SMBus 2.0 port
  - o ASF 1.0 and 2.0
  - o Compliance with PCI Power Management v1.1/ACPI v2.0

- o   Wake on LAN (WoL) support
- ■   Additional Device
    - o   Four programmable LED outputs
    - o   On-chip power regulator control circuitry
    - o   BIOS LAN Disable pin
    - o   JTAG (IEEE 1149.1) Test Access Port built in silicon
- ■   Lead-free 196-pin Ball Grid Array (BGA)

2.9   Drive Interfaces

The ROCKY-4786EVG can support the following drive interfaces.

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

2.9.1 SATA Drives

The ROCKY-4786EVG CPU Board supports two first generation SATA drives with transfer rates up to 1.5 GB/s.

2.9.2 IDE HDD Interfaces

The ROCKY-4786EVG southbridge chipset IDE controller supports up to two HDDs with the following specifications:

- ■   Supports PIO IDE transfers up to 16MB/s
- ■   Supports an Ultra ATA/100/66/33 DMA protocol with data transfer rates up to 100MB/s

2.9.3 Floppy Disk Drive (FDD)

The ROCKY-4786EVG 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-4786EVG 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-4786EVG 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-4786EVG 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**. The normal RS-232 COM 2 will then be disabled.

2.14 USB Interfaces

The ROCKY-4786EVG CPU board has eight internal USB interfaces. The USB interfaces support USB 2.0.

2.15 BIOS

The ROCKY-4786EVG CPU Board uses a licensed copy of Award BIOS. Flash BIOS features 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-4786EVG 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-4786EVG has an integrated REALTEK ALC202A CODEC. The ALC202A CODEC is a 16-bit, full-duplex AC'97 Rev. 2.2 compatible stereo 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.

- Single-chip audio CODEC with high S/N ratio (>90 dB)
- Compliant with AC'97 2.2 & WHQL specifications
- Support of S/PDIF out is compliant with AC'97 rev2.2 specifications
- Meets performance requirements for audio on PC2001 systems
- Meets Microsoft PC99 & WLP 2.0 audio requirements
- 18-bit Stereo full-duplex CODEC with independent and variable sampling rate
- 18-bit ADC and 20-bit DAC resolution
- Four analog line-level stereo inputs with 5-bit volume control: LINE_IN, CD, VIDEO, AUX
- High quality differential CD input
- Two analog line-level mono input: PC_BEEP, PHONE_IN
- Supports double sampling rate (96KHz) of DVD audio playback

- Two software selectable MIC inputs
- +30dB boost preamplifier for MIC input
- Stereo output with 6-bit volume control
- Mono output with 5-bit volume control
- Headphone output with 50mW/8W driving capability (ALC202)
- Line output with 50mW/8W driving capability (ALC202A)
- Headphone jack-detect function to mute LINE/MONO/HP output, and to control S/PDIF output
- 3D stereo enhancement
- Multiple CODEC extension capability
- External Amplifier Power Down (EAPD) capability
- High performance converter technology
- Power management and enhanced power saving features
- 2 GPIO pins
- No external crystal/clock required
- 14.318MHz/48MHza24.576MHz PLL saves crystal
- DC voltage volume control
- Auxiliary power (VAUX) to support Power Off CD function
- Power support: digital: 3.3V; analog: 3.3V/5V
- Standard 48-pin LQFP package

2.18 Power Consumption

Table 2-2 shows the power consumption parameters for the ROCKY-4786EVG CPU board when a Pentium 4 processor with a clock speed of 3.0GHz, an L2 cache of 2MB and a FSB 800MHz is running with a 2GB DDR400 module.

Voltage	Current
+5V	6.98
+12V	7.52

Table 2-2: Power Consumption

2.19 Packaged Contents and Optional Accessory Items

2.19.1 Package Contents

When you unpack the ROCKY-4786EVG CPU board, you should find the following components.

- 1 x ROCKY-4786EVG CPU card.
- 1 x SATA power cable (P/N: 32100-088600-RS).
- 2 x SATA cables (P/N: 32000-062800-RS).
- 1 x Mini jumper pack (P/C: 33100-000079-RS).
- 1 x RS-232 cable (2 COM ports; P/N: 19800-000051-RS).
- 1 x power cord (P/N: 32100-087100-RS).
- 1 x USB adapter cable (P/N: CB-USB02-RS).
- 1 x IDE HDD cable (P/N: 32200-000052-RS).
- 1 x PS/2 keyboard/mouse Y-cable (P/N: 32000-000138-RS).
- 1 x Driver and Utility CD.
- 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 kit (P/N: AC-KIT08R-R10)
- FDD cable (P/N: 32200-000017-RS)
- LPT cable (P/N: 19800-000049-RS)

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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-4786EVG CPU Board Layout

Figure 3-1 shows the onboard peripheral connectors, backplane peripheral connectors and onboard jumpers.
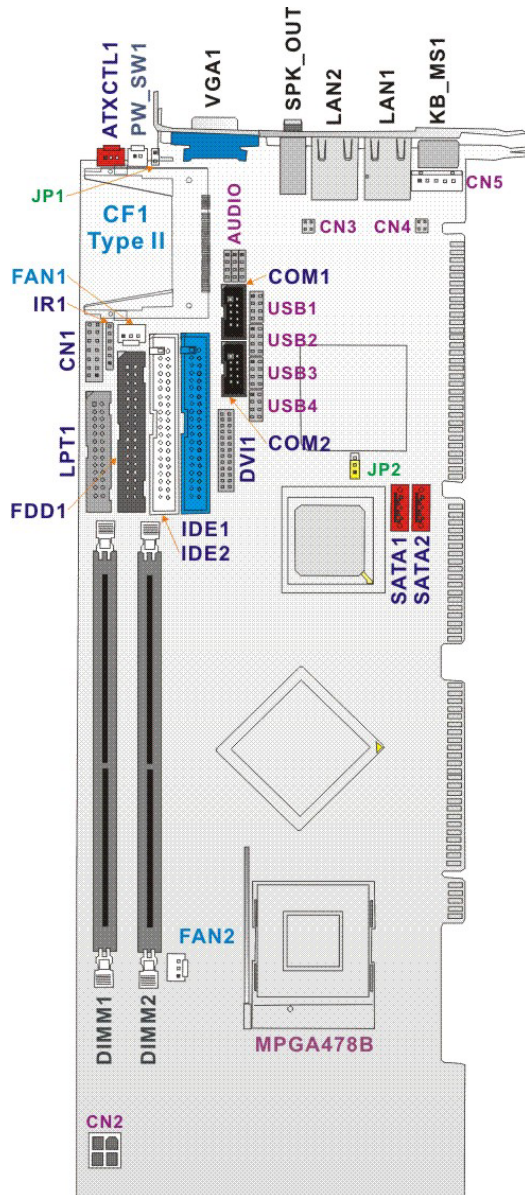
Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the ROCKY-4786EVG CPU board. Detailed descriptions of these connectors can be found in **Section 3.2**.

Label	Connector	Type
IDE1	Primary & Secondary IDE connectors	40-pin header
IDE2	Primary & Secondary IDE connectors	40-pin header
FDD1	Floppy drive	34-pin header
LPT1	Parallel port connector	26-pin header
COM1	Serial port connectors	5-pin header
COM2	Serial port connectors	5-pin header
CF1	Compact Flash Storage Card Type II connector	50-pin header
IR1	IrDA infrared interface port	5-pin header
USB1	USB dual port connector	8-pin header
USB2	USB dual port connector	8-pin header
USB3	USB dual port connector	8-pin header
USB4	USB dual port connector	8-pin header
CN5	External Keyboard Connector	5-pin header
FAN1	System Fan connector	3-pin header
FAN2	CPU Fan connector	3-pin header
SATA1	Serial ATA connectors	SATA disk drive port
SATA2	Serial ATA connectors	SATA disk drive port
CN1	Front Panel Connector	4-pin header
CN2	ATX +12V Power connector	4-pin header
CN3	LAN State LED connectors	4-pin header

CN4	LAN State LED connectors	4-pin header
CD-IN	Audio CD in connector	4-pin header
LINE-IN	Audio LINE in connector	4-pin header
MIC-IN	Audio MIC in connector	4-pin header
PW-SW1	ATX Power Button connector	2-pin header
ATXCTL1	Backplane to Main board ATX power control Connector	3-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-4786EVG CPU card. Detailed descriptions of these connectors can be found in **Section 4.5**.

Label	Connector	Type
KB/MS1	Keyboard or Mouse connector	PS/2
LAN1	Ethernet connector	RJ-45
LAN2	Ethernet connector	RJ-45
SPK_OUT	AUDIO connector	LINE OUT
VGA1	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 0**.

Label	Connector	Type
JP1	Compact Flash Master/Slave Setting	2-pin header

JP2	Clear CMOS Setup	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-4786EVG 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-4786EVG 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	HEAD#
33	GND	34	DISK CHANGE#

Table 3-4: FDD Connector Pinouts
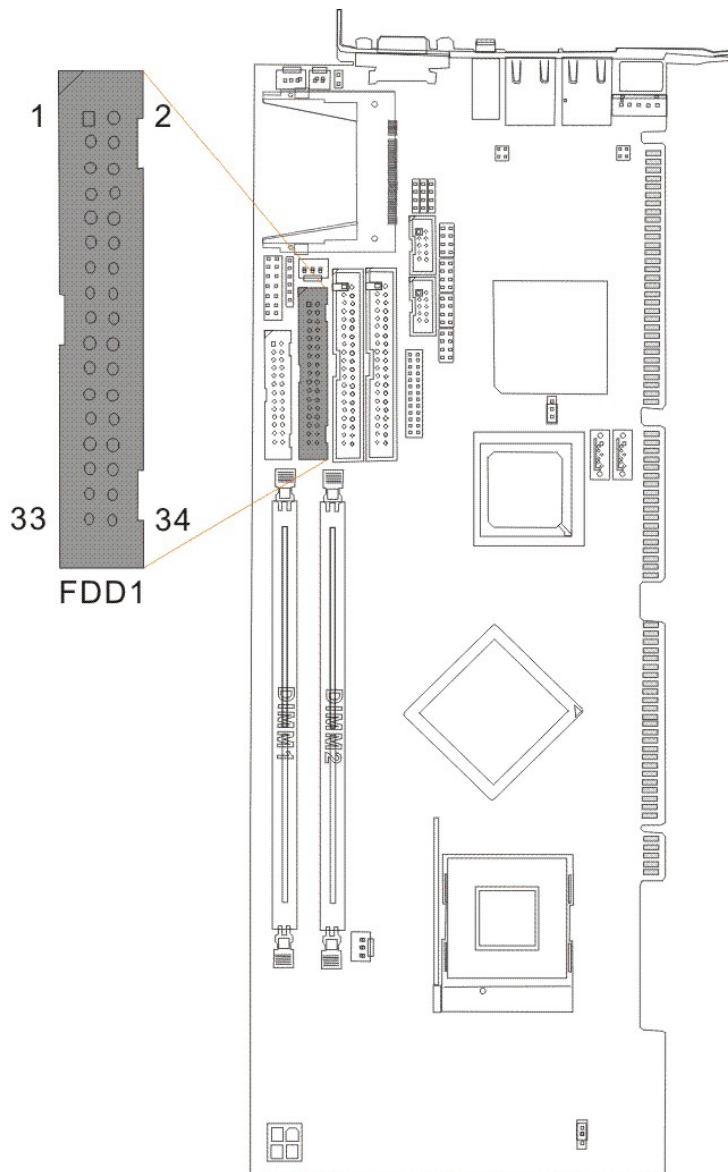
Figure 3-2: FDD Connector Location

3.2.2 IDE Connectors

CN Label:　　　　　**IDE1 (primary) and IDE2 (secondary)**

CN Type:　　　　　**2x20 pin header**

CN Location:　　　**See Figure 3-3**

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

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	(KEY)
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	GND
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA1	34	P66DET
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

Table 3-5: IDE Connector Pinouts
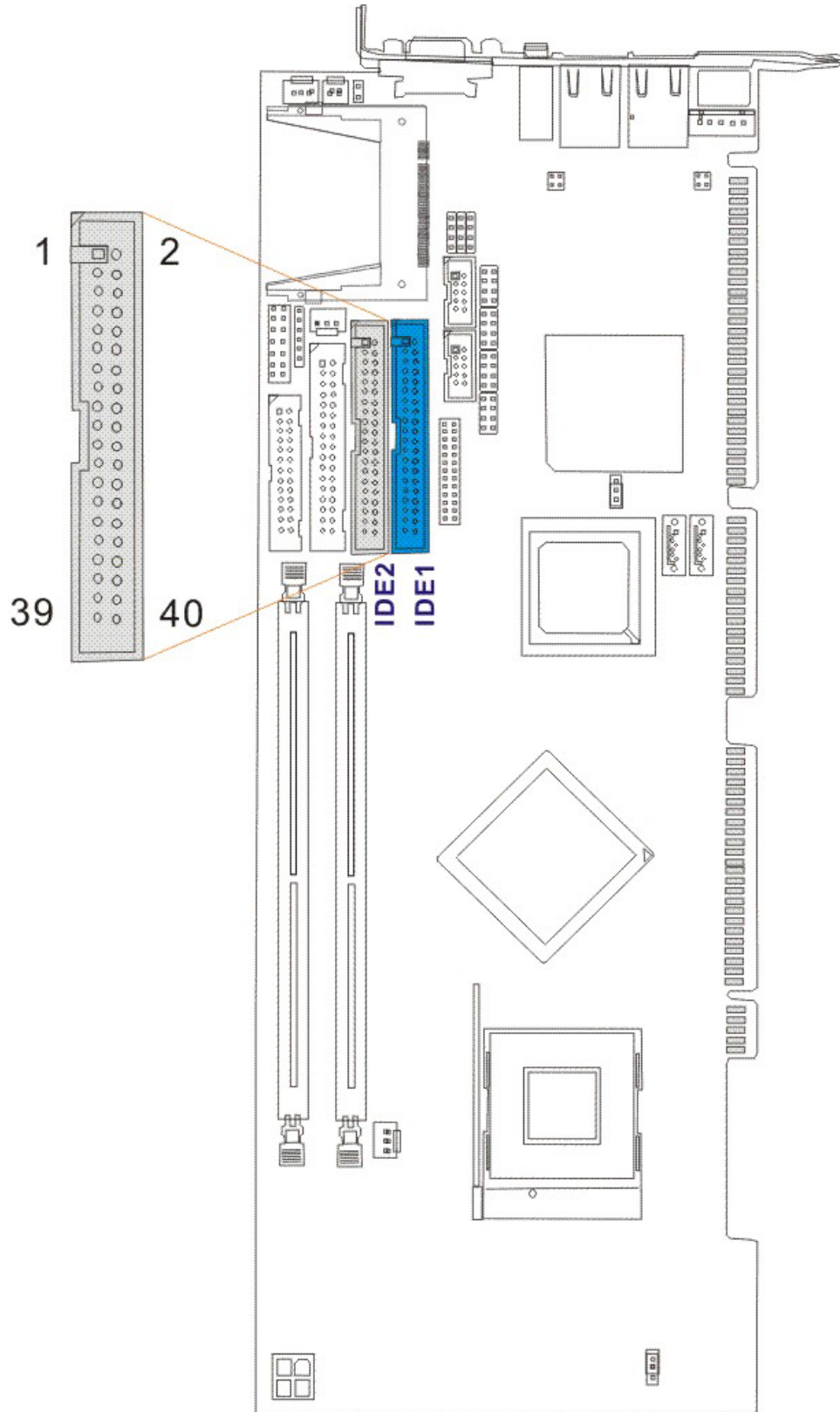
Figure 3-3: IDE Connector Locations

3.2.3 COM Ports

CN Label: **COM1, COM2**

CN Type: **2x5 pin headers**

CN Location: **See**

CN Pinouts: **See Table-3-6**

The ROCKY-4786EVG offers two high speed NS16C550 compatible UART's with 16-byte Read/Receive FIFO serial ports.

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
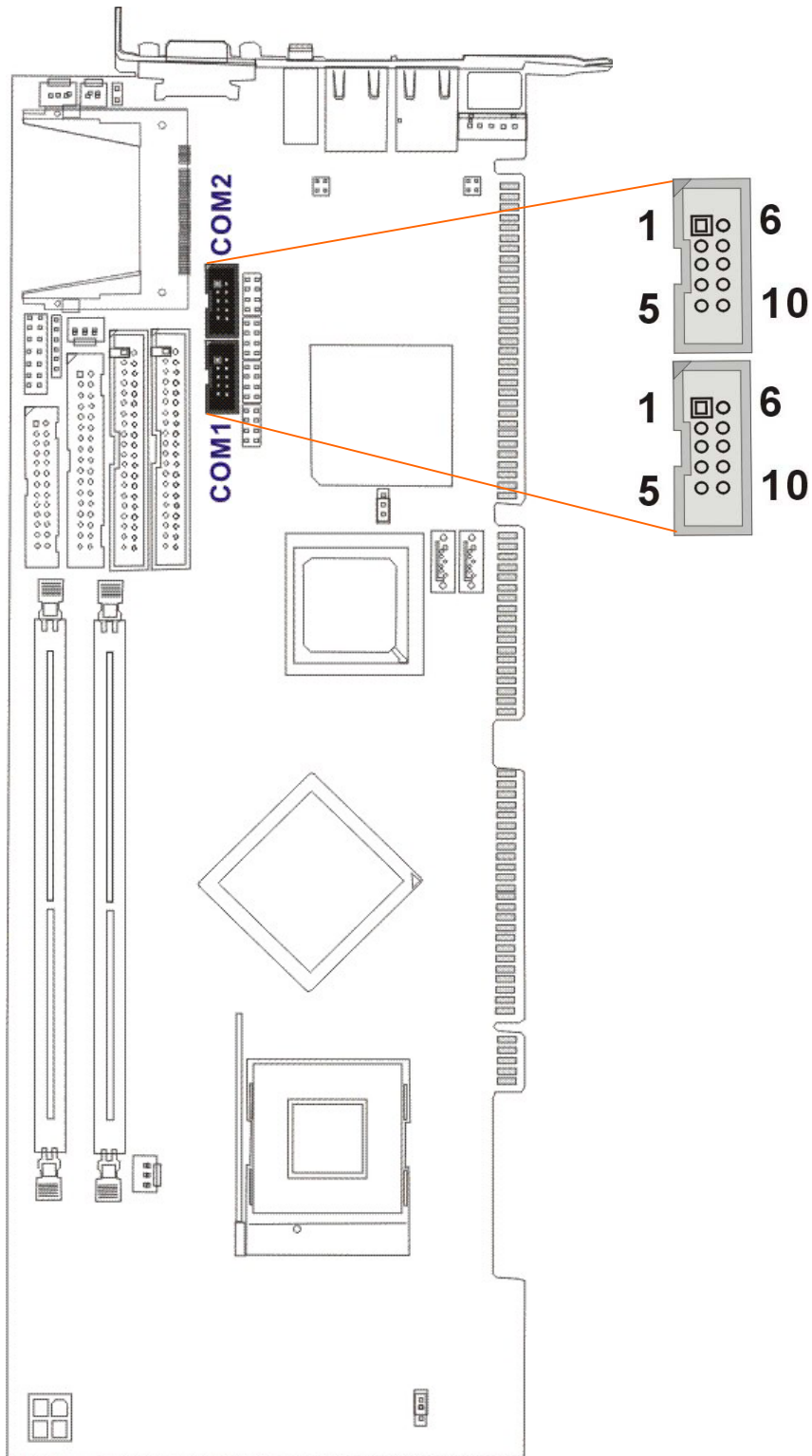
Figure 3-4 COM Port Locations

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
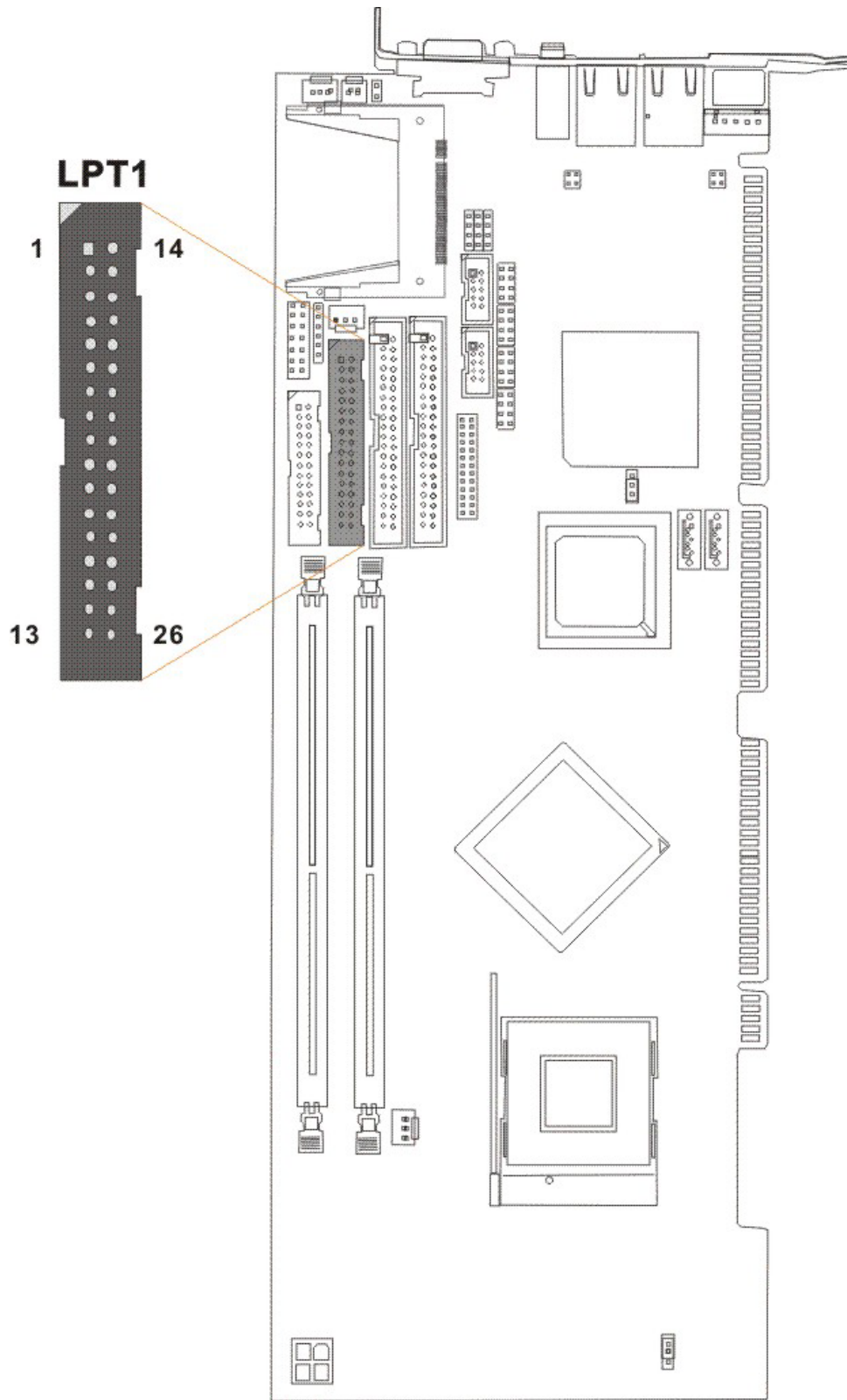
Figure-3-5: LPT Connector Location

3.2.5 Internal USB Connectors

CN Label: **USB1, USB2, USB3, USB4**

CN Type: **2x4 pin header**

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

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

Four 2x4 pin connectors provide connectivity to eight USB 2.0 ports. The USB ports are used for I/O bus expansion.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	2	GND
3	DATA0-	4	DATA1-
5	DATA0+	6	DATA1+
7	GND	8	VCC

Table-3-8: USB Port Connector Pinouts
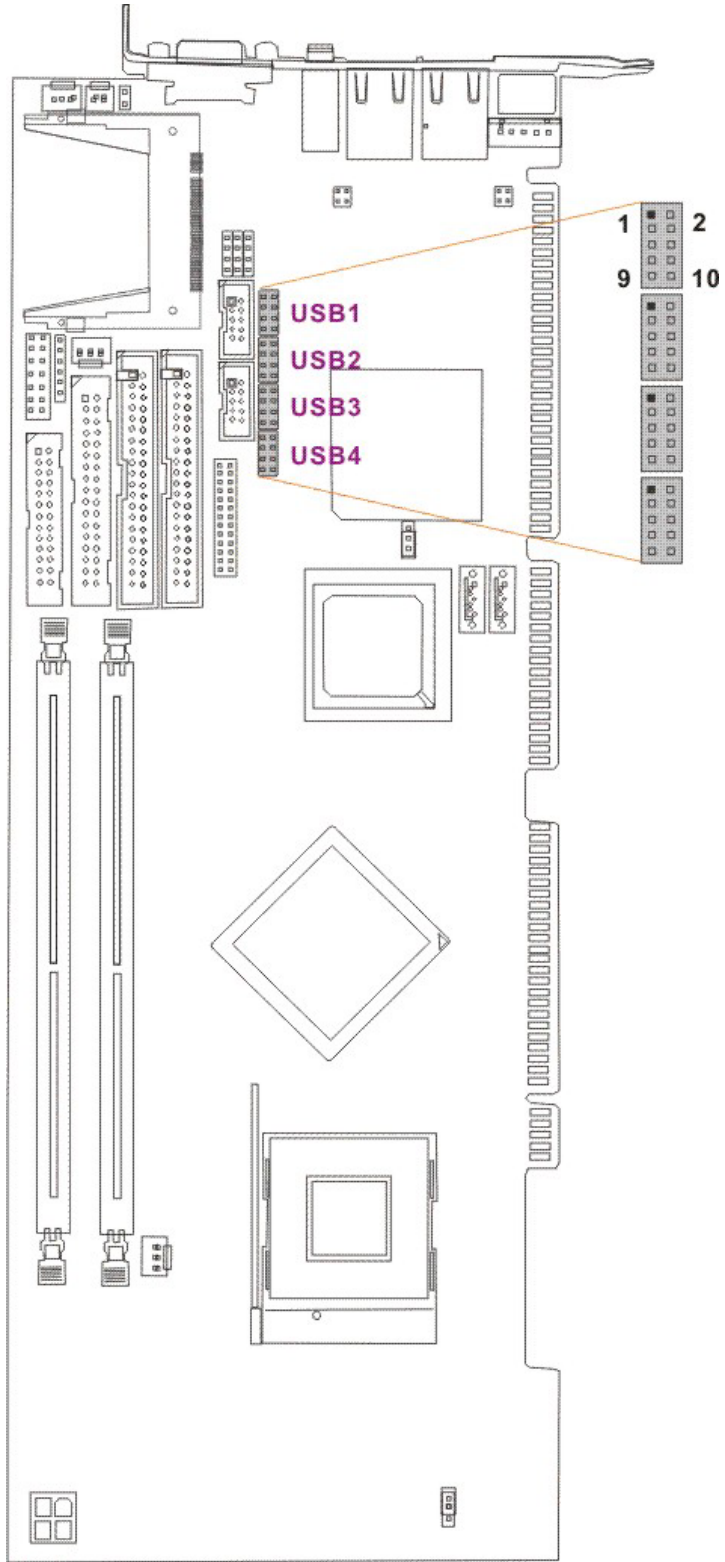
Figure-3-6: USB Port Connector Location

3.2.6 Cooling Fan Connector

CN Label: **FAN1, FAN2**

CN Type: **1x3 pin header**

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

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

The FAN1 and FAN2 cooling fan connectors provide a 12V, 350mA ~ 740mA or 1A ~ 2.2A current to the cooling fans. Each 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	GND
2	+12V
3	Sense Pulse

Table 3-9 Cooling Fan Connector Pinouts
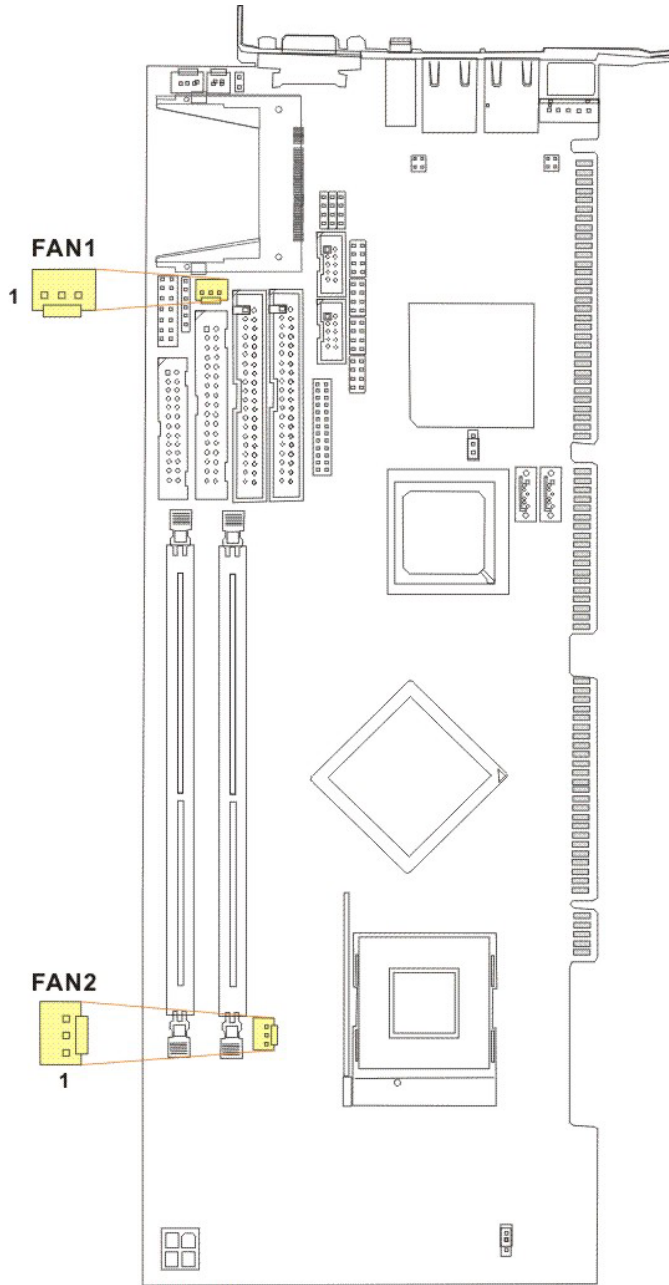
Figure 3-7 Cooling Fan Connector Locations

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	5VSB
2	ATX-ON
3	GND

Table 3-10: CN7 Connector Pin Outs
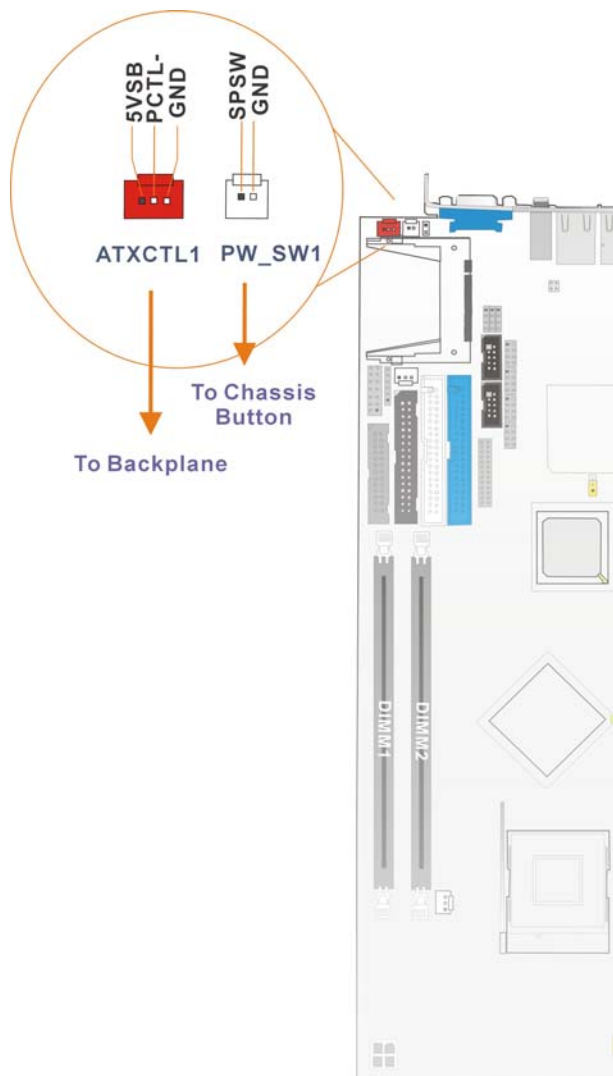
Figure 3-8: ATXCTL Connector Locations

3.2.8 System Front Panel Connector

CN Label: **CN1**

CN Type: **2x7 pin header**

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

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

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	
Power LED	1	+5V	2	Speaker+	Speaker
	3	N/C	4	N/C	
	5	GND	6	N/C	
	7	N/C	8	Speaker-	
	9	N/C	10	Reset PIN1	Reset Button
	11	GND	12	Reset PIN2	
HDD LED	13	HDD LED+	14	HDD LED-	HDD LED

Table 3-11: System Panel Connector Pinouts
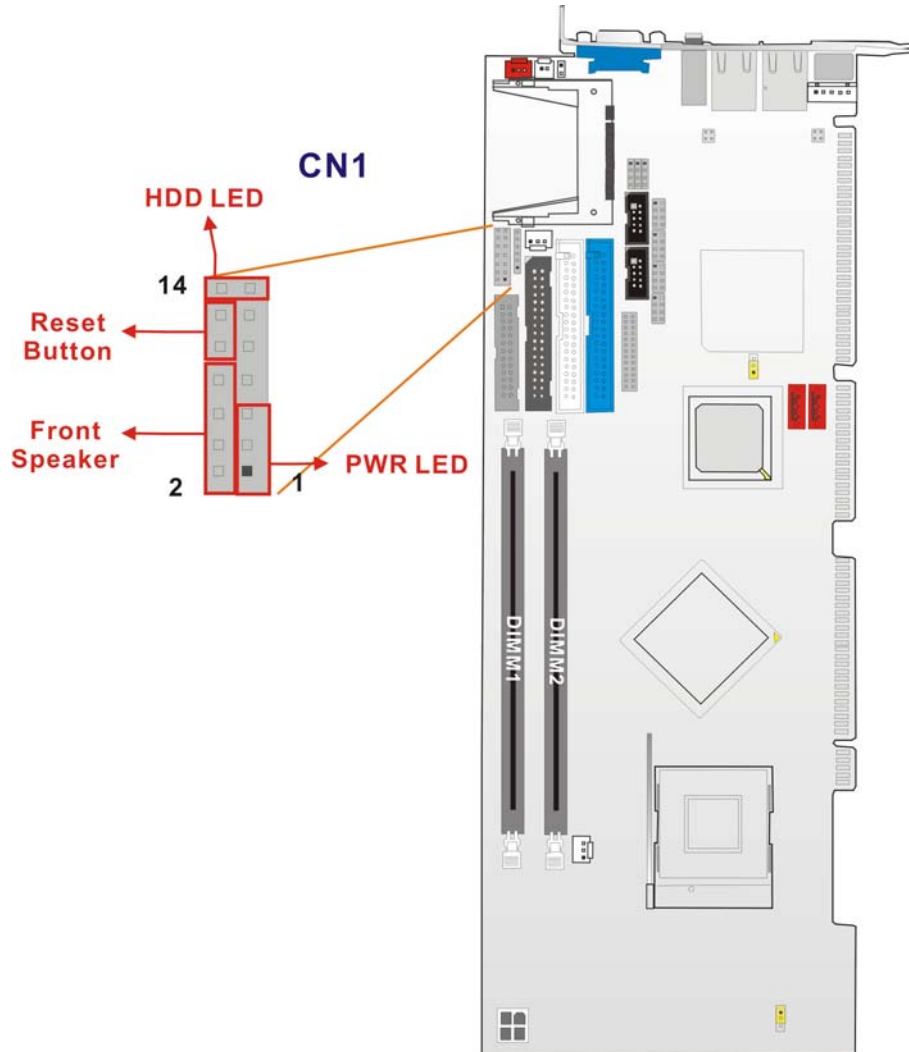
Figure 3-9: System Panel Connector Location

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	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX
6	CIRRX

Table 3-12: IrDA Connector Pinouts
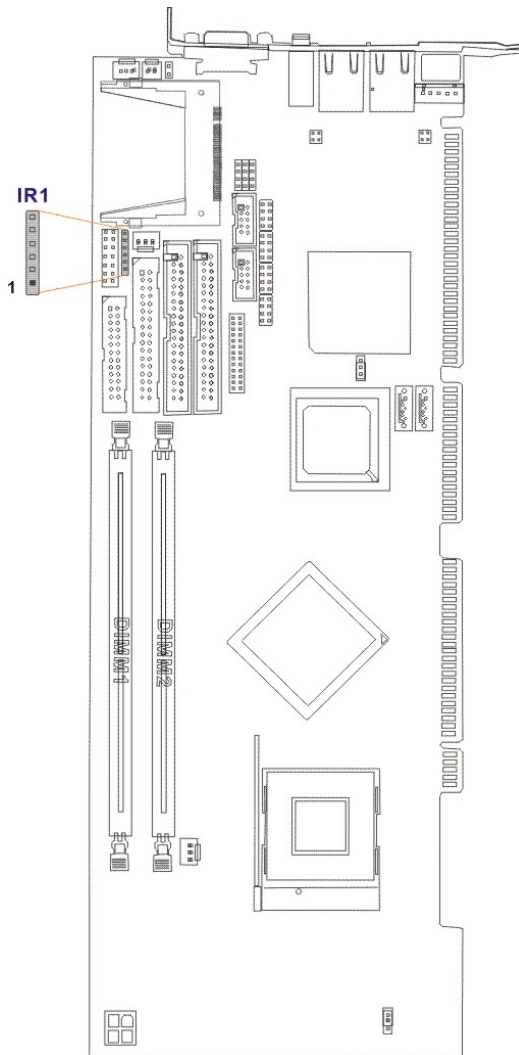
Figure 3-10: IrDA Connector Location

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.
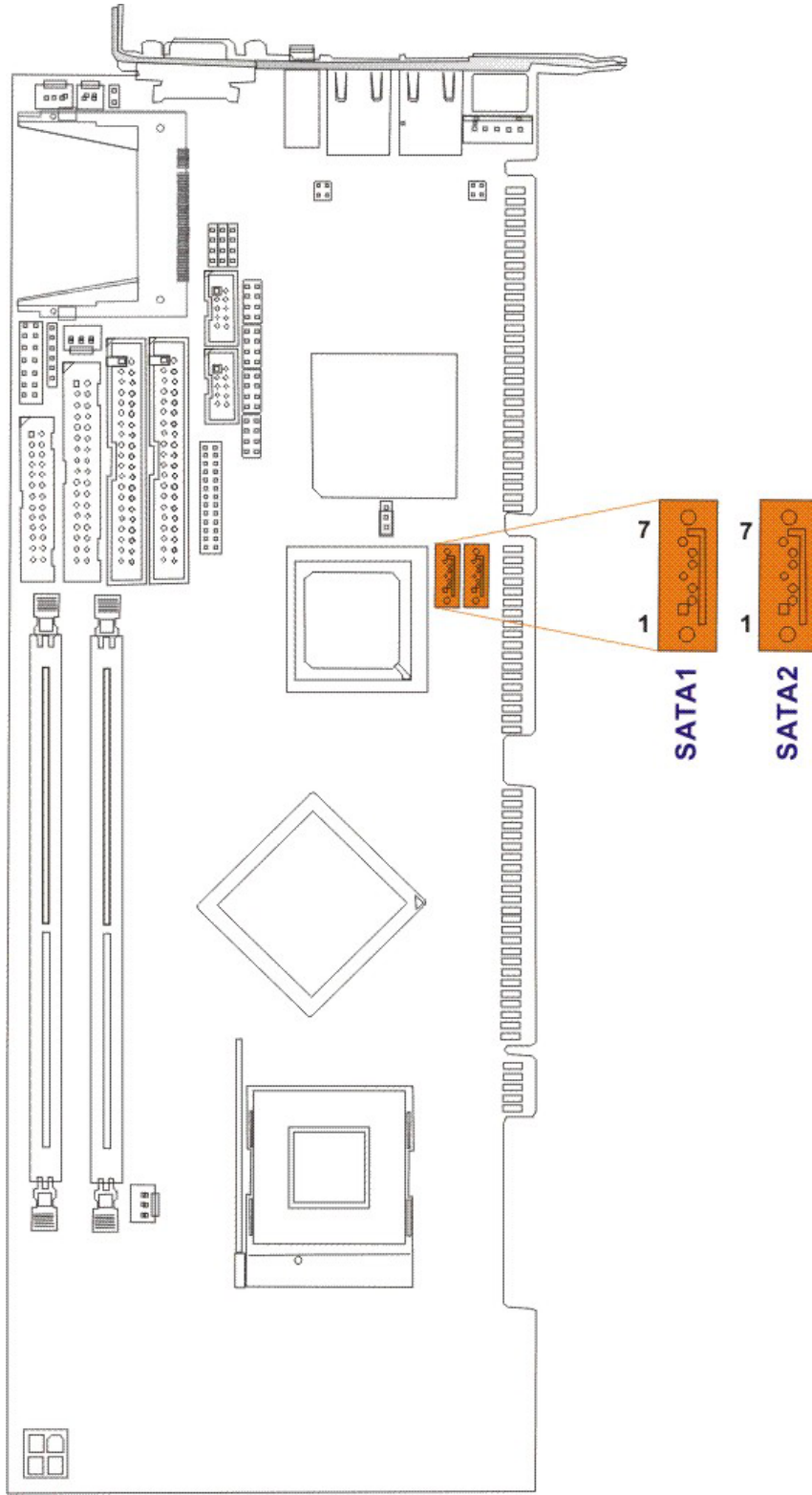
Figure 3-11: SATA Connector Locations

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: **CN5**

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	+5V

Table 3-14: CN5 Connector Pinouts
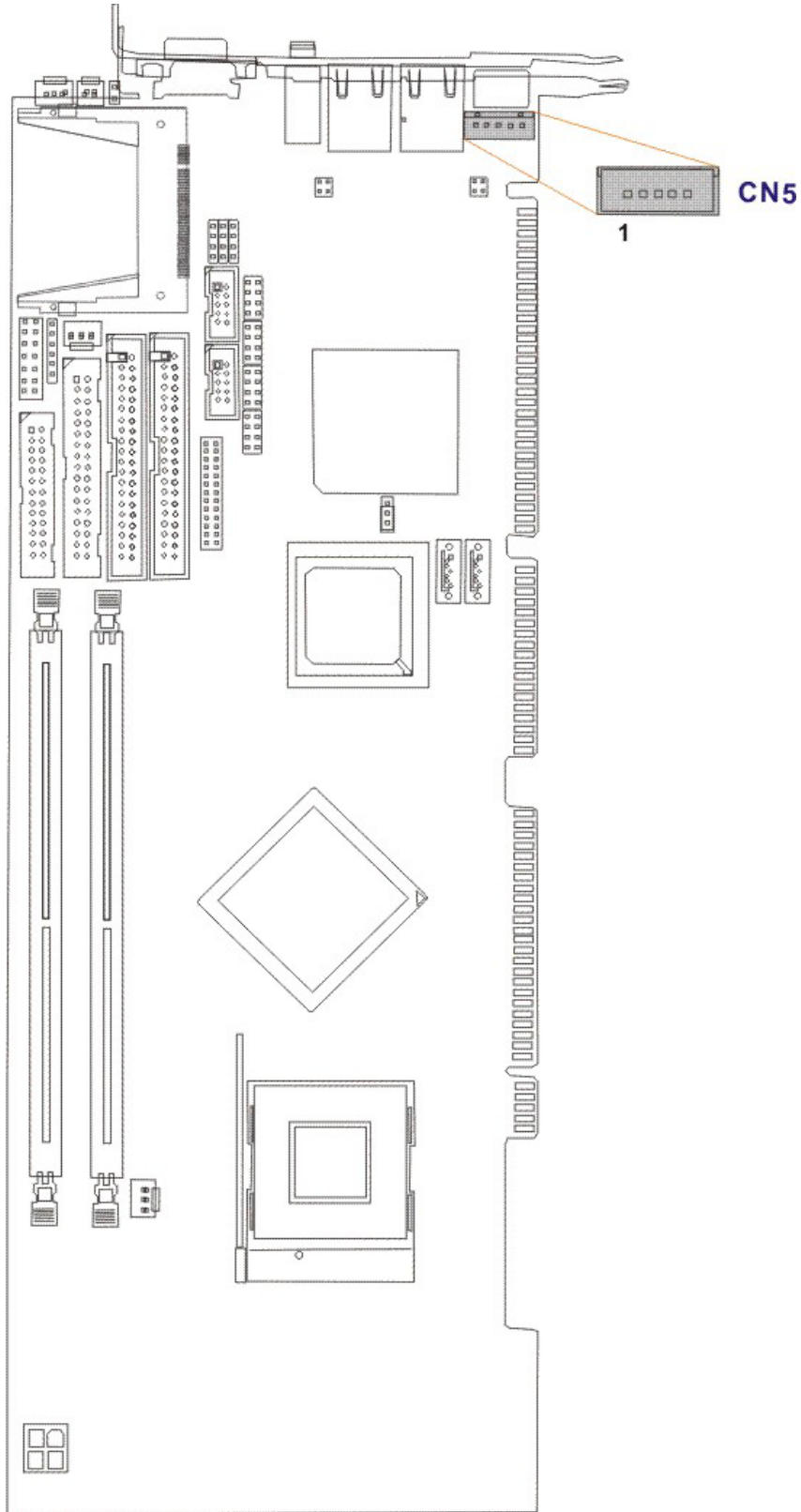
Figure 3-12: CN5 Connector Location

3.2.12 ATX-12V Power Source Connector

CN Label: **CN2**

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	2	GND
3	+12V	4	+12V

Table 3-15: CN2 Connector Pinouts
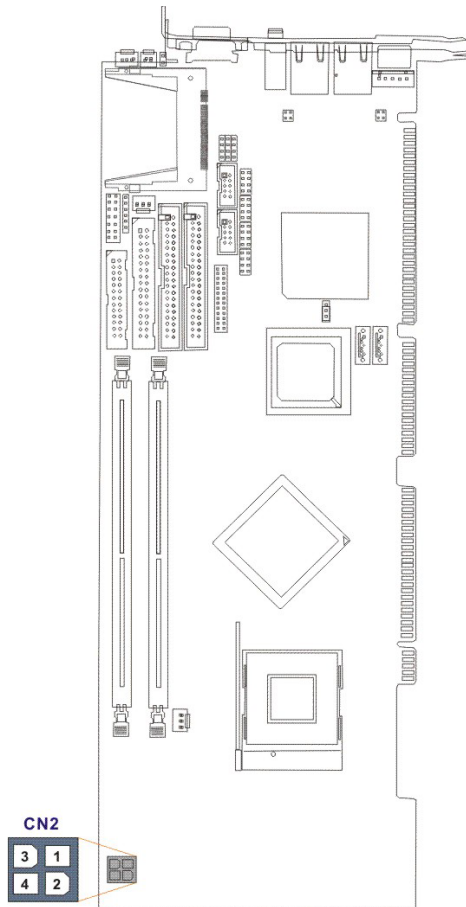
Figure 3-13: ATX Connector Location

3.3 External (Rear Panel) Connectors

Figure 3-14 shows the ROCKY-4786EVG 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 RJ-45 GbE connectors
- 1 x Line-out connector
- 1 x VGA connector
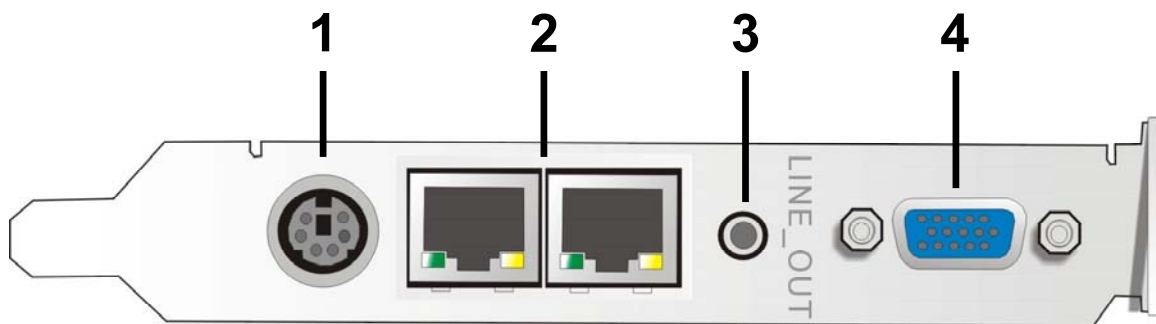
Figure 3-14: ROCKY-4786EVG CPU Board Rear Panel

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
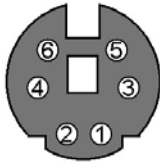
Figure 3-15: PS/2 Pinout locations

3.3.2 Ethernet Connectors

CN Label: **LAN1, LAN2**

CN Type: **RJ-45**

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

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

Two 1Gb connections can be made between the Ethernet connectors 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 3-17: RJ-45 Ethernet Connector Pinouts
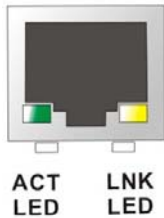
Figure 3-16: RJ-45 Ethernet Connector

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 3-18**.

SPEED LED		ACT/LINK LED	
STATUS	DESCRIPTION	STATUS	DESCRIPTION
OFF	10 Mbps connection	OFF	No link
ORANGE	100 Mbps connection	YELLOW	Linked
GREEN	1 Gbps connection	BLINKING	Date activity

Table 3-18: RJ-45 Ethernet Connector LEDs

3.3.3 LINE OUT Connector

Connect an audio device to the line out connector on the rear panel Figure 3-14 (labeled number 3).

3.3.4 VGA Connector

CN Label: **VGA1**

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

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

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 3-19: VGA Connector Pinouts
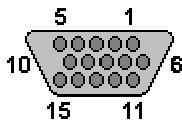
Figure 3-17: VGA Connector

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.
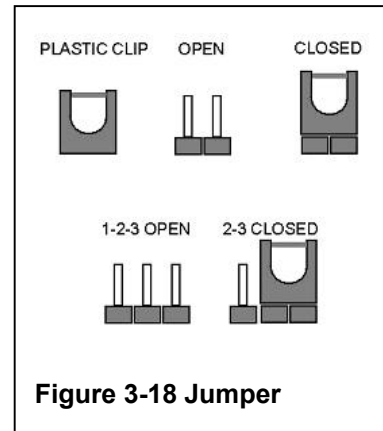
Figure 3-18 Jumper

The ROCKY-4786EVG CPU Board has two onboard jumpers. See **Table 3-3**.
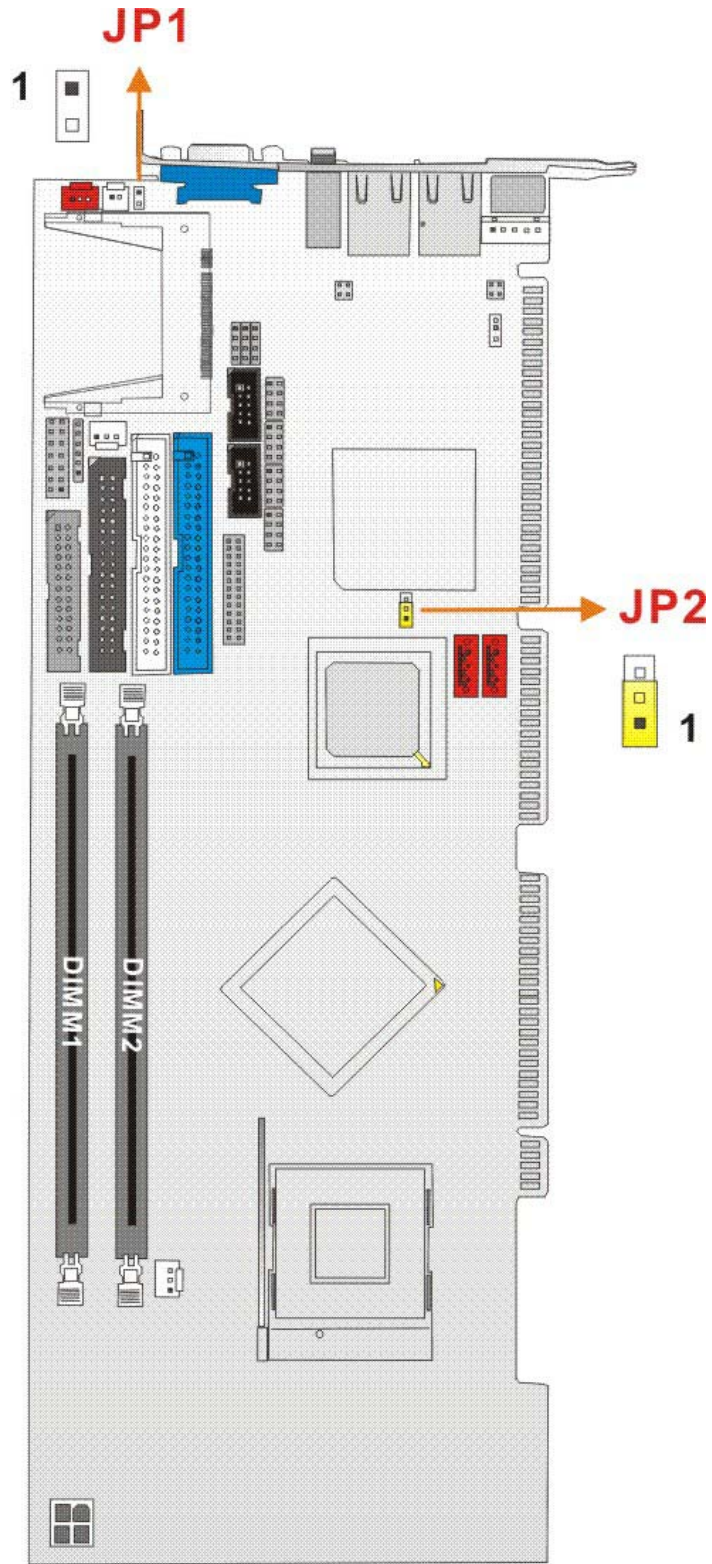
Figure 3-19: Jumper Locations

3.4.1 Reset CMOS Jumper

Jumper Label: JP2

Jumper Type: 3 pin header

Jumper Settings: See Table 3-20

Jumper Location: See Figure 3-19

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.

JP2	CLEAR CMOS
1-2 closed	Normal (default)
2-3 closed	Clear CMOS

Table 3-20: 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-4786EVG CPU Board, please **DO** the following:

- Read the user manual
  - The user manual provides a complete description of the ROCKY-4786EVG 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-4786EVG 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-4786EVG 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-4786EVG 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-4786EVG CPU card, you must unpack the CPU card. Some components on ROCKY-4786EVG are very sensitive to static electricity and can be damaged by a sudden rush of power. To protect it from being damaged, follow these precautions:

- Ground yourself to remove any static charge before touching your ROCKY-4786EVG. You can do so by wearing a grounded wrist strap at all times or by frequently touching any conducting material that is connected to the ground.

- Handle your ROCKY-4786EVG 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-4786EVG, please make sure that your package contains the following items.

- 1 x Rocky-4786-RS-R40 single board computer
- 1 x HDD cable P/N: 32200-000052-RS
- 2 x SATA cable 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 ATX-12V cable P/N: 32100-087100-RS
- 1 x RS-232 cable P/N: 19800-000051-RS
- 1 x USB cable P/N: CB-USB02-RS
- 1 x mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

If one or more of these items are missing, please contact the reseller or vendor you purchased the ROCKY-4786EVG CPU card from and do not proceed any further with the installation.

4.3 ROCKY-4786EVG CPU Card Installation

⚠ WARNING!

1. Never run the CPU board without an appropriate heat sink 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

⚠ WARNING!

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

To install Intel 478-pin CPU onto your motherboard, follow the steps below:

Step 1: **Inspect the CPU socket.** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

Step 2: **Correctly position the CPU.** Make sure the pin 1 mark matches the cut edge on the CPU socket. Carefully place the CPU on top of the socket. When properly placed, the CPU should be easily inserted into the socket.

Step 3: **Insert the CPU.** To insert the CPU into the socket, first lift the lever on the side of the CPU socket (See **Figure 4-1**) and then follow the instructions below:

Step 4: Correctly orientate the CPU with the IHS (Integrated Heat Sink) side facing upward.

Step 5: Locate the pin 1 mark on the CPU.

Step 6: Gently insert the CPU into the socket.

Step 7: Lower the lever into the locked position.
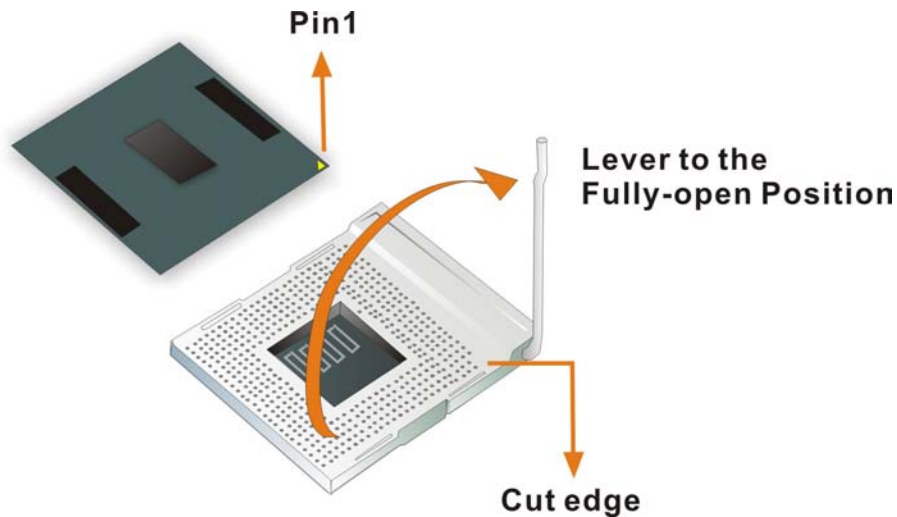
Figure 4-1: Locking the CPU into the CPU Socket

4.3.2 Cooling Kit CF-519 Installation

IEI provides a cooling kit designed for socket 478 CPUs. The cooling kit is comprises a CPU heat sink and a cooling fan.

![NOTE icon] **NOTE:**

> The CF-519 heat sink comes with a sprayed layer of thermal paste. Make sure you do not accidentally wipe away the thermal paste while unpacking or installing the heat sink. Thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the CF-519 cooling kit, please follow the steps below.

Step 1: **Install the cooling kit bracket**. A cooling kit bracket is installed on the rear of

the CPU card. Align the bracket with the four retention holes at the back of the CPU card. Once properly aligned, insert four retention screws from the front of the CPU card.
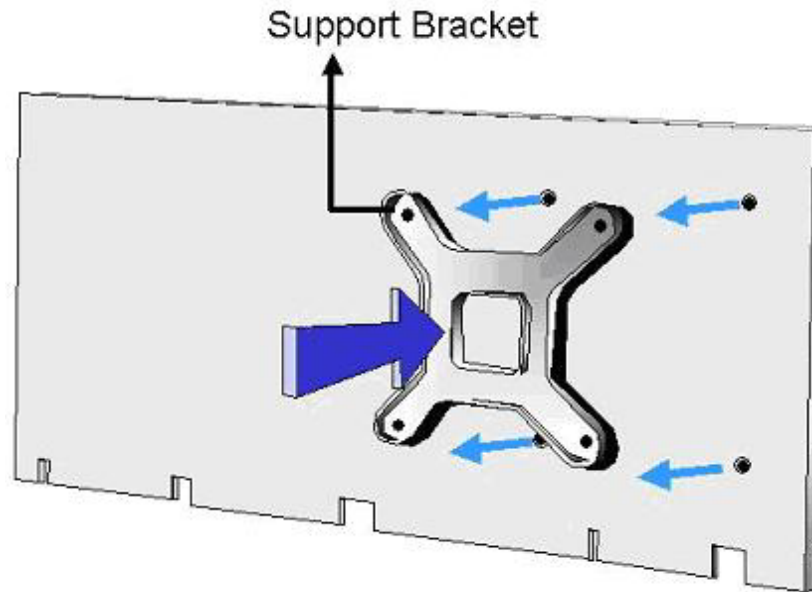
Figure 4-2: Cooling Kit Support Bracket

Step 2: **Open the lever at the top of the heat sink**. Lift the lever at the top of the cooling kit to loosen the cooling kit clamps.

Step 3: **Secure the cooling kit**. Gently place the heat sink and cooling kit onto the CPU. Make sure the hooks are properly secured to the bracket. To secure the cooling kit, close the top lever.

4.3.3 DIMM Module Installation

4.3.3.1 Purchasing the Memory Module

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-4786EVG CPU Board has two DDR SDRAM DIMM sockets. To install the DIMM modules, follow the instructions below.

Step 4: Pull the two white handles on either side of the DIMM socket down.

Step 5: Align the DIMM module with the DIMM socket making sure the matching pins are correctly aligned.

Step 6: 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	ATX 12V cable
1	Mini Jumper
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 IDE1 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. It can be connected to an external monitor. Pin assignments are shown in **Figure 3-17**.

4.5.2 Line Out Connection

Connect an audio device to the line out connector on the rear panel.

4.5.3 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.

Chapter

5

Award BIOS Setup

5.1   Introduction

A licensed copy of Phoenix Award 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 Phoenix Award 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 the item above
Down arrow	Move to the item below
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+/Page up	Increase the numeric value or make changes
-/Page down	Decrease the numeric value or make changes
Esc	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

F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Item help
F5	Previous values for the page menu items
F6	Fail-safe defaults for the current page menu items
F7	Optimized defaults for the current page menu items
F9	Menu in BIOS
F10	Save changes and Exit BIOS

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 the **Esc** 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 3**, **Section 3.4.1**.

5.1.5 Main BIOS Menu

Once the BIOS opens, the main menu (**BIOS Menu 1**) appears.

```
              Phoenix - AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features          ▶ Frequency/Voltage Control

▶ Advanced BIOS Features             Load Fail-Safe Defaults

▶ Advanced Chipset Features          Load Optimized Defaults

▶ Integrated Peripherals             Set Supervisor Password

▶ Power Management Setup             Set User Password

▶ PnP/PCI Configurations             Save & Exit Setup

▶ PC Health Status                   Exit Without Saving

Esc : Quit      F9 : Menu in BIOS       ↑ ↓ → ←   : Select Item
F10 : Save & Exit Setup

              Time, Date, Hard Disk Type...
```

BIOS Menu 1: Award BIOS CMOS Setup Utility

NOTE:

The following sections will completely describe the menus listed below and the configuration options available to users.

The following menu options are seen in **BIOS Menu 1**.

- **Standard CMOS Features**: Changes the basic system configuration.
- **Advanced BIOS Features**: Changes the advanced system settings.
- **Advanced Chipset Features**: Changes the chipset configuration features
- **Integrated Peripherals:** Changes the settings for integrated peripherals
- **Power Management Setup:** Changes power saving options
- **PCIPnP Configurations:** Changes the advanced PCI/PnP Settings
- **PC Health Status:** Monitors essential system parameters

- **Frequency/Voltage Control:** Configures the CPU Clock Ratio, Auto Detect DIMM/PCI CLk and Spread Spectrum settings

The following user configurable options are also available in the BIOS Main Menu

➔ **Load Fail-Safe Defaults**

This option allows you to load failsafe default values for each of the parameters on the Setup menus. **F6 key can be used for this operation on any page.**

➔ **Load Optimized Defaults**

This option allows you to load optimal default values for each of the parameters on the Setup menus. **F7 key can be used for this operation on any page.**

➔ **Set Supervisor Password**

By default, no **Supervisor Password** is set. If you wish to install a supervisor password, select this field and enter the password. After this option has been selected, a red dialogue box with **"Enter Password: "** will appear. You will be asked to confirm your password. Retype the original password into the **"Confirm Password: "** dialogue box and press enter.

➔ **Set User Password**

By default, no **User Password** is set. If you wish to install a user password, select this field and enter the password. After this option has been selected, A red dialogue box with **"Enter Password: "** will appear. You will be asked to confirm your password. Retype the original password into the **"Confirm Password: "** dialogue box and press enter.

➔ **Save & Exit Setup**

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

➔ **Exit Without Saving**

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.

5.2 Standard CMOS Features

The Standard CMOS Features menu (**BIOS Menu 2**) changes basic BIOS configuration options.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    Standard CMOS Features
┌─────────────────────────────────────────────────┬───────────────────────┐
│ Date (mm:dd:yy)          Thu, May 18 2006         │      Item Help        │
│ Time (hh:mm:ss)          17 : 15 : 58             ├───────────────────────┤
│                                                   │ Menu Level   ▶        │
│ ▶ IDE Channel 0 Master                            │                       │
│ ▶ IDE Channel 0 Slave                             │ Change the day, month,│
│ ▶ IDE Channel 1 Master                            │ year and century      │
│ ▶ IDE Channel 1 Slave      [ None]                │                       │
│                                                   │                       │
│ Drive A                    [1.44M, 3.5 in.]       │                       │
│ Drive B                    [None]                 │                       │
│                                                   │                       │
│ Video                      [EGA/VGA]              │                       │
│ Halt On                    [All , But Keyboard]   │                       │
│                                                   │                       │
│ Base Memory                     640K              │                       │
│ Extended Memory               65472K              │                       │
│ Total Memory                   1024K              │                       │
└───────────────────────────────────────────────────┴───────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

BIOS Menu 2: Standard CMOS Features

The **Standard CMOS Features** menu allows you to set both the date and the time field:

- **Date [mm:dd:yy]**: Allows you to set the system date.
- **Time [Day hh/mm/ss]:** Allows you to set the system time.

➔ **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 **Standard CMOS Features** menu:

- Primary IDE Master

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

The IDE Configuration menu (**BIOS Menu 3**) 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 5.2.1** appear.

→ **Drive A [1.44M, 3.5in]**

The **Drive A** configuration option determines the type of floppy drive installed in the system. The floppy drive configuration options are listed below.

- None
- 360K, 5.25 in
- 1.2M, 5.25 in
- 720K, 3.5 in
- 1.44M, 3.5 in (DEFAULT)
- 2.88M, 3.5in

→ **Drive B [1.44M, 3.5in]**

The **Drive B** configuration option determines the type of floppy drive installed in the system. The floppy drive configuration options are listed below.

- None
- 360K, 5.25 in
- 1.2M, 5.25 in
- 720K, 3.5 in
- 1.44M, 3.5 in (DEFAULT)
- 2.88M, 3.5in

→ **Video [EGA/VGA]**

The **Video** configuration option allows you to select the adapter for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in the BIOS setup. Video configuration options are listed below.

→ **EGA/VGA** (DEFAULT) Selected when the adapter for the primary system monitor is one of the following:

            → **EGA**

            → **VGA**

            → **SEGA**

            → **SVGA**

            → **PGA**

→ **CGA 40** The system will power up in 40 column mode

→ **CGA 80** The system will power up in 80 column mode

→ **MONO** A monochrome monitor is used. High-resolution monochrome monitors are also supported.

→ **Halt On**

The **Halt On** category allows users to determine whether the computer will stop if an error is detected during power up.

→ **All Errors** (DEFAULT) Whenever BIOS detects a non-fatal error the system will be stopped and you will be prompted.

→ **No Errors** The system boot will not be stopped for any errors that may be detected

→ **All, But Keyboard** The system boot will not stop for a keyboard error; it will stop for all other errors.

→ **All, But Diskette** The system boot will not stop for a disk error; it will stop for all other errors.

→ **All, But Disk/Key** The system boot will not stop for a keyboard

or a disk error; it will stop for all other errors.

➔ **Base Memory:**

The **Base Memory** is NOT user configurable. The POST will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the CPU card or 640K for systems with 640K or more memory installed on the motherboard.

➔ **Extended Memory**

The **Extended Memory** is NOT user configurable. The BIOS determines how much extended memory is present during the POST. This is the amount of memory above 1MB located in the memory address map of the CPU.

➔ **Total Memory**

The **Total Memory** is NOT user configurable.

5.2.1 IDE Channel Master

The **IDE Channel Master** menu (**BIOS Menu 3**) allows you to set or change the configurations for the master and slave IDE devices for both channel 0 and channel 1.
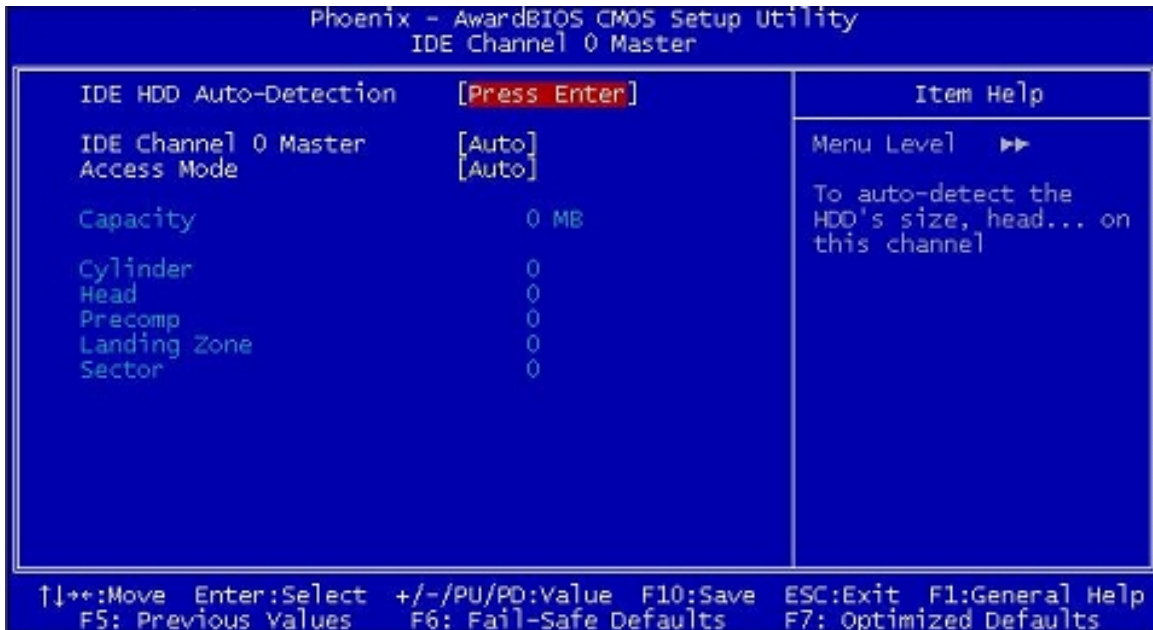
BIOS Menu 3: IDE Channel Master

➔ **IDE HDD Auto-Detection [Press Enter]**

Selecting **IDE HDD Auto-Detection** option and pressing the "ENTER" key will enable the

BIOS to automatically detect the HDD type. Do not set this option manually.

➔ **IDE Channel 0/1 Master/Slave [Auto]**

The **IDE Channel** option allows you to activate or deactivate the following drive channels:

- Channel 0 Master
- Channel 0 Slave
- Channel 1 Master
- Channel 0 Slave

➔ **None**   If no drives are connected to the IDE channel select this

option. Once set, this IDE channel will become

inaccessible and any drives attached to it undetected.

➔ **Auto**   (DEFAULT)   Setting this option allows the device to be automatically

detected by the BIOS

➔   **Manual**   Selecting this option allows you to manually configure the device on the IDE channel in BIOS.

➔ **Access Mode [Auto]**

The **Access Mode** option allows you to determine the hard disk BIOS translation modes. Most systems now use hard drives with large capacities and therefore either the LBA translation mode or auto mode should be selected.

➔   **CHS**   Select this mode if the HDD capacity is less than 504MB.

➔   **LBA**   Select this mode if the HDD capacity is more than 8.4GB.

➔   **Large**   This mode is an extended ECHS mode and while it supports HDDs larger than 504MB, it is not recommended.

➔   **Auto**   (DEFAULT)   If you are unsure of what access mode to set, select this option

➔ **Capacity**

The **Capacity** specification tells the user the storage capacity of the HDD installed in the system.

➔ **Cylinder**

The **Cylinder** specification shows the number of cylinders (tracks) on the HDD installed in the system.

➔ **Head**

The **Head** specification shows the number of logical heads on the HDD installed in the system.

→ **Precomp**

The **Precomp** specification indicates on which track the write precompensation begins.

→ **Landing Zone**

The **Landing Zone** specification tells the user where the disk head will park itself after the system powers off.

→ **Sector**

The **Sector** specification tells the user how many logical sectors the HDD has been divided into.

5.3 Advanced BIOS Features

The Advanced BIOS Features menu (**BIOS Menu 4**) provides access to CPU and peripheral device configuration options.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced BIOS Features
┌──────────────────────────────────────────────┬───────────────────────┐
│ ▶ Hard Disk Boot Priority    [Press Enter]  ▲ │      Item Help        │
│   CPU L1 & L2 Cache          [Enabled]        │                       │
│   Hyper-Threading Technology[Enabled]         │ Menu Level   ▶        │
│   Quick Power On Self Test   [Enabled]        │                       │
│   First Boot Device          [Floppy]         │ Select Hard Disk Boot │
│   Second Boot Device         [Hard Disk]      │ Device Priority       │
│   Third Boot Device          [LS120]          │                       │
│   Boot Other Device          [Enabled]        │                       │
│   Swap Floppy Drive          [Disabled]       │                       │
│   Boot Up Floppy Seek        [Enabled]        │                       │
│   Boot Up NumLock Status     [On]             │                       │
│   Gate A20 Option            [Fast]           │                       │
│   Typematic Rate Setting     [Disabled]       │                       │
│ x Typematic Rate (Chars/Sec) 6                │                       │
│ x Typematic Delay (Msec)     250              │                       │
│   Security Option            [Setup]          │                       │
│   APIC Mode                  [Enabled]        │                       │
│   MPS Version Control For OS[1.4]            ▒ │                       │
│   OS Select For DRAM > 64MB [Non-OS2]       ▼ │                       │
├──────────────────────────────────────────────┴───────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────────┘
```

BIOS Menu 4: Advanced BIOS Features

Once the **Advanced BIOS Features** menu is selected, two menu options and a host of configuration options are available. The two menu options are:

- ■ CPU Feature

- Hard Disk Boot Priority

To access these menus, use the arrow keys to select the menu option and press the "**ENTER"** button. The menu will appear. The menus are discussed fully in **Section 5.3.1: CPU Feature** and **Section 5.3.2: Hard Disk Boot Priority** below.

➔ **Virus Warning [Disabled]**

When the virus warning is enabled, the BIOS will monitor the boot sector and partition table of the HDD for any attempt at modification. If an attempt is made, the BIOS will halt the system and an error message will appear. Afterwards, if necessary, run an anti-virus program to locate and remove the problem before any damage is done.

➔ **Enabled**   Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or HDD partition table.

➔ **Disabled** (Default) No warning message will appear when anything attempts to access the boot sector or HDD partition table.

NOTE:

Many disk diagnostic programs can cause the above warning message to appear when the program attempts to access the boot sector table. If you run such a program, it is recommended that you first disable the virus protection function before hand.

➔ **CPU L1 & L2 Cache [Enabled]**

The **CPU L1 & L2 Cache** option allows users to select whether the CPU primary cache (L1) and secondary cache (L2) will be turned on or off.

➔ **Enabled** (DEFAULT)　The L1 and L2 CPU caches are both turned on

➔ **Disabled**　　　　The L1 and L2 CPU caches are both turned off

➔ **Quick Power On Self Test [Enabled]**

The **Quick Power On Self Test** configuration option speeds up the POST after you turn on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

➔ **Enabled** (DEFAULT)　Quick POST will occur after the computer is turned on

➔ **Disabled**　　　　Normal POST will occur after the computer is turned on

➔ **Boot Device**

There are three **Boot Device** configuration options. They are:

- First Boot Device [DEFAULT: Hard Disk]
- **Second Boot Device** [DEFAULT: Hard Disk]
- Third Boot Device [DEFAULT: LS120]

The **Boot Device** configuration options allow you to select the order of devices the computer will boot from. Using the default values, the system will first look for an HDD to boot from. If an HDD is unavailable then the system will boot from a LS120 drive.

Boot Device configuration options are:

- Hard Disk
- CDROM
- ZIP100
- USB-FDD
- USB-ZIP
- USB-CDROM
- LAN
- Disabled
- Floppy
- LS120

➔ **Boot Other Device [Enabled]**

The **Boot Other Device** option determines whether the CPU card will use a second or third boot device if the first boot device is not found.

➔ **Enabled** (DEFAULT) The system will look for second and third boot devices if the first one is not found.

➔ **Disabled** The system will not look for second and third boot device if the first one is not found.

➔ **Swap Floppy Drive [Disabled]**

The **Swap Floppy Drive** option is effective only in systems with two floppy drives. Selecting **Enabled** assigns physical drive B to logical drive A, and physical drive A to logical drive B.

➔ **Enabled** Assigns physical drive B to logical drive A, and physical drive A to logical drive B.

➔ **Disabled** (DEFAULT) Default physical/logical drive assignations.

➔ **Boot Up Floppy Seek [Enabled]**

During the POST, BIOS will determine if the floppy disk drive installed has 40 or 80 tracks. 360K FDDs have 40 tracks while 760K, 1.2M and 1.44M FDDs all have 80 tracks

➔ **Enabled** (DEFAULT) BIOS searches for a FDD to determine if it has 40 or 80 tracks. Note that BIOS cannot tell the difference between 720K, 1.2M or 1.44M drives as they all have 80 tracks.

➔ **Disabled** BIOS does not search for the type of FDD drive by track number. Note that there will not be any warning message if the drive installed is 360K.

➔

➔ **Boot Up Numlock Status [On]**

The **Boot Up Numlock Status** option allows you to determine the default state of the numeric keypad.

➔ **Off**   The keys on the keypad will be arrow keys

➔ **On**   (DEFAULT)   The keys on the keypad will be number keys

➔ **Gate A20 Option [Fast]**

The **Gate A20 Option** option refers to the way the system addresses memory above 1 MB (extended memory). Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

➔ **Fast**   (DEFAULT)   Lets the system chipset control Gate A20

➔ **Normal**   A pin in the keyboard controller controls Gate A20

➔ **Typematic Rate Setting [Disabled]**

Disabling the **Typematic Rate Setting** configuration option only allows one character to appear onto the screen if a key is continuously held down. In other words, the BIOS will only report the key is down. When this option is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. Such a feature would be used to accelerate cursor movements with the arrow keys.

➔ **Disabled**   (DEFAULT)   Disables the typematic rate

➔ **Enabled**   Enables the typematic rate

➔ **x Typematic Rate (Chars/sec) [6]**

The **Typematic Rate** can only be configured if the **Typematic Rate Setting** is Enabled. The **Typematic Rate** configuration field determines the rate keys are accelerated.

➔   **6**   (DEFAULT)   6 characters per second

➔   **8**   8 characters per second

➔   **10**   10 characters per second

➔   **12**   12 characters per second

➔   **15**   15 characters per second

➔   **20**   20 characters per second

➔   **24**   24 characters per second

➔   **30**   30 characters per second

➔   **x Typematic Delay (Msec) [250]**

The **Typematic Delay** can only be configured if the **Typematic Rate Setting** is enabled.
The **Typematic Delay** configuration field allows you to select the delay between when the
key was first depressed and when the acceleration begins.

➔   **250**   (DEFAULT)   250 milliseconds

➔   **500**   500 milliseconds

➔   **750**   750 milliseconds

➔   **1000**   1000 milliseconds

➔   **Security Option [Setup]**

The **Security Option** configuration option allows you to limit access to the system and
Setup or just to the Setup.

➔   **Setup**   (DEFAULT)   The system will not boot and access to Setup will be
denied if the correct password is not entered at the
prompt.

➔   **System**   The system will boot, but access to Setup will be denied if

the correct password is not entered at the prompt.

➔

✓ NOTE:

> To disable security, select the password setting in the **Main Menu**. When
> asked to enter a password, do not type anything, press, "**ENTER**" and the
> security is disabled. Once the security is disabled, the system will boot and
> you can enter Setup freely.

➔ **APIC Mode [Enabled]**

The **APIC Mode** (Advanced Programmable Interrupt Controller mode) option is a BIOS
setting made available to Windows 2000 and Windows XP systems that increases the
number of IRQ (Interrupt Request) lines available to the processor from 16 to 23.

> ➔ **Enabled** (DEFAULT) IRQ lines increased from 16 to 23
>
> ➔ **Disabled** Only 16 IRQ lines are available to the CPU

➔ **MPS Version Control for OS [1.4]**

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

> ➔ **1.1** MPS version 1.1 is used
>
> ➔ **1.4** (DEFAULT) MPS version 1.4 is used

➔ **OS Select For DRAM > 64MB [Non-OS2]**

The **OS Select For DRAM > 64MB** option allows you to specify the operating system you
are using.

➔ **OS2**   Only select this if you are using the OS/2 operating
                              system

➔ **Non-OS2** (DEFAULT)   If you are not using the OS/2 operating system then
                           disable this function.

➔ **Small Logo (EPA) Show [Disabled]**

The **Small Logo (EPA) Show** option determines if the Environmental Protection Agency
(EPA) logo will appear during the system boot-up process. If it is enabled then the boot up
process may be delayed.

➔ **Enabled**   EPA logo will appear during the boot up process.

➔ **Disabled** (DEFAULT)   EPA logo will not appear during the boot up process.

5.3.1 CPU Feature

The CPU Feature menu (**BIOS Menu 5**) shows CPU configuration options.
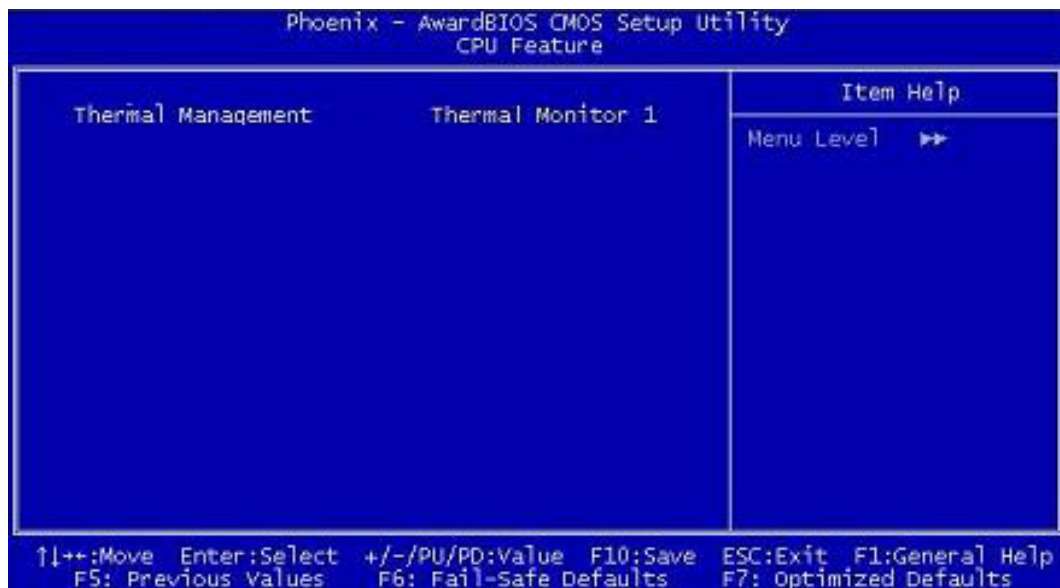
BIOS Menu 5: CPU Feature

➔ **Thermal Management [Thermal Monitor 1]**

The **Thermal Management** configuration option allows you to select the thermal monitor the CPU will use to monitor its own operating temperature. Once the thermal monitor detects that the CPU is reaching its maximum operating temperature, the thermal monitor will automatically throttle the CPU (reduce the number of CPU processing cycles) in order to cool the CPU down to a safe operating temperature. Once at a safe operating temperature, the CPU will continue to perform at its peak capacity.

➔ **Thermal Monitor 1**   Thermal Monitor 1 uses an on-die temperature sensing circuit in the CPU that can act quickly in response to thermal issues. This circuit monitors the most active areas of the CPU-die at all times and will quickly lower the CPU temperature by throttling the internal CPU clock speed when the CPU approaches its maximum operating temperature.

5.3.2 Hard Disk Boot Priority

The Hard Disk Boot Priority menu (**BIOS Menu 6**) is shown below.

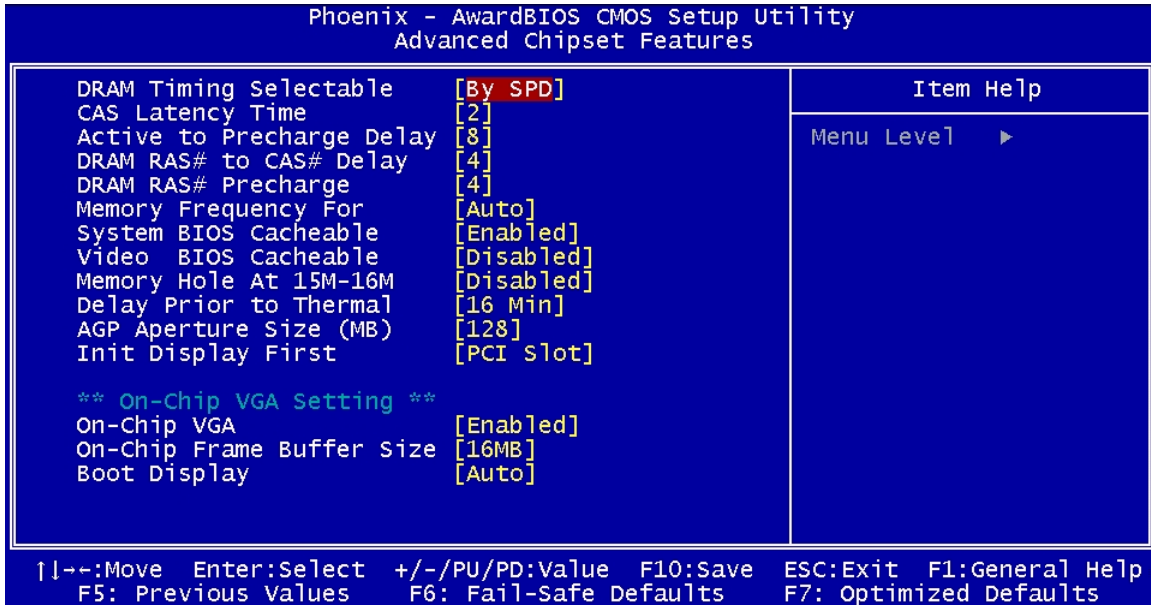**BIOS Menu 6: Hard Disk Boot Priority**

5.4   Advanced Chipset Features

The Advanced Chipset Features menu (**BIOS Menu 7**) allows you to change the
configuration for the chipset configuration options.

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                        Advanced Chipset Features

   DRAM Timing Selectable      [By SPD]              Item Help
   CAS Latency Time            [2]
   Active to Precharge Delay   [8]          Menu Level    ▶
   DRAM RAS# to CAS# Delay     [4]
   DRAM RAS# Precharge         [4]
   Memory Frequency For        [Auto]
   System BIOS Cacheable       [Enabled]
   Video  BIOS Cacheable       [Disabled]
   Memory Hole At 15M-16M      [Disabled]
   Delay Prior to Thermal      [16 Min]
   AGP Aperture Size (MB)      [128]
   Init Display First          [PCI Slot]

   ** On-Chip VGA Setting **
   On-Chip VGA                 [Enabled]
   On-Chip Frame Buffer Size   [16MB]
   Boot Display                [Auto]



 ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value  F10:Save   ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```

BIOS Menu 7: Advanced Chipset Features

➔   **DRAM Timing Selectable [Manual]**

The **DRAM Timing Selectable** configuration option allows you to select whether the
manufacturer recommended settings for the following DRAM configuration options are
automatically detected by the BIOS or if you manually select the DRAM settings. The
DRAM configuration options are:

- ■   CAS Latency Time [2]
- ■   Active to Precharge Delay [6]
- ■   DRAM RAS# to CAS# Delay [3]
- ■   DRAM RAS# Precharge [3]

➔ **Manual** (DEFAULT) You set the above configuration options manually

➔ **By SPD** The BIOS automatically detects the settings

recommended by the manufacturer

➔ **CAS Latency Time [2]**

The **CAS Latency Time** configuration option refers to the Column Address Strobe (CAS) delay time. (To be able to change this configuration option the **DRAM Timing Selectable** configuration option must be set to "**Manual**") The following configuration options are available

- 2 nanoseconds (DEFAULT)
- 2.5 nanoseconds
- 3 nanoseconds

➔ **Active to Precharge Delay [6]**

This feature controls the memory bank's minimum row active time (**tRAS**). This constitutes the time when a row is activated until the time the same row can be deactivated. (To be able to change this configuration option the **DRAM Timing Selectable** configuration option must be set to "**Manual**") The following configuration options are available

- 8 nanoseconds
- 7 nanoseconds
- 6 nanoseconds (DEFAULT)
- 5 nanoseconds

➔ **DRAM RAS# to CAS# Delay [3]**

The **DRAM RAS# to CAS# Delay** option allows you to set the delay between the RAS and CAS signals. (To be able to change this configuration option the **DRAM Timing Selectable** configuration option must be set to "**Manual**") The following configuration options are available

- 4 nanoseconds
- 3 nanoseconds (DEFAULT)

- 2 nanoseconds

➔ **DRAM RAS# Precharge [3 clocks]**

The **DRAM RAS# Precharge** option indicates how fast your RAM can terminate the access of one row and start accessing another. (To be able to change this configuration option the **DRAM RAS# Precharge** configuration option must be set to "**Manual**") The following configuration options are available

- 4 clocks
- 3 clocks   (DEFAULT)
- 2 clocks

➔ **Memory Frequency For [DDR266]**

The **Memory Frequency For** configuration option allows you to manually select the DDR type. The default value is DDR266. If you are not certain of what value to select, select "**Auto**" and the BIOS will automatically detect the DDR type. The following configuration options are available,

- DDR266 (DEFAULT)
- DDR333
- Auto

➔ **System BIOS Cacheable [Enabled]**

The **System BIOS Cacheable** option allows the system BIOS to be cached in the L2 cache.

➔ **Disabled**   System BIOS is not cached in the L2 cache

➔ **Enabled**   (DEFAULT)   System BIOS is cached in the L2 cache

➔ **Video BIOS Cacheable [Disabled]**

The **Video BIOS Cacheable** option allows the video BIOS to be cached in the L2 cache.

➔ **Disabled**   (DEFAULT)   Video BIOS is not cached in the L2 cache

➔ **Enabled** Video BIOS is cached in the L2 cache

➔ **Memory Hole At 15M – 16M [Disabled]**

The **Memory Hole At 15M – 16M** reserves the memory space between 15MB and 16MB for ISA expansion cards that require a specified area of memory to work properly. If you are using older ISA expansion cards, please refer to the documentation that came with the card to see if it is necessary to reserve the space.

➔ **Disabled** (DEFAULT) Memory is not reserved for ISA expansion cards

➔ **Enabled** Memory is reserved for ISA expansion cards

➔ **Delay Prior to Thermal [16 Min.]**

The **Delay Prior to Thermal** option controls when the thermal monitor can be activated in automatic mode after the system boots. The following configuration options are available,

- 4 Min
- 8 Min
- 16 Min (DEFAULT)
- 32 Min

➔ **AGP Aperture Size (MB) [128]**

The AGP Aperture Size option selects the size of the AGP aperture. The following configuration options are available,

- 4
- 8
- 16
- 32
- 64
- 128 (DEFAULT)
- 256

➔ **Init Display First [PCI Slot]**

The **Init Display First** option selects whether to boot from the PCI slot or the onboard AGP.

➔ **PCI Slot** (DEFAULT) The system will boot from the PCI graphics card.

➔ **Onboard/AGP** The system will boot from the AGP graphics card

➔ **On-Chip VGA [Enabled]**

The **On-Chip VGA** option is found on motherboards that have a built-in graphics processor as well as a PCI-E port. It allows you to select whether to use the onboard graphics processor or the PCI-E card.

➔ **Enabled** (DEFAULT) The system will boot up using the on-chip graphics processor regardless of whether or not a PCI graphics card is installed.

➔ **Disabled** The system will boot up using the installed PCI graphics card.

➔ **On-Chip Frame Buffer Size [16MB]**

The **On-Chip Frame Buffer Size** option allows you to allocate a predetermined amount of system memory to the graphics processor when the system boots up.

➔ **1MB** 1MB of system memory is allocated to the graphics processor

➔ **8MB** 8MB of system memory is allocated to the graphics processor

➔ **16MB** (DEFAULT) 16MB of system memory is allocated to the graphics processor
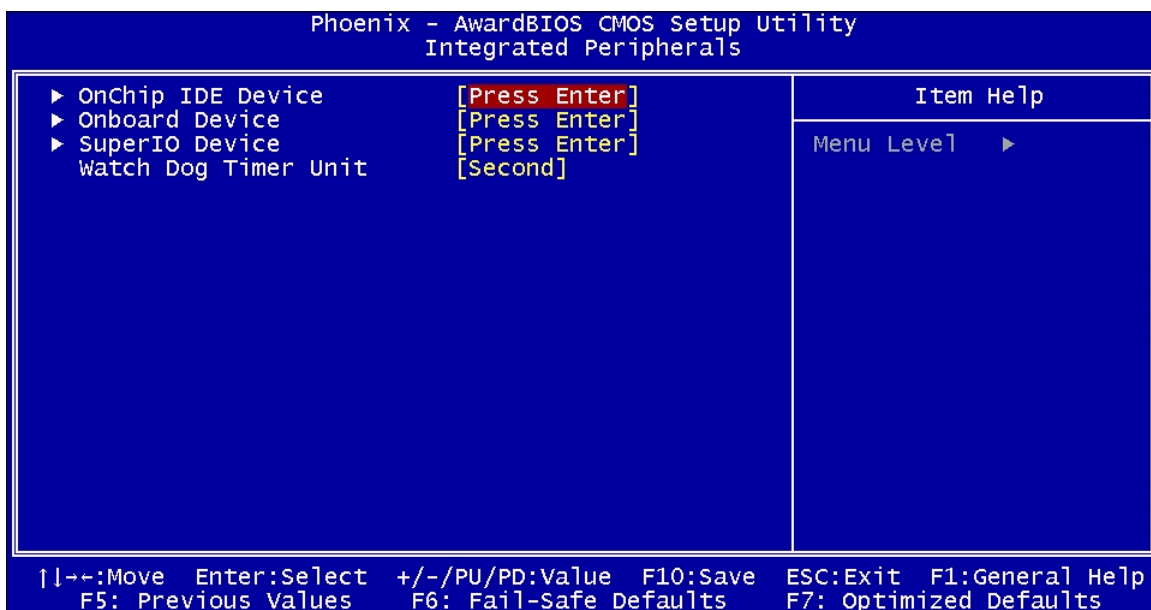
IEI® **Technology, Corp**.

➔ **Boot Display [Auto]**

The **Boot Display** option allows you to select the display device the system will boot with.

➔ **Auto**   (DEFAULT)   The system will automatically determine the display

device type.

➔ **CRT**   The display device type will be set as CRT

➔ **EFP**   The display device type will be set as EFP

5.5   Integrated Peripherals

The Integrated Peripherals menu (BIOS Menu 8) allows you to change the configuration option for peripheral devices.
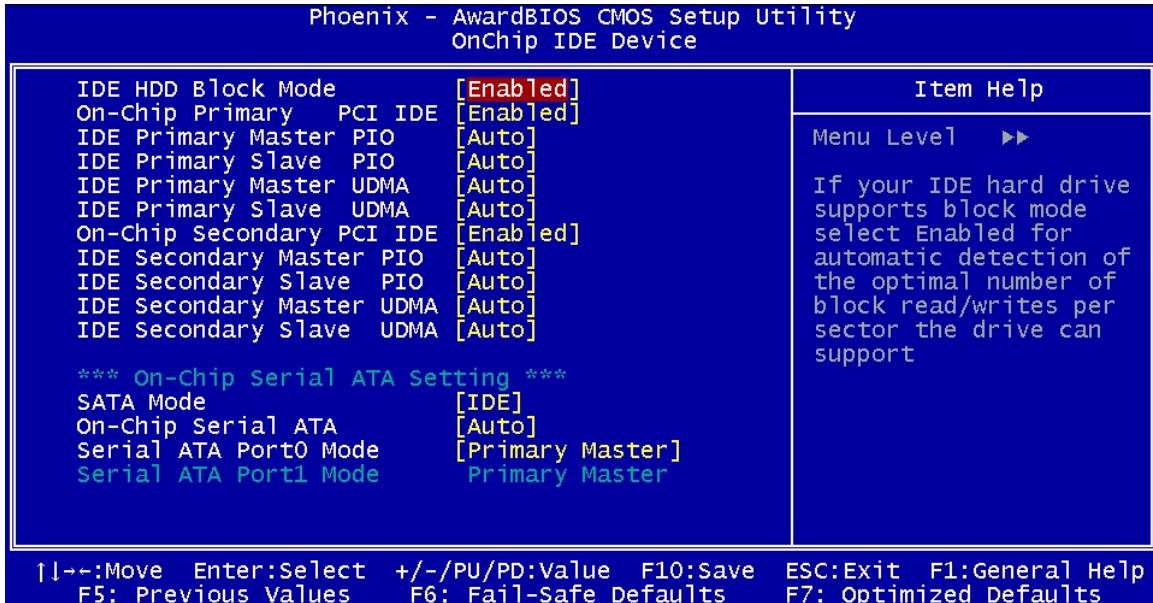
```
               Phoenix - AwardBIOS CMOS Setup Utility
                        Integrated Peripherals
  ▶ OnChip IDE Device         [Press Enter]            Item Help
  ▶ Onboard Device            [Press Enter]
  ▶ SuperIO Device            [Press Enter]        Menu Level    ▶
    Watch Dog Timer Unit      [Second]




  ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values      F6: Fail-Safe Defaults   F7: Optimized Defaults
```

BIOS Menu 8: Integrated Peripherals

The Integrated Peripherals menu (BIOS Menu 8) has four options listed below:

- OnChip IDE Device
- Onboard Device
- Super IO Device
- Watch Dog Timer Unit

5.5.1 OnChip IDE Device

The OnChip IDE Device menu (BIOS Menu 9) allows you to change the IDE device configurations.

```
                      Phoenix - AwardBIOS CMOS Setup Utility
                                OnChip IDE Device
 ┌──────────────────────────────────────────────┬─────────────────────────┐
 │ IDE HDD Block Mode          [Enabled]         │        Item Help        │
 │ On-Chip Primary   PCI IDE [Enabled]           ├─────────────────────────┤
 │ IDE Primary Master PIO      [Auto]            │ Menu Level    ▶▶        │
 │ IDE Primary Slave  PIO      [Auto]            │                         │
 │ IDE Primary Master UDMA     [Auto]            │ If your IDE hard drive  │
 │ IDE Primary Slave  UDMA     [Auto]            │ supports block mode     │
 │ On-Chip Secondary PCI IDE [Enabled]           │ select Enabled for      │
 │ IDE Secondary Master PIO    [Auto]            │ automatic detection of  │
 │ IDE Secondary Slave  PIO    [Auto]            │ the optimal number of   │
 │ IDE Secondary Master UDMA [Auto]              │ block read/writes per   │
 │ IDE Secondary Slave  UDMA [Auto]              │ sector the drive can    │
 │                                               │ support                 │
 │ *** On-Chip Serial ATA Setting ***            │                         │
 │ SATA Mode                   [IDE]             │                         │
 │ On-Chip Serial ATA          [Auto]            │                         │
 │ Serial ATA Port0 Mode     [Primary Master]    │                         │
 │ Serial ATA Port1 Mode       Primary Master    │                         │
 │                                               │                         │
 └──────────────────────────────────────────────┴─────────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values      F6: Fail-Safe Defaults   F7: Optimized Defaults
```

BIOS Menu 9: Integrated Peripherals

➔ **IDE HDD Block Mode [Enabled]**

The **IDE HDD Block Mode** option should only be enabled if your IDE HDD device supports block mode. Please refer to the documentation that came with your IDE HDD device to check the compatibility.

➔ **Disabled**   The BIOS will not detect block data transfers.

➔ **Enabled**   (DEFAULT)   The optimal number of block read/writes per sector the drive can support will be automatically detected.

➔ **On-Chip Primary PCI IDE [Enabled]**

The **On-Chip Primary PCI IDE** option allows you to determine whether or not the ROCKY-4786EVG will use the integrated primary IDE channel.

➔   **Disabled**   The CPU card will not use the primary IDE channel

➔   **Enabled**   (DEFAULT)   The CPU card will use the primary IDE channel

➔   **IDE PIO [Auto]**

The Programmed Input/Output (PIO) mode for the following HDDs can all be selected.

- ▪ IDE Primary Master PIO
- ▪ IDE Primary Slave PIO
- ▪ IDE Secondary Master PIO
- ▪ IDE Secondary Slave PIO

➔   **Auto**   (DEFAULT)   Allows the computer to select the correct mode

➔   **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

➔   **IDE UDMA [Auto]**

The Ultra DMA (UDMA) mode for the following HDDs can all be selected.

- ▪ IDE Primary Master UDMA
- ▪ IDE Primary Slave UDMA
- ▪ IDE Secondary Master UDMA
- ▪ IDE Secondary Slave UDMA

➔   **Auto**   (DEFAULT)   Allows the computer to select the correct UDMA

➔   **Disabled**   Disables the UDMA for the HDD device

➔   **On-Chip Secondary PCI IDE [Auto]**

The **On-Chip Secondary PCI IDE** option allows you to determine if the motherboard should or should not use the integrated primary IDE channel. Disable this if you use an IDE adapter card for your IDE hard drives.

➔ **Disabled**   The CPU card will not use the integrated primary IDE channel

➔ **Enabled**   (DEFAULT)   The CPU card will use the integrated primary IDE channel

➔ **On Chip Serial ATA [Disabled]**

The **On Chip Serial ATA** (SATA) option allows you to determine the operational status of the onboard SATA controller.

➔ **Disabled**   (DEFAULT)   The SATA controller is disabled

➔ **Auto**   The SATA controller is automatically arranged by the BIOS

➔ **Combined Mode**   PATA and SATA modes are combined together. A maximum of 2 IDE drives in each channel

➔ **Enhanced Mode**   Enable both PATA and SATA. A maximum of 6 IDE drives are supported.

➔ **SATA Only**   SATA is operating in legacy mode.

➔ **x PATA IDE Mode [Secondary]**

When the **On Chip Serial ATA** option is in the combined mode, the PATA IDE Mode will be selected as **secondary**.

➔ **SATA Port**

The **SATA Port** parameter is automatically detected by the system BIOS and shown on the screen. This parameter is not user configurable.

5.5.2 Onboard Device

The **Onboard Device** menu (**BIOS Menu 10**) allows you to change the USB, Audio and LAN device configurations.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                        Onboard Device
┌───────────────────────────────────────────┬─────────────────────────┐
│ USB Controller          [Enabled]         │      Item Help          │
│ USB 2.0 Controller      [Enabled]         │                         │
│ USB Keyboard Support    [Enabled]         │  Menu Level    ▶▶       │
│ AC97 Audio              [Auto]            │                         │
│ I82562ET LAN (10/100M)  [Enabled]         │                         │
│ CSA LAN (Giga-LAN)      [Auto]            │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
├───────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│    F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults  │
└──────────────────────────────────────────────────────────────────────┘
```
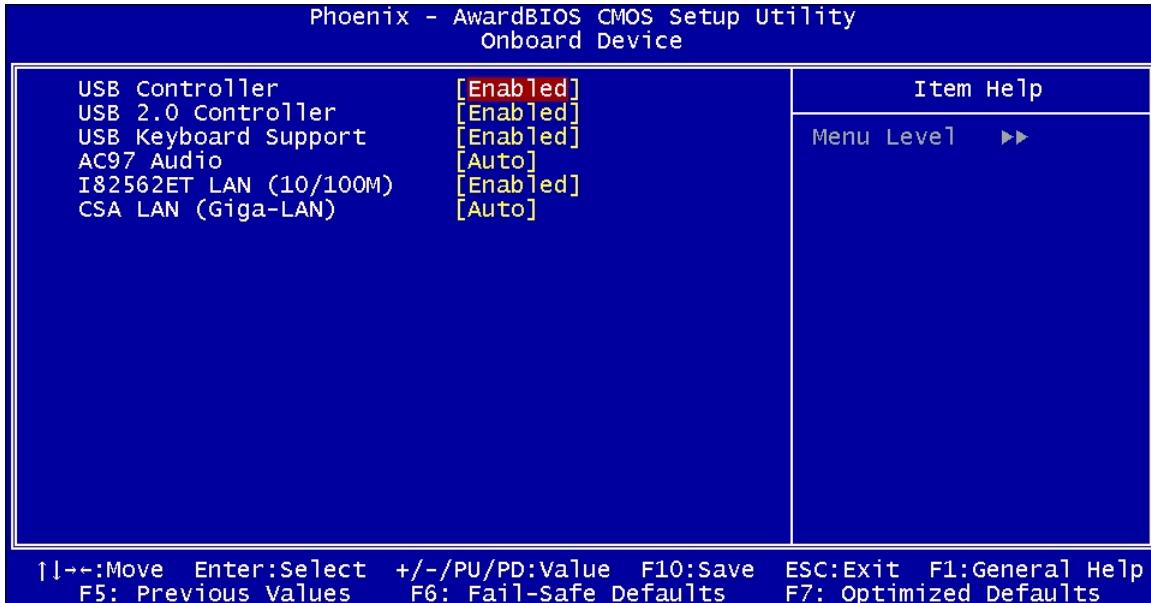
BIOS Menu 10: OnBoard Device [Integrated Peripherals]

➔ **USB Controller [Enabled]**

The **USB Controller** option allows you to activate or deactivate the onboard USB controller.

➔ **Enabled**   (DEFAULT)   The USB controller is activated

➔ **Disabled**   The USB controller is deactivated

➔ **USB 2.0 Controller [Enabled]**

The **USB 2.0 Controller** option allows you to activate or deactivate the onboard EHCI controller.

➔ **Enabled**   (DEFAULT)   The EHCI controller is activated

➔ **Disabled**   The EHCI controller is deactivated

➔ **USB Keyboard Support [Disabled]**

The **USB Keyboard Support** is only applicable if you are using a USB keyboard. Some OSes do not support USB keyboards. Enabling this option in BIOS will allow users using an OS that does not support USB keyboard to implement a USB keyboard.

➔ **Disabled** (DEFAULT) USB keyboard support no provided by BIOS

➔ **Enabled** USB keyboard support is provided by BIOS

➔ **AC97 Audio Select [Auto]**

The **AC97 Audio Select** option allows the user to select the standard that will be used by the system.

➔ **Auto** (DEFAULT) The BIOS automatically detects the audio standard

Disabled No audio standard is set

➔ **I82562ET LAN (10/100M) [Disabled]**

The **I82562ET LAN (10/100M)** allows you to boot your system from a LAN server. For this to be possible the LAN card installed on your system must have boot ROM. If you choose to boot your system from a server using the LAN boot ROM functionality, you do not need a boot disk installed on the system.

➔ **Disabled** (DEFAULT) If disabled, you will not be able to boot your system from a server.

➔ **Enabled** You will be able to boot your system from a server if the LAN card installed in the system has boot ROM

5.5.3 SuperIO Device

The SuperIO Device menu (BIOS Menu 11) allows you to change the super IO device configurations.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                          SuperIO Device
  POWER ON Function         [BUTTON ONLY]            Item Help
  KB Power ON Password      [Enter]
  Hot Key Power ON          [Ctrl-F1]         Menu Level    ▶▶
  Onboard FDC Controller    [Enabled]
  Onboard Serial Port 1     [3F8/IRQ4]
  Onboard Serial Port 2     [2F8/IRQ3]
  UART Mode Select          [Normal]
  RxD , TxD Active          [Hi,Lo]
  IR Transmission Delay     [Enabled]
  UR2 Duplex Mode           [Half]
  Use IR Pins               [IR-Rx2Tx2]
  Onboard Parallel Port     [378/IRQ7]
  Parallel Port Mode        [SPP]
  EPP Mode Select           [EPP1.7]
  ECP Mode Use DMA          [3]
  PWRON After PWR-Fail      [Off]



 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults  F7: Optimized Defaults
```

BIOS Menu 11: SuperIO Device [Integrated Peripherals]

➔ **POWER ON Function [BUTTON ONLY]**

The **POWER ON Function** option allows you to select the method you use to turn on the system.

➔ **Password** — When you turn on the computer you will be prompted for a password (see the **KB Power ON Password option below**)

➔ **Hot KEY** — You can use a pre-specified hot key to turn on your computer (see the **Hot Key Power ON** option below)

➔ **Mouse Left** — Click the left mouse button to turn the system on

➔ **Mouse Right** — Click the right mouse button to turn the system on

➔ **Any KEY** — Click any key to turn the system on

➔ **BUTTON ONLY** (DEFAULT) — The computer can only be turned on with the power button

→ **Keyboard 98**   If you are using Windows 98 or better and have the appropriate keyboard, you can use the keyboard's wake-up or power-on button to start up the computer.

→ **x KB Power ON Password [Enter]**

The **KB Power ON Password** option can only be specified if you have selected the **Password** as the **POWER ON Function** option. To set the password, place the cursor on the password option and click "**ENTER**." You will be prompted to enter a password. Select you password and press "**ENTER**." You will be asked to confirm the password. Confirm it and then press "**ENTER**" and the password will be set.

→ **x Hot Key Power ON [Ctrl-F1]**

The **Hot Key Power ON** option can only be specified if you have selected the **Hot KEY** as the **POWER ON Function** option. The following key combinations can be selected as the hot keys that will turn your computer on.

- Ctrl-F1
- Ctrl-F2
- Ctrl-F3
- Ctrl-F4
- Ctrl-F5
- Ctrl-F6
- Ctrl-F7
- Ctrl-F8
- Ctrl-F9
- Ctrl-F10
- Ctrl-F11
- Ctrl-F12

→ **Onboard FDC Controller [Disabled]**

The **Onboard FDC Controller** allows you to select whether the onboard floppy controller will or will not be used.

➔ **Disabled** (DEFAULT) Disable this option if you use an adapter for your FDDs
or if you have no FDDs connected

➔ **Enabled** Select this option if FDDs are connected to the board
and will use the onboard FDD controller.

➔ **Onboard Serial Port 1 [3F8/IRQ4]**

The **Onboard Serial Port 1** option allows you to select the I/O address and IRQ for the
onboard serial port. The serial port can be disabled or the I/O address and the IRQ can be
automatically selected by the BIOS. The options are listed below:

- Disabled
- 3F8/IRQ4 (DEFAULT)
- 2F8/IRQ3
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

➔ **Onboard Serial Port 2 [2F8/IRQ4]**

The **Onboard Serial Port 2** option allows you to select the I/O address and IRQ for the
onboard serial port. The serial port can be disabled or the I/O address and the IRQ can be
automatically selected by the BIOS. The options are listed below:

- Disabled
- 3F8/IRQ4
- 2F8/IRQ3 (DEFAULT)
- 3E8/IRQ4
- 2E8/IRQ3
- Auto

➔ **UART Mode Select [Normal]**

The **UART Mode Select** option allows you to select the UART mode for the system.

➔ **IrDA** IrDA is set as the IR serial mode. If this option is

selected, COM2 will be disabled.

➔ **ASKIR**   ASKIR is set as the IR serial mode. If this option is

selected, COM2 will be disabled.

➔ **Normal**   (DEFAULT)   COM2 is enabled and the IR device disabled

➔ **x RxD, TxD Active [Hi,Lo]**

The **RxD, TxD Active** BIOS option allows you to set the infra-red reception (RxD) and transmission (TxD) polarity. (This option can only be selected if the UART is set in IrDA mode or ASKIR mode.) The following configuration options are available,

- Hi, Hi
- Hi, Lo (DEFAULT)
- Lo, Hi
- Lo, Lo

➔ **x IR Transmission Delay [Enabled]**

➔ **Disabled**

➔ **Enabled**   (DEFAULT)

➔ **UR2 Duplex Mode [Half]**

➔ **Full**

➔ **Half**   (DEFAULT)

➔ **Use IR Pins [IR-Rx2Tx2]**

➔ **RxD2, TxD2**

➔ **IR-Rx2Tx2**   (DEFAULT)

➔ **Onboard Parallel Port [378/IRQ7]**

The **Onboard Parallel Port** option allows you to select the I/O address and IRQ for the onboard parallel port. The following configuration options are available,

- Disabled
- 378/IRQ7 (DEFAULT)
- 278/IRQ5
- 3BC/IRQ7

→ **Parallel Port Mode [SPP]**

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

→ **SPP** (DEFAULT) The parallel port will operate in the standard parallel port (SPP) mode. This parallel port mode will work with most parallel port devices but is slow.

→ **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 SPP mode.

→ **ECP** 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 SPP mode.

→ **ECP+EPP** The parallel port will be compatible with both ECP and EPP devices

→ **Normal**

→ **x EPP Mode Select**

If the **EPP mode** is selected in the **Parallel Port Mode** configuration option, you will be able to configure the **EPP Mode Select** option. The EPP parallel port mode has two standards, EPP 1.7 and EP 1.9. This selection allows you to choose the standard the

parallel port will operate in. Please refer to the parallel device that your system will be connected to and select the EPP mode accordingly.

➔ **EPP1.9**   EPP 1.9 is selected as the EPP standard

➔ **EPP1.7**   (DEFAULT)   EPP 1.7 is selected as the EPP standard

➔ **x ECP Mode Use DMA [3]**

If the **ECP mode** is selected in the **Parallel Port Mode** configuration option, you will be able to configure the **ECP Mode Use DMA** option. This option determines the DMA channel the parallel port uses when it is in the ECP mode.

➔ 1   Parallel port uses DMA Channel 1 in the ECP mode

➔ 3   (DEFAULT)   Parallel port uses DMA Channel 3 in the ECP mode

➔ **PWRON After PWR-Fail [Off]**

This **PWRON After PWR-Fail** option allows you to select the state the system will return to if there is a power failure or power to the system is suddenly cut off.

➔ **Off**   (DEFAULT)   After the power returns the system will remain off.

➔ **On**   After the power returns, the system will turn on

➔ **Former-Sts**   After the power returns the system will return to its original state. If it was off, it will remain off. If it was on, it will turn on again.

➔ **Watch Dog Timer Unit [Second]**

The **Watch Dog Timer Unit** default is set to second and is non-configurable.

5.6 Power Management Setup

The Power Management Setup menu (**BIOS Menu 12**) allows you to set the power management and saving features in the BIOS.

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                          Power Management Setup
   ┌──────────────────────────────────────────────────┬─────────────────────┐
   │  Power-Supply Type        [ATX]                 ▲ │     Item Help        │
   │  ACPI Function            [Enabled]               │  Menu Level    ►     │
   │  ACPI Suspend Type        [S1(POS)]               │                      │
   │ x Run VGABIOS if S3 Resume  Auto                  │                      │
   │  Power Management         [User Define]           │                      │
   │  Video Off Method         [DPMS]                  │                      │
   │  Video Off In Suspend     [Yes]                   │                      │
   │  Suspend Type             [Stop Grant]            │                      │
   │  MODEM Use IRQ            [3]                      │                      │
   │  Suspend Mode             [Disabled]              │                      │
   │  HDD Power Down           [Disabled]              │                      │
   │  Soft-Off by PWR-BTTN     [Instant-Off]           │                      │
   │  Wake Up On LAN(I82562ET) [Enabled]               │                      │
   │  Wake Up On LAN(CSA)      [Enabled]               │                      │
   │  Power On by Ring         [Enabled]               │                      │
   │ x USB KB Wake-Up From S3    Disabled              │                      │
   │  Resume by Alarm          [Disabled]              │                      │
   │ x  Date(of Month) Alarm     0                     │                      │
   │ x  Time(hh:mm:ss) Alarm     0 :  0 :  0         ▼ │                      │
   ├──────────────────────────────────────────────────┴─────────────────────┤
   │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
   │    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults    │
   └──────────────────────────────────────────────────────────────────────────┘
```

BIOS Menu 12: Power Management Setup

➔ **Power-Supply Type [AT]**

The following configuration options are available,

- AT (DEFAULT)
- ATX

➔ **ACPI Function [Enabled]**

The **ACPI Function** option allows you to enable or disable the ACPI function.

➔ **Disabled**   The ACPI function is enabled

➔ **Enabled**   (DEFAULT)   The ACPI function is disabled

➔ **ACPI Suspend Type [S1(POS)]**

The **ACPI Suspend Type** option allows you to select the suspend state your computer will go into during the power conservation mode.

➔ **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.

➔ **S1&S3**   The BIOS will be able to support both the S1 and the S3 suspend states described above.

➔ **x Run VGABIOS if S3 Resume [Auto]**

If the **S3(STR)** or **S1&S3** option is selected in **ACPI Suspend Type** above, you will be able to configure the **Run VGABIOS if S3 Resume** option. This option allows you to select whether or not to run the VGA BIOS after the system wakes up from an S3 sleep state.

➔ **Auto**   (DEFAULT)   The system BIOS automatically decides whether or not to run the VGA BIOS after the system resumes from a S3 sleep state.

➔ **Yes**   The VGA BIOS will be run after the system resumes from a S3 sleep state.

➔ **No**   The VGA BIOS will not be run after the system resumes from a S3 sleep state.

➔ **Power Management [User Define]**

The **Power Management** option allows you to manually define the **Suspend Mode** and the **HDD Power Down** options. BIOS has preset minimum and maximum values for the **Suspend Mode** and the **HDD Power Down** options.

➔ **User Define**   (DEFAULT)   The user defines the **Suspend Mode** time and the **HDD Power Down** time.

➔ **Min. Saving**   BIOS automatically sets the **Suspend Mode** time and the **HDD Power Down** time for minimum

power saving.

➔ **Max. Saving**   BIOS automatically sets the **Suspend Mode** time

and the **HDD Power Down** time for maximum

power saving.

The minimum and maximum power settings are shown below:

	Suspend Mode	HDD Power Down
Min. Saving	1 hour	15 minutes
Max. Saving	1 minute	1 minute

➔ **Video Off Method [DPMS]**

The **Video Off Method** option allows you to specify what happens to the monitor in a
power down mode.

➔ **Blank Screen**   Writes blanks to the video buffer and the

monitor is black, but still active (not powered

down).

➔ **V/H SYNC + Blank**   Writes blanks to the video buffer and the

monitor is black, but still active (not powered

down)

➔ **DPMS**   (DEFAULT)   If your monitor supports Display Power

Management Signaling, the monitor uses

this to enter a power down mode.

➔ **Video Off In Suspend [Yes]**

The **Video Off In Suspend** option allows you to specify whether the display monitor is
turned off or remains on when the systems enters a suspend state.

➔ **No**   The display monitor will remain on when the system is in

suspend mode.

➔ **Yes** (DEFAULT) The display monitor will be turned off when the system is in suspend mode.

➔ **Suspend Type [Stop Grant]**

The **Suspend Type** option allows you to determine what suspend state the CPU will go into when the system is in the suspend state.

➔ **Stop Grant** (DEFAULT) When the CPU is in the stop grant state the bus clock (BCLK) continues to run. Snoops and interrupts are also allowed in the stop grant state. Thus, the CPU can operate in a lower power state yet can respond to snoops and interrupts.

➔ **PwrON Suspend**

➔ **MODEM Use IRQ [3]**

The **MODEM Use IRQ** option tells the power management which IRQ it should monitor for modem wakeup. The following options can be selected.

- N/A
- 3 (Default)
- 4
- 5
- 7
- 9
- 10
- 11

➔ **Suspend Mode [Disabled]**

The **Suspend Mode** option allows you to specify how long the computer must wait for no activity before it goes into a suspend mode. If you disable this option the system will not go into a suspend mode. Note that if you selected max. or min. as the setting for the **Power**

Management option, you will not be able to configure this setting. The following settings can be made.

- Disable (Default)
- 1 Min
- 2 Min
- 3 Min
- 4 Min
- 8 Min
- 12 Min
- 20 Min
- 30 Min
- 40 Min
- 1 Hour

➔ **HDD Power Down [Disabled]**

The **HDD Power Down** 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. Note that if you selected max. or min. as the setting for the **Power Management** option, you will not be able to configure this setting. 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

➔ **Soft –Off by PWR-BTTN [Instant-Off]**

The **Soft –Off by PWR-BTTN** option allows you to define how the system responds when the power button is pushed. You may choose to allow the system to be either turned off completely or enter into a suspend mode.

➔ **Instant-Off**   (DEFAULT)   The system will be turned off as soon as the power button is pressed.

➔ **Delay 4 Sec**   The power button must be pressed for more than four seconds before it is turned off. If it is pressed for less than four seconds the system will enter a suspend state.

➔ **Wake-Up On LAN(I82562ET) [Enabled]**

The **Wake-Up On LAN(I82562ET)** option allows users to wake a system in a suspended state through a network. A wakeup signal from a network can be routed directly through the PCI card.

➔ **Disabled**   The system cannot be woken from a suspend state through the network via a PCI card

➔ **Enabled**   (DEFAULT)   The system can be woken from a suspend state through the network via a PCI card

➔ **Power On by Ring [Enabled]**

The **Power On by Ring** option allows users to determine whether or not the system can be roused from a suspend state when the modem rings.

➔ **Disabled**   The system will not be woken from a suspend state when the modem rings

➔   **Enabled**   (DEFAULT)   The system will be woken from a suspend state when the modem rings

➔   **x USB KB Wake-Up From S3 [Disabled]**

If you selected either the S3(STR) or the S1&S3 option in the **ACPI Suspend Type** option, you will be able to configure the **USB KB Wake-Up From S3**. This option allows you to wake the system from an S3 suspend state using the keyboard.

➔   **Disabled**   (DEFAULT)   Keyboard cannot be used to rouse the system from the S3 suspend state

➔   **Enabled**   Keyboard can be used to rouse the system from the S3 suspend state

➔   **Resume by Alarm [Disabled]**

The **Resume by Alarm** option allows you tell the computer when it should be roused from a suspend state.

➔   **Disabled**   (DEFAULT)   No time is specified for when the computer should be roused from a suspend state

➔   **Enabled**   The date and time the computer must be roused from a suspend state is specified

➔   **x Date(of Month) Alarm [0]**

The **Date(of Month) Alarm** option can only be configured if the **Resume by Alarm** option has been enabled. When you select this option you will be asked to enter a number between 0 and 31 to specify the date of the current month that you would like the system to be roused.

➔   **x Time(hh:mm:ss) Alarm [0 : 0 : 0]**

The **Time (hh:mm:ss) Alarm** option can only be configured if the **Resume by Alarm** option has been enabled. You will have to set the time you wish the computer to be roused. You will see three zeroes side by side. The first zero is for the hour, the second zero for the minutes and the third zero for the seconds.

- ■ Hour (first zero): Select a number between 0 and 23
- ■ Minute (second zero): Select a number from 0 to 59
- ■ Second (third zero): Select a number from 0 to 59

➔ **Reload Global Timer Events**

The **Reload Global Timer Events** field has the following BIOS configuration options

- ■ Primary IDE 0
- ■ Primary IDE 1
- ■ Secondary IDE 0
- ■ Secondary IDE 1
- ■ FDD, COM, LPT Port
- ■ PCI PIRQ[A-D]#

All the above options have "**Disabled**" as their default value. When disabled, if any activity occurs on these devices during a suspended state, the system will not be roused.

If "**Enabled**" is selected for any of the above devices, and if activity is recorded on an enabled device in the above list the system will be roused from its suspended state.

5.7 PnP/PCI Configurations

The PnP/PCI Configurations menu (**BIOS Menu 13**) allows you to set the plug and play, and PCI options.
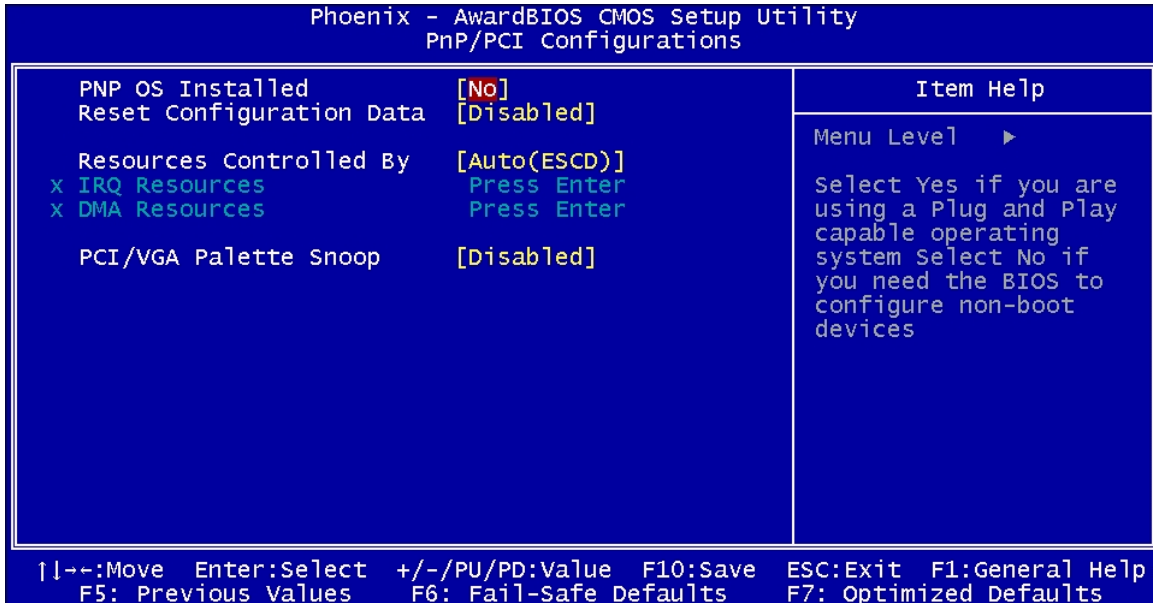
BIOS Menu 13: PnP/PCI Configurations

➔ **PNP OS Installed [No]**

The **PNP OS Installed** 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.

➔ **Reset Configuration Data [Disabled]**

The **Reset Configuration Data** option allows you to reset the Extended System Configuration Data (ESCD) when you exit setup if you have problems booting the system up after you have installed a new add-on.

➔ **Disabled** (DEFAULT) ESCD will not be reconfigured

→ **Enabled**   ESCD will be reconfigured after you exit setup

→ **Resources Controlled By [Auto (ESCD)]**

The **Resources Controlled By** option gives you the option of manually configuring all the boot and plug and play devices, or allowing BIOS to configure these devices automatically. If you allow BIOS to configure it automatically you will not be able to select the IRQs, DMA and memory base address fields because BIOS will automatically assign them.

→ **Auto(ESCD)**   (DEFAULT)   BIOS automatically configures plug and play devices as well as boot devices.

→ **Manual**   You manually configure the plug and play devices and any other boot devices

→ **x IRQ Resources [Press Enter]**

If you select manual in the **Resources Controlled By** option then you will be able to configure the **IRQ Resources**. To do this, select **IRQ Resources** and press **ENTER**. A new menu will appear (**BIOS Menu 14**).

BIOS Menu 14: IRQ Resources

The menu will have the following 12 BIOS configuration options:

- IRQ-3 assigned to
- IRQ-4 assigned to
- IRQ-5 assigned to
- IRQ-6 assigned to
- IRQ-7 assigned to
- IRQ-8 assigned to
- IRQ-9 assigned to
- IRQ-10 assigned to
- IRQ-11 assigned to
- IRQ-12 assigned to
- IRQ-13 assigned to
- IRQ-14 assigned to
- IRQ-15 assigned to

The above options all have the same default and the same options. These are listed below.

➔ **PCI Device** (DEFAULT) The IRQ is assigned to legacy ISA for devices

compliant with the original PC AT bus specification,
PCI/ISA PNP for devices compliant with the Plug and
Play standard whether designed for PCI or ISA bus
architecture.

➔ **Reserved**   The IRQ is reserved by BIOS

➔ **x DMA Resources [Press Enter]**

If you select manual in the **Resources Controlled By** option then you will be able to
configure the **DMA Resources**. To do this, select **DMA Resources** and press **ENTER**. A
new menu will appear.

The menu has the following 6 BIOS configuration options:

- DMA-0 assigned to
- DMA-1 assigned to
- DMA-3 assigned to
- DMA-5 assigned to
- DMA-6 assigned to
- DMA-7assigned to

The above options all have the same default and the same options. These are listed below.

➔ **PCI/ISA PnP**   (DEFAULT)   For devices compliant with Plug and Play standard
whether designed for PCI or ISA bus architecture.

➔ **Legacy ISA**   Legacy ISA for devices compliant with the original
PC AT bus specification.

➔ **PCI/VGA Palette Snoop [Disabled]**

The **PCI/VGA Palette Snoop** option allows you determine whether or not some special
VGA cards, high-end hardware MPEG decoders and other similar devices are allowed to
look at the VGA palette on the video card so these devices can determine what colors are

in use. This option is only *very* rarely needed. It should be left at "Disabled" unless a video
device specifically requires the setting enabled upon installation.

➔ **Disabled**   (DEFAULT)   Does not allow the graphics devices to examine the VGA
palette on the graphics card

➔ **Enabled**   Does allow the graphics devices to examine the VGA palette
on the graphics card

5.8   PC Health Status

The **PC Health Status** menu (**BIOS Menu 15**) is a passive menu where you cannot alter
any BIOS configurations. This menu shows system operating parameters that are essential
to the stable operation of your system.

BIOS Menu 15: PC Health Status

The following system parameters are monitored by the PC Health Status menu (**BIOS
Menu 15**).

➔ **System Temperature**

The following temperatures are monitored:

- System Temperature
- CPU Temperature

➔ **Voltages**

The following voltages are monitored

- CPU Vcore
- +1.5 V
- +3.3 V
- +5 V
- +12 V
- -12 V

➔ **Fan Speeds**

The following fan speeds are monitored:

- CPU an Speed
- System Fan Speed

5.9   Frequency/Voltage Control

The **Frequency/Voltage Control** menu (**BIOS Menu 16**) allows you to configure the Auto

Detect DIMM/PCI CLk and Spread Spectrum settings.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                        Frequency/Voltage Control
  ┌──────────────────────────────────────────────┬──────────────────────────┐
  │ CPU Clock Ratio             [ 8 X]            │        Item Help         │
  │ Auto Detect DIMM/PCI Clk    [Disabled]        ├──────────────────────────┤
  │ Spread Spectrum             [Disabled]        │ Menu Level    ▶          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  │                                               │                          │
  └──────────────────────────────────────────────┴──────────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults
```
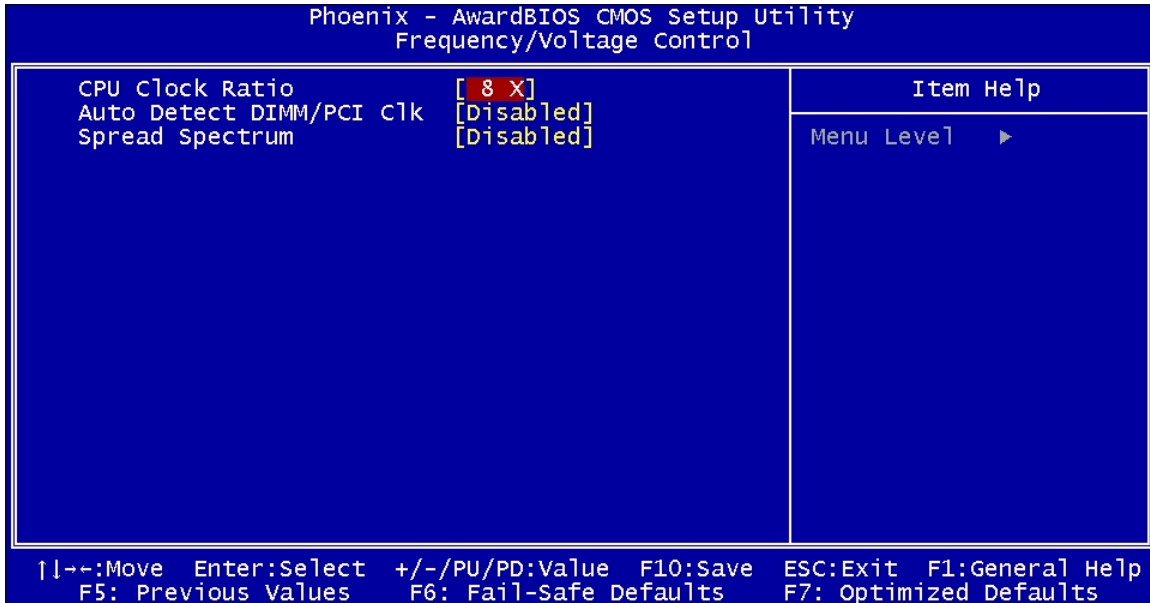
BIOS Menu 16: Frequency/Voltage Control

The following system parameters are controlled by the Frequency/Voltage Control menu (**BIOS Menu 16**).

➔ **Auto Detect DIMM/PCI CLk [Enabled]**

The **Auto Detect DIMM/PCI CLk** option allows BIOS to monitor power consumption to the AGP, PCI and SDRAM DIMM slots and reduce EMI (Electromagnetic Interference) by turning them off when unoccupied or inactive.

➔ **Enabled** (DEFAULT) Bios will monitor and turn off any unoccupied or inactive AGP, PCI and SDRAM DIMM slots

➔ **Disabled** BIOS will not monitor AGP, PCI and SDRAM DIMM slots

➔ **Spread Spectrum [Disabled]**

The **Spread Spectrum** option is used to reduce EMI (Electromagnetic Interference) generated by the system clock. This option is disabled by default so that EMI can be controlled by the **Auto Detect DIMM/PCI CLk** option.

➔ **Enabled** Monitors system clocking to reduce EMI

(Electromagnetic Interference)

➔ **Disabled** (DEFAULT) Does not monitor system clocking

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-4786EVG CPU card has five software drivers:

- **Intel® Chipset Software Installation Utility**
- **Intel® Graphics Media Accelerator**
- **825xx LAN Driver** (for GbE LAN)
- **USB 2.0 Driver**
- **Realtek AC'97 Codec**

All five drivers can be found on the CD that came with the CPU card. To install the drivers please follow these instructions:

Insert the CD into the system that contains the ROCKY-4786EVG CPU card. From the **IEI Driver CD** main menu, click the **Rocky Series** menu item to go to the **Rocky Series** menu. From the **Rocky Series** menu, click the **Rocky-4786EVG/E2V** menu item to go to the **Rocky-4786EVG/Rocky-4786E2V** menu. You will find the drivers listed above available for installation **Figure 6-1**.
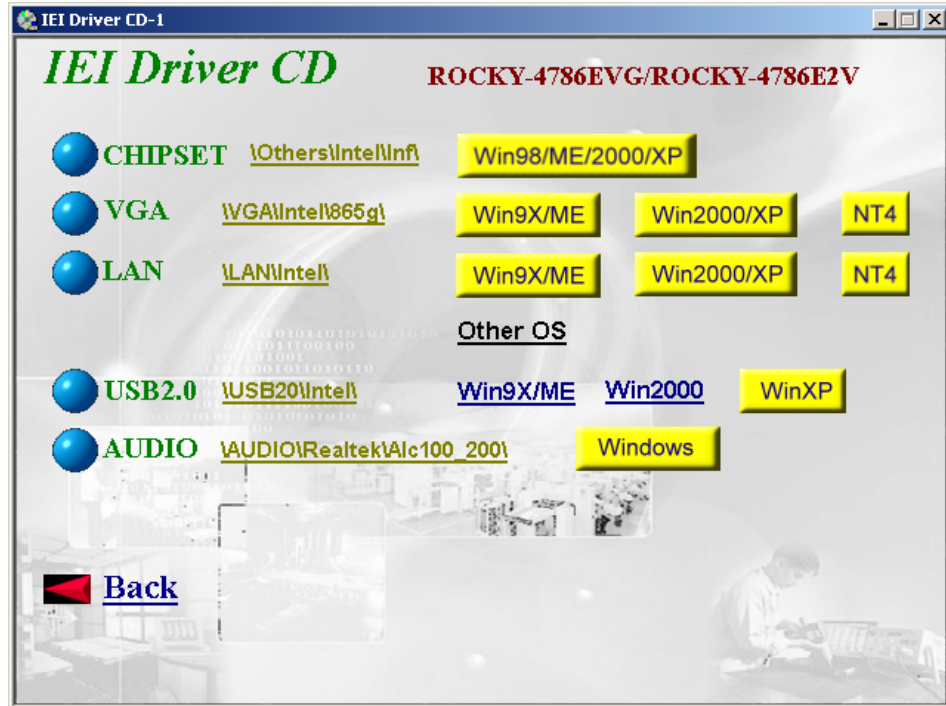
Figure 6-1: IEI Driver CD Rocky-4786EVG/Rocky-4786E2V Menu

![NOTE icon] **NOTE:**

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

6.2   Chipset Driver Installation

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

Step 3:   To the right of the **CHIPSET** menu item, you may select either **\Others\Intel\Inf** to browse the driver directory, or click on **Win98\ME\2000\XP** to install the Chipset Software Installation Utility.

Step 4: Once you click the **Win98\ME\2000\XP** icon, a welcome screen shown in **Figure 6-2** appears.
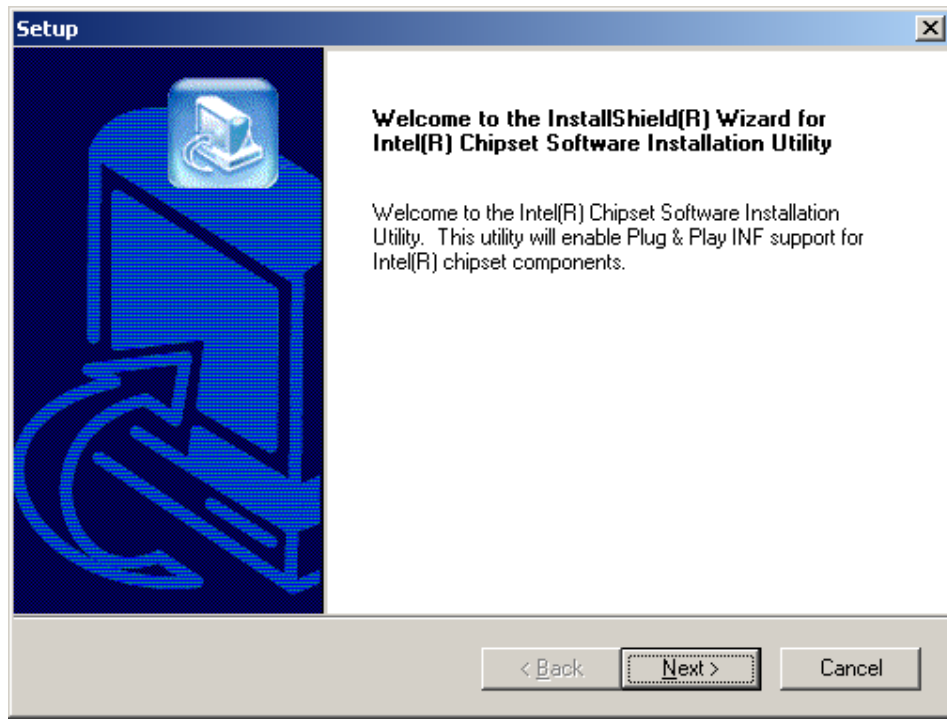
Figure 6-2: Chipset Software Installation Utility Welcome Screen

Step 5: After the welcome screen shown in **Figure 6-2** appears, to continue the installation process click the "**NEXT**" button. The license agreement shown in **Figure 6-3** will appear.
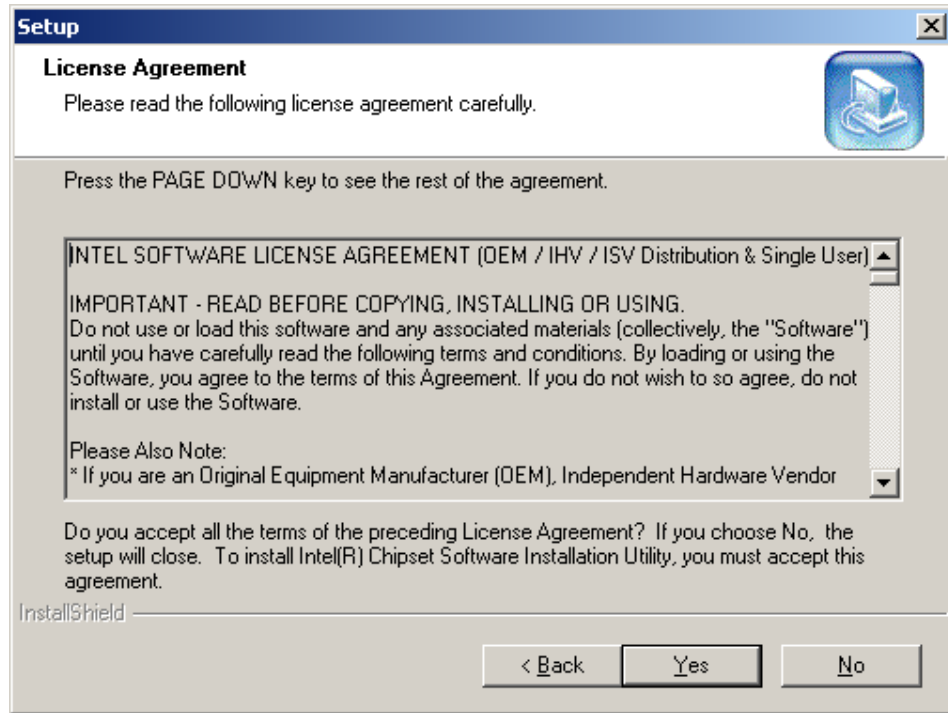
Figure 6-3: Chipset Software Installation Utility License Agreement

Step 6: Read the license agreement in **Figure 6-3.** If you choose to accept the terms and conditions stipulated in the agreement, click the "**YES**" button. The Readme file information shown in **Figure 6-4** will appear.
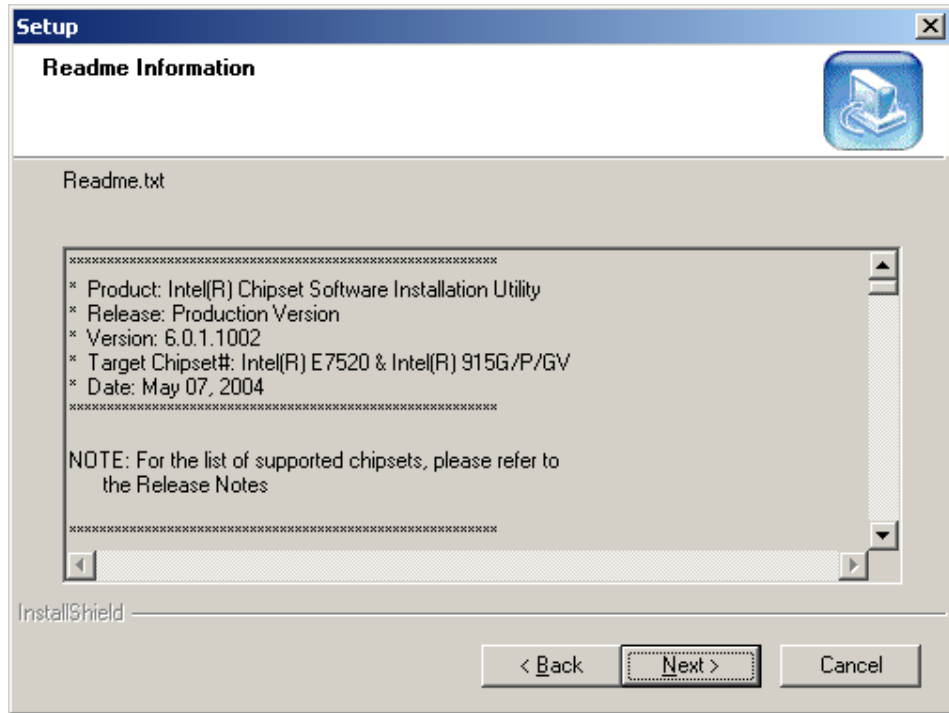
Figure 6-4: Chipset Software Installation Utility Readme File Information

Step 7: After reading through the Readme file information shown in **Figure 6-4** click on

the "**NEXT**" button and the chipset driver will be installed.

Step 8: After the driver installation process is complete, a confirmation screen shown in

Figure 6-5 will appear.
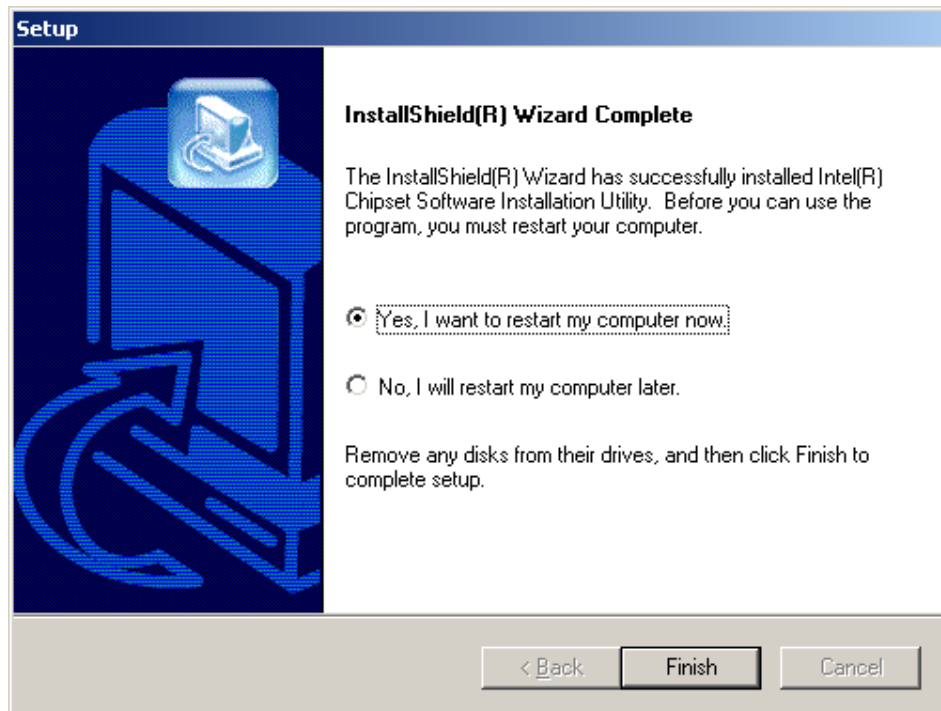
Figure 6-5: Chipset Software Installation Utility Complete

Step 9: The confirmation screen shown in **Figure 6-5** 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.

6.3   Intel Graphics Media Accelerator Driver

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

Step 1: To the right of the **VGA** menu item, you may select either **\VGA\Intel\865g** to browse the driver directory, or click on any of the **Win9X\ME**, **Win2000\XP** or **NT4** buttons to install the appropriate GMA driver.

Step 2: Once you click one of the **Win9X\ME**, **Win2000\XP** or **NT4** buttons, a Welcome screen shown in **Figure 6-6** will appear.
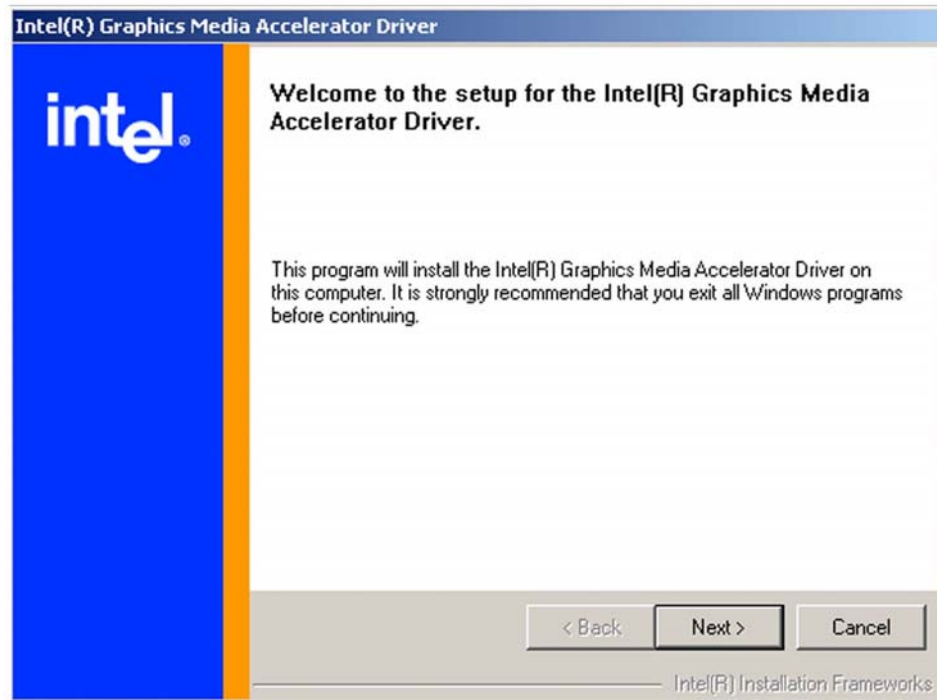
Figure 6-6: GMA Driver Installation Welcome Screen

Step 3: To continue installing click "**Next**" and a license agreement shown in **Figure 6-7** will appear. Read the license agreement.

Figure 6-7: GMA Driver License Agreement

Step 4:   If you choose to accept the terms and conditions stipulated in the license

agreement shown **Figure 6-7**, click the "**YES**" button. The installation notice

shown in **Figure 6-8** will appear.

Figure 6-8: GMA Driver Installing Notice

Step 5:   After the driver installation process is complete, a confirmation screen shown in

Figure 6-9 will appear.
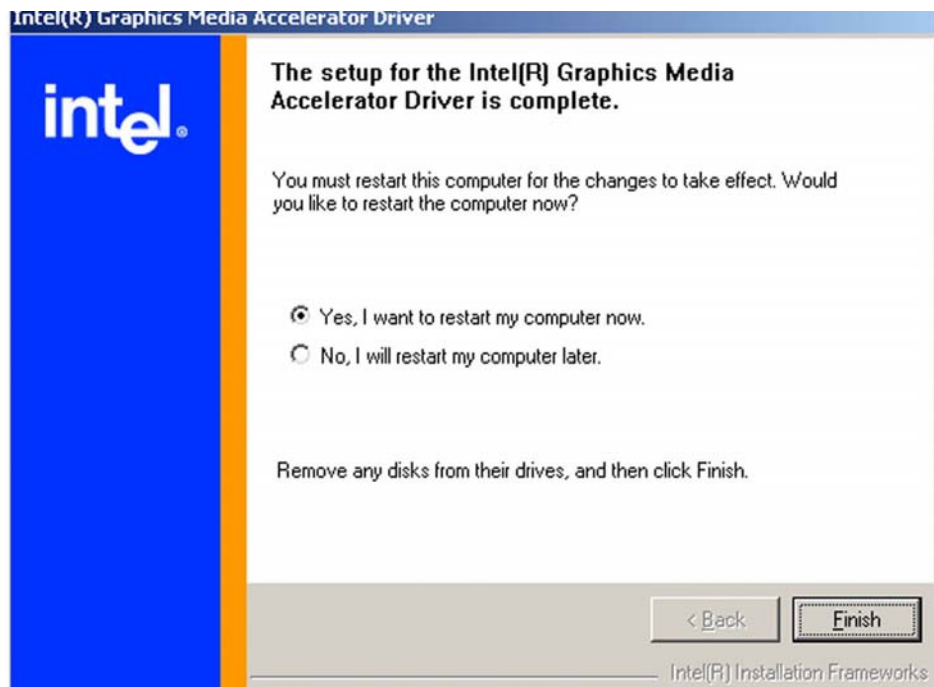
Figure 6-9: GMA Driver Installation Complete

Step 6: The confirmation screen shown in **Figure 6-9** allows you to restart the computer immediately after the installation is complete or to restart the computer later. For the settings to take effect, the computer must be restarted. Once you have decided when to restart the computer, click the "**FINISH**" button.

6.4 LAN Driver Installation

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

Step 1: To the right of the **LAN** menu item, you may select either **\LAN\Intel** to browse the driver directory, or click on any of the **Win9X\ME**, **Win2000\XP**, **NT4**, or **Other OS** buttons to install the appropriate LAN driver.

Step 2: Once you click on one of the **Win9X\ME**, **Win2000\XP**, or **NT4** buttons, a **License Agreement** screen shown in **Figure 6-10** will appear. Read the license agreement. If you click on the **Other OS** button, a new window will open to the CD folder with a list of drivers for all supported Oses.

Figure 6-10: LAN Driver License Agreement

Step 3:   If you choose to accept the terms and conditions stipulated in the license

agreement shown **Figure 6-10**, click the "**NEXT**" button. The location to save files

shown in **Figure 6-11** will appear.
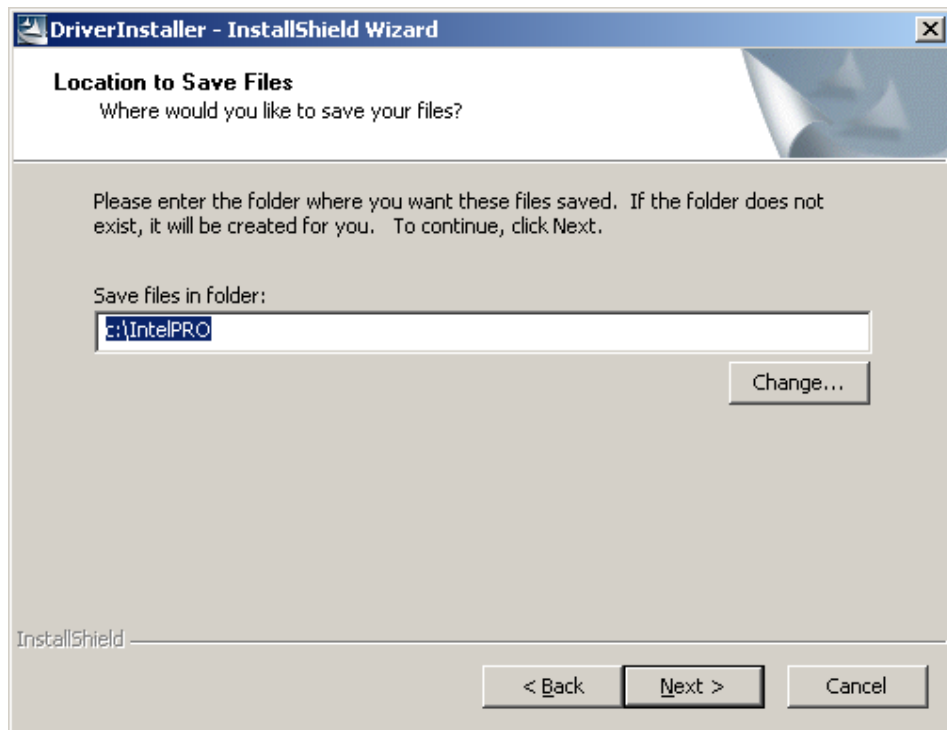
Figure 6-11: LAN Location to Save Files

Step 4: Select the folder to save the file in and click the "**Next**" button. The installation

notice shown in **Figure 6-12** will appear, after which the **Intel® PRO Network**

Connections menu shown **Figure 6-13** will immediately appear.

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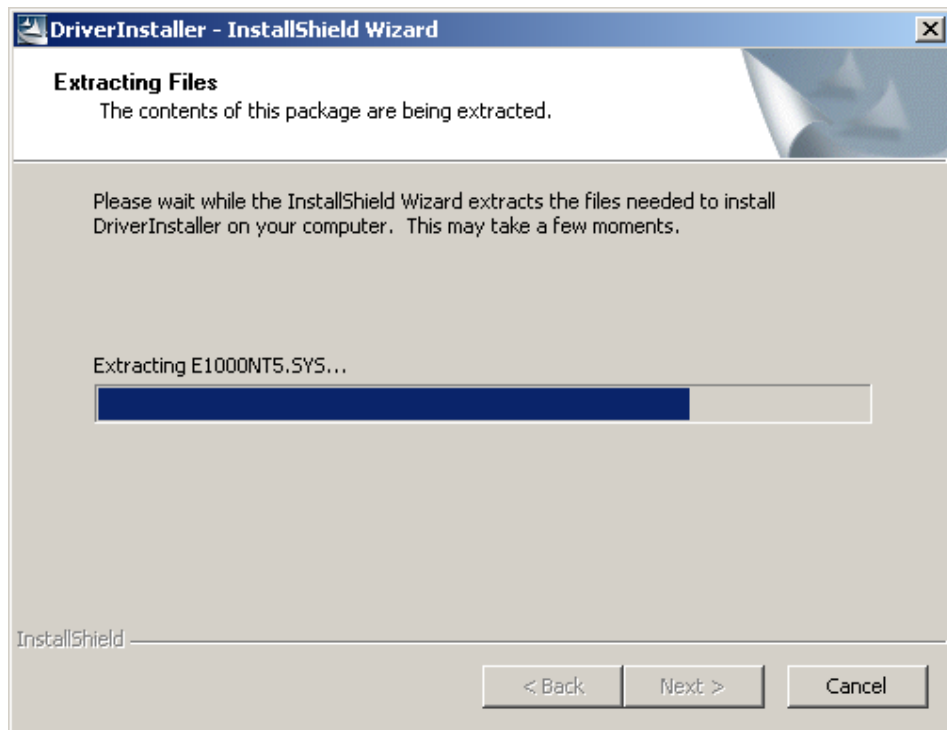
Figure 6-12: LAN Extracting Files Notice

Figure 6-13: Intel® PRO Network Connections Main Menu

Step 5: From the **Intel® PRO Network Connections** menu shown **Figure 6-13**, click on the **Install Base Driver** button. The installation notice shown in **Figure 6-14** will appear.
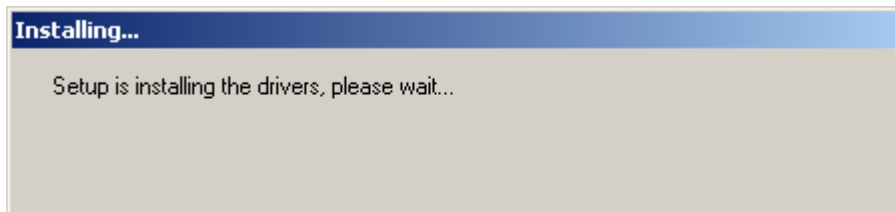
Figure 6-14: LAN Installation Notice

Step 6: The LAN driver installation is now complete. From the **Intel® PRO Network Connections** menu shown **Figure 6-13**, click on the **Exit** button.

6.5   USB2.0 Driver Installation

To install the USB2.0 driver, please follow the steps below:

Step 1:   To the right of the **USB2.0** menu item, you may select either **\USB20\Intel** to browse the driver directory, or click on any of the **Win9X\ME**, **Win2000**, or **WINXP** buttons to install the appropriate USB 2.0 driver. If you click on either the **Win9X\ME** or **Win2000** button, a new window will open to the CD folder where a readme.txt file can be read for information on how to install the USB 2.0 driver for the corresponding OS.

Step 2:   Once you click on the **WINXP** button, the install shield wizard for the USB 2.0 driver starts. See **Figure 6-15**.
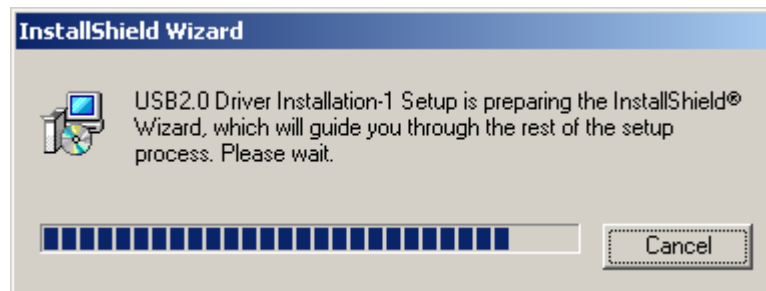
Figure 6-15: USB 2.0 Driver Install Shield Wizard Starting

Step 3:   After install shield is prepared, the welcome screen shown in **Figure 6-16** appears. To continue the installation process, click the "**NEXT**" button. A **License Agreement** screen shown in **Figure 6-17** will appear. Read the license agreement.
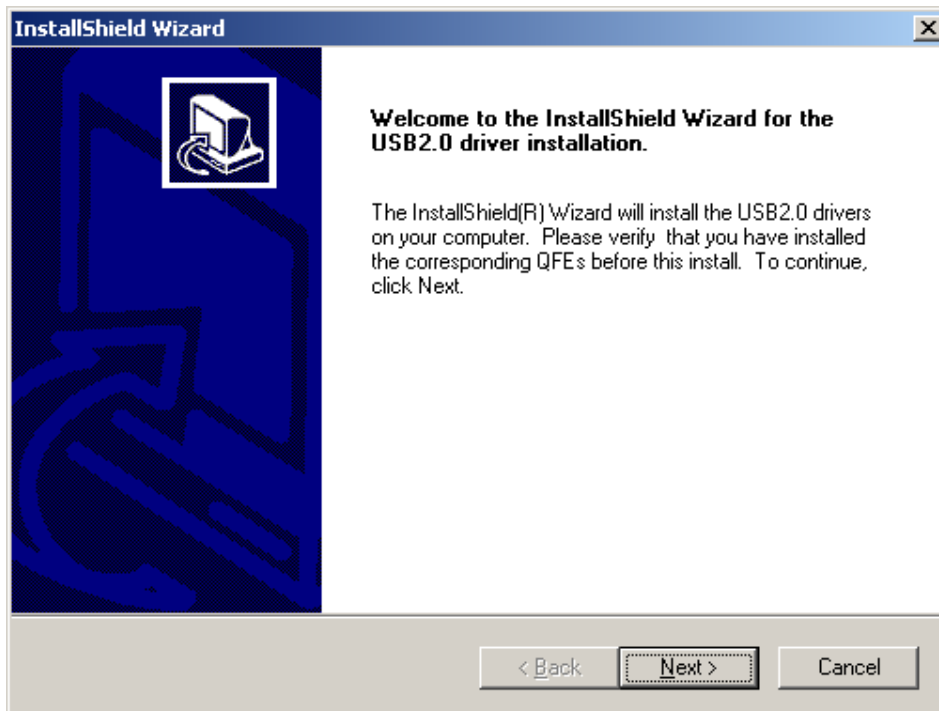
Figure 6-16: USB2.0 Welcome Screen
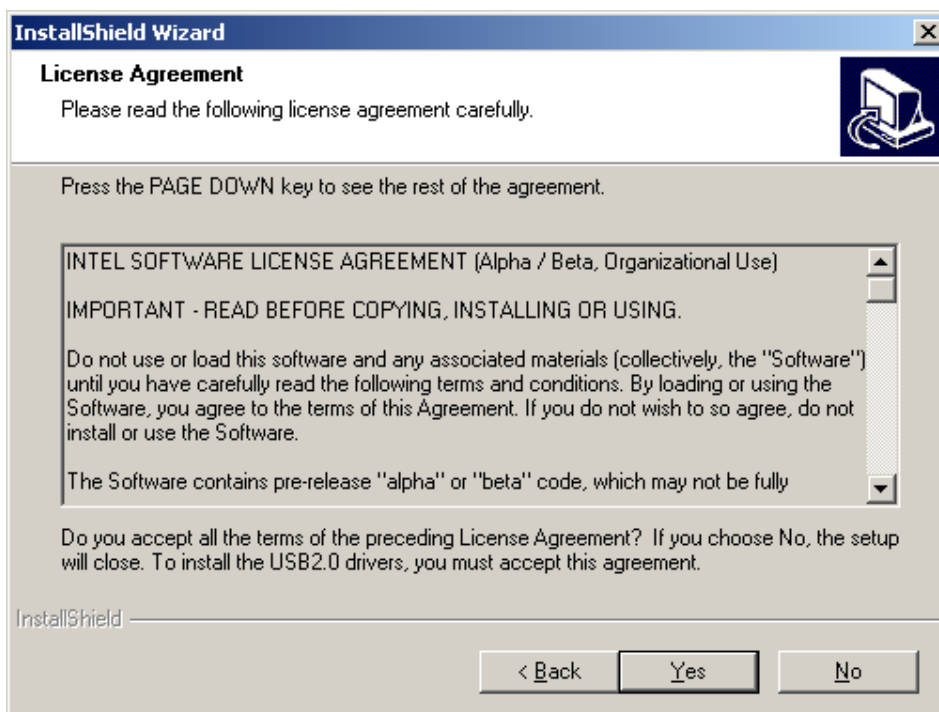
Figure 6-17: USB2.0 License Agreement

Step 4: If you choose to accept the terms and conditions stipulated in the license

agreement shown **Figure 6-17**, click the "Y**ES**" button. The installation notice

shown in **Figure 6-18** will appear.
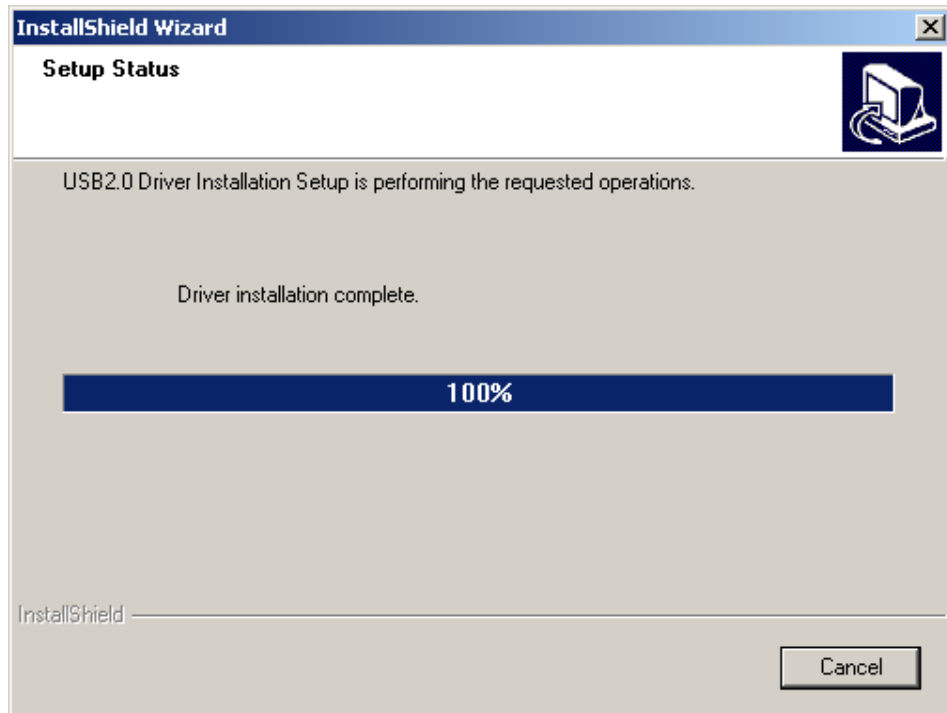
Figure 6-18: USB2.0 Installation Notice

Step 5: After the driver installation process is complete, a confirmation screen shown in

Figure 6-19 will appear.
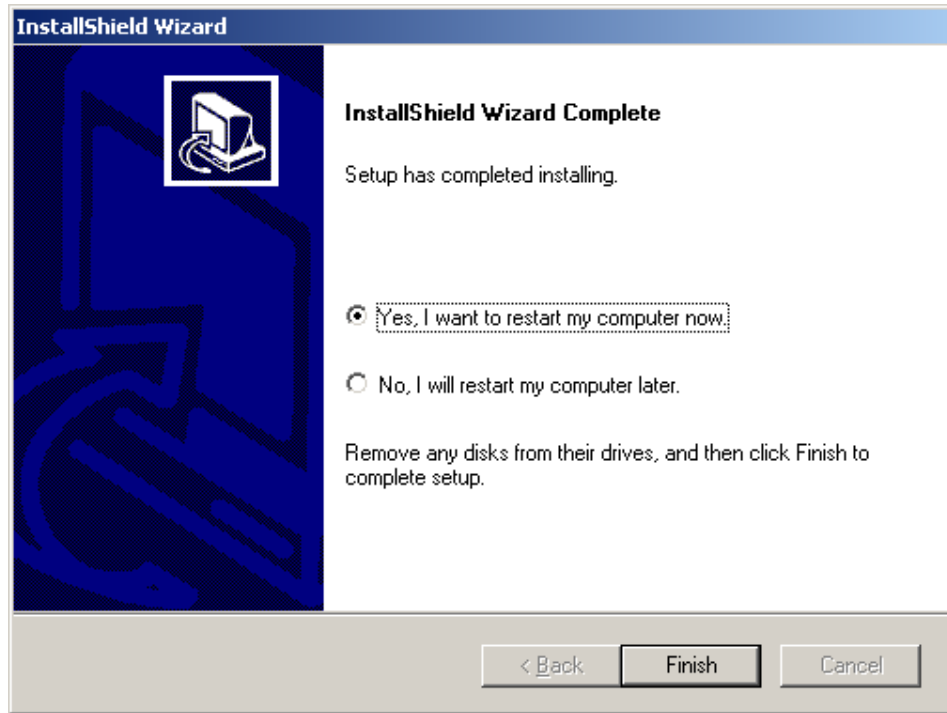
Figure 6-19: USB2.0 Driver Installation Complete

The confirmation screen shown in **Figure 6-19** 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.

6.6 RealTek Audio Driver Installation

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

To the right of the **Audio** menu item, you may select either

\AUDIO\Realtek\Alc100_200 to browse the driver directory, or click on the

Windows button to install the driver.

Once you double click the **Windows** button, the install shield wizard for the

audio driver starts. See **Figure 6-20**.
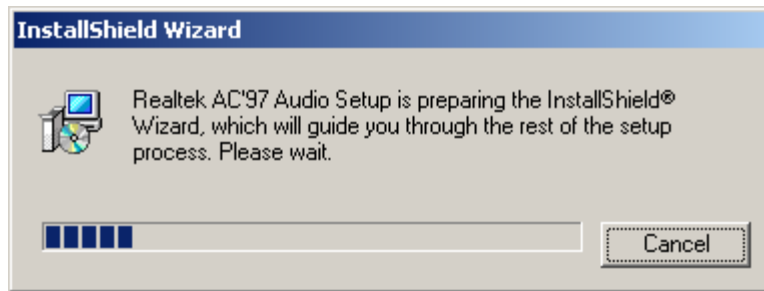
Figure 6-20: Audio Driver Install Shield Wizard Starting

Step 3: The RealTek Audio Setup prepares the install shield to guide you through the

rest of the setup process. See **Figure 6-21**.
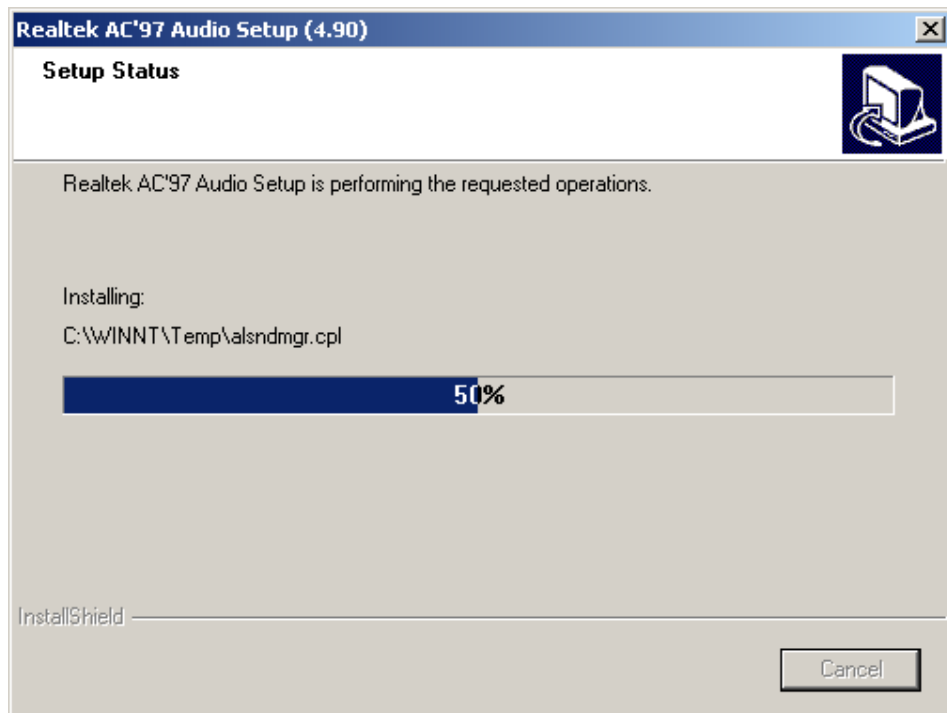
Figure 6-21: Audio Driver Setup Preparation

Step 4: At this stage the "**Digital Signal Not Found**" screen shown in **Figure 6-22**

appears. To continue the installation process, click the "**YES**" button.

Figure 6-22: Audio Driver Digital Signal

Step 5: At this stage clicking the "**YES**" button in **Figure 6-22** begins the driver

installation; see **Figure 6-23**.
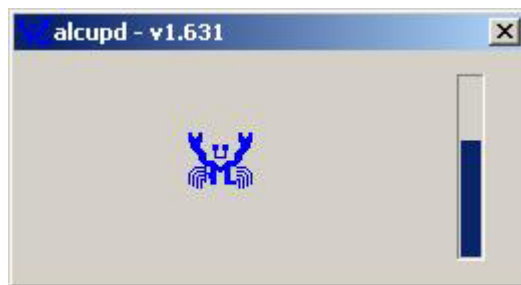
Figure 6-23: Audio Driver Installation Begins

Step 6: After the driver installation process is complete, a confirmation screen shown in

Figure 6-24 appears.
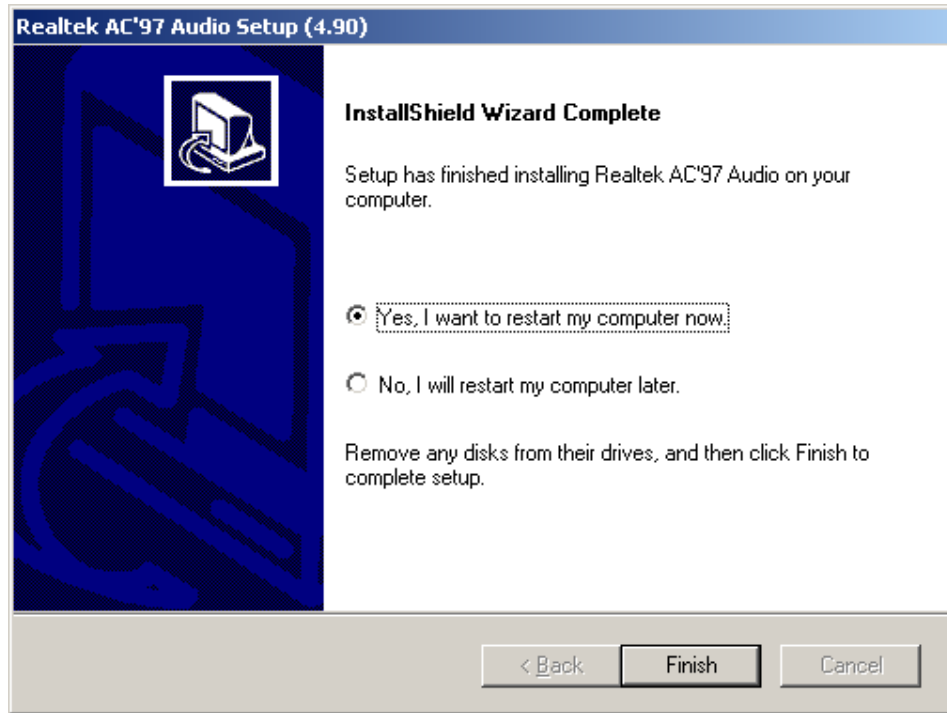
Figure 6-24: Audio Driver Installation Complete

Step 7: The confirmation screen shown in **Figure 6-24** 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.

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Appendix

A

BIOS Configuration Options

A.1   BIOS Configuration Options

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

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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** ;

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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) Graphics Controller
3C0-3DF	Intel(R) 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

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Appendix

D

External AC'97 Audio CODEC

D.1   Introduction

The audio functionalities of the ROCKY-4786EVG CPU come with an onboard Realtek ALC202A 18-bit, full duplex AC'97 2.2 compatible audio CODEC with independent and variable sampling rate. The ALC202A 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 and 10-band equalizer. 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 6.6.

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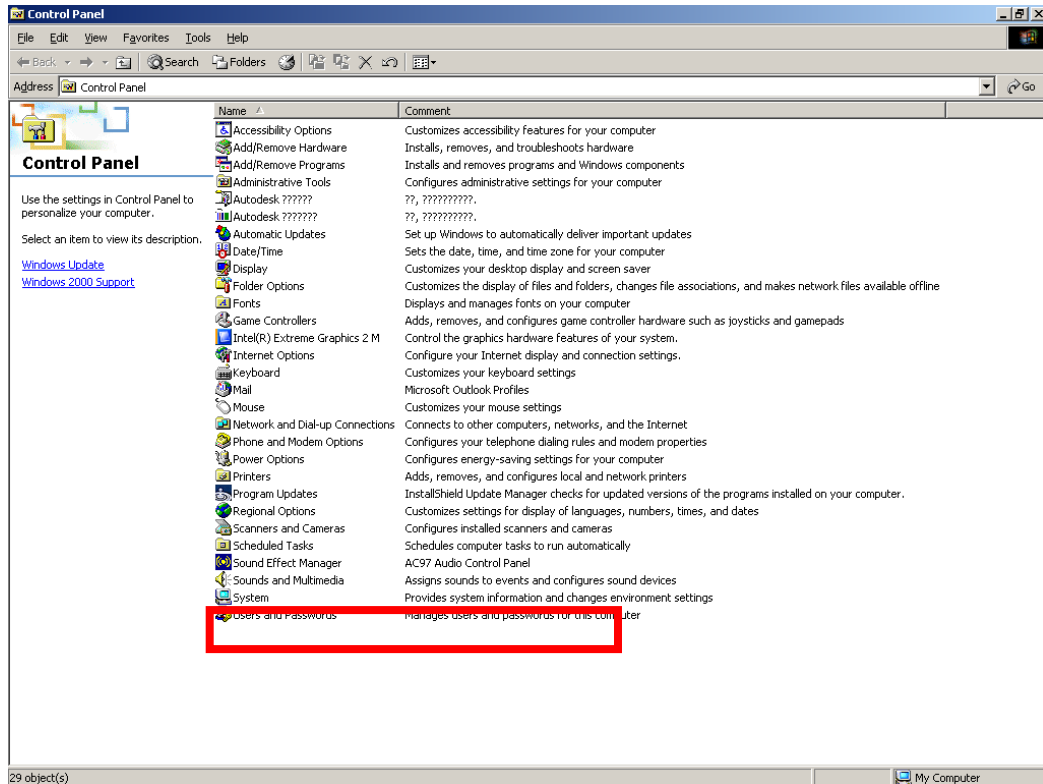
Figure D-1: Sound Effect Manager Icon

D.3   Sound Effect Configuration

After installing the audio CODEC driver, you should be able to use the multi-channel audio features.   Double-click the **Sound Effect Manager** icon in the **Control Panel** (**Figure D-1**).

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 customized setting using the "**Load**" and "**Save**" buttons (**Figure D-3**).
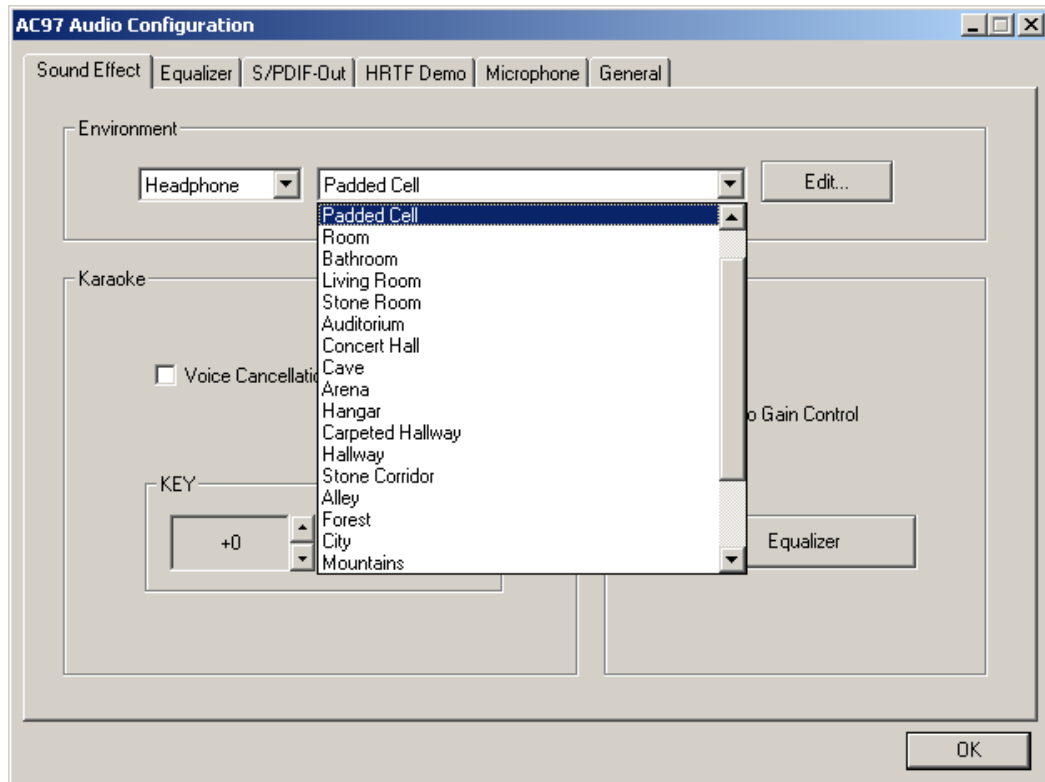
Figure D-2: Setting Sound Effects

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 24 preset environment modes (**Figure D-2**). 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 to edit (**Figure D-3**). Select a preset mode, and then the property value from the list. Use the scroll bar to adjust property setting. When the adjustment is done, click the "**Save**" button.
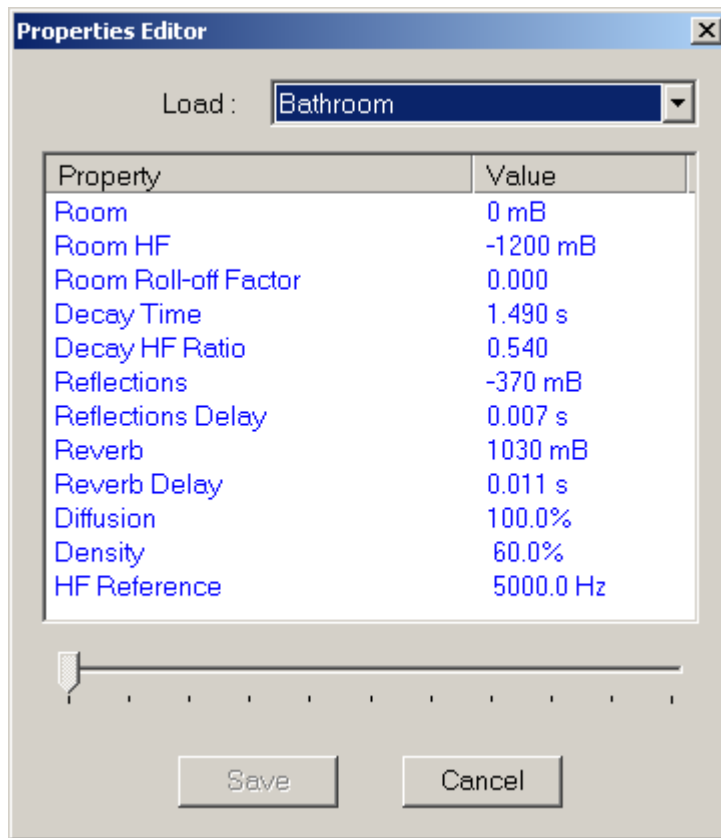
Figure D-3: Sound Effects Properties Editor

D.6 Karaoke Mode
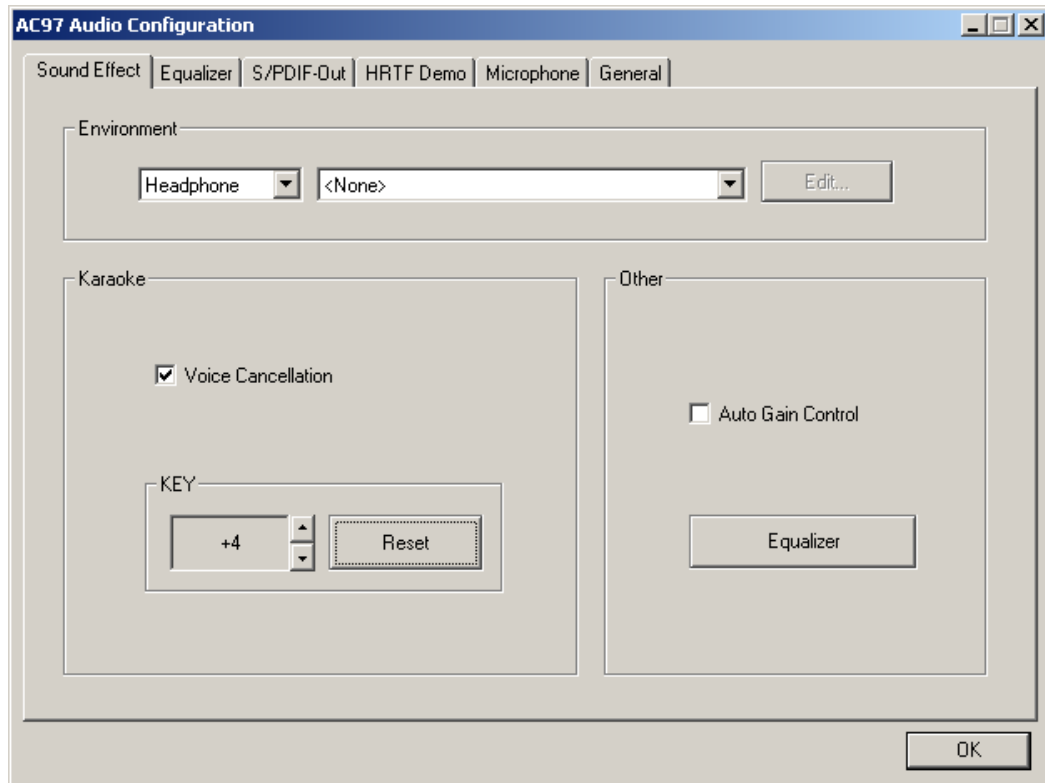
Figure D-4: Karaoke Mode

The Karaoke mode (**Figure D-4**) allows you to eliminate the vocal part 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.

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D.7   Equalizer Selection
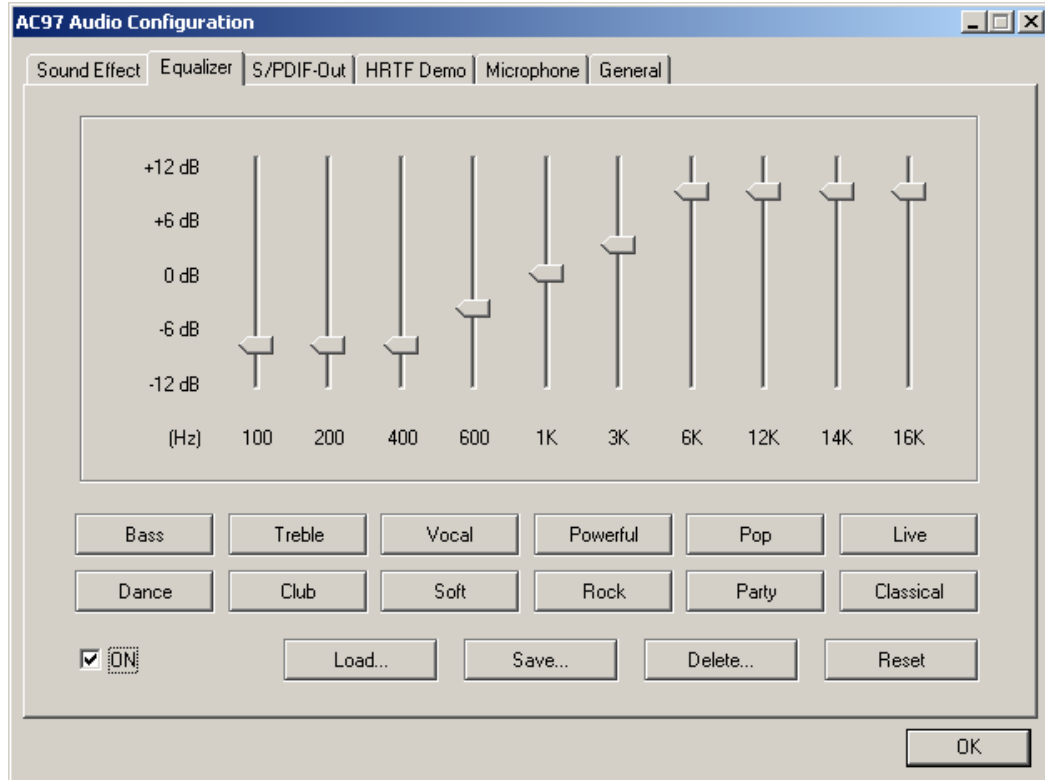
Figure D-5: Equalizer Settings

The equalizer (**Figure D-5**) 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 bars to fine-tune settings, and use the "**Load**", "**Save**", "**Delete**", and "**Reset**" buttons to edit your settings.

D.8   S/PDIF-Out
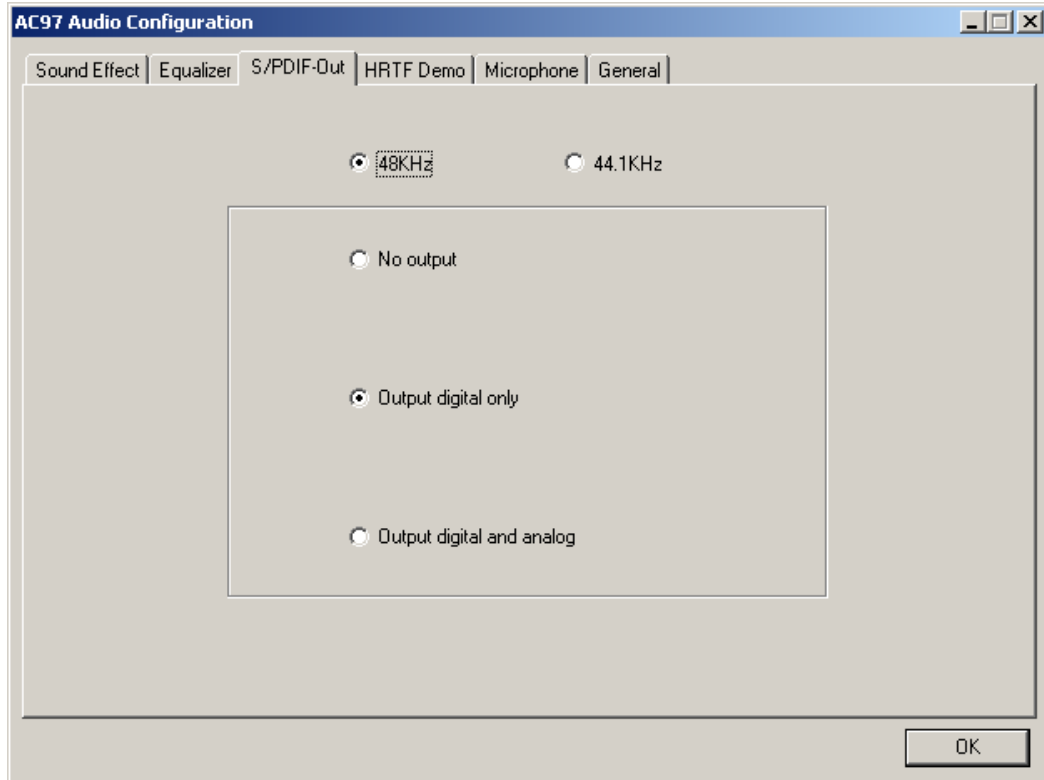
Figure D-6: S/PDIF-Out Settings

The ALC202 also supports the SPDIF out function (**Figure D-6**) is compliant to AC'97 2.2 and can offer easy connection of PCs to consumer electronic products, such as AC3 decoder/speaker and mini disk devices.

D.9   HRTF Demo
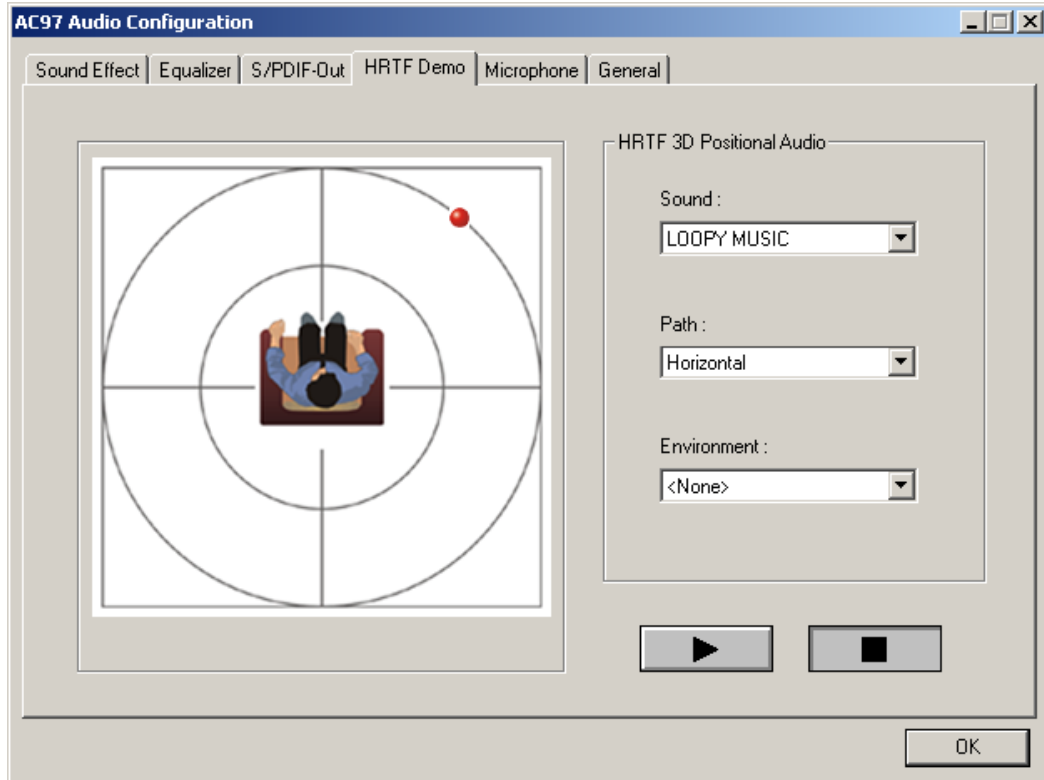
  Figure D-7: HRTF Demo

The HRTF window in **Figure D-7** 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 **Path** settings.

D.10 Microphone Effect
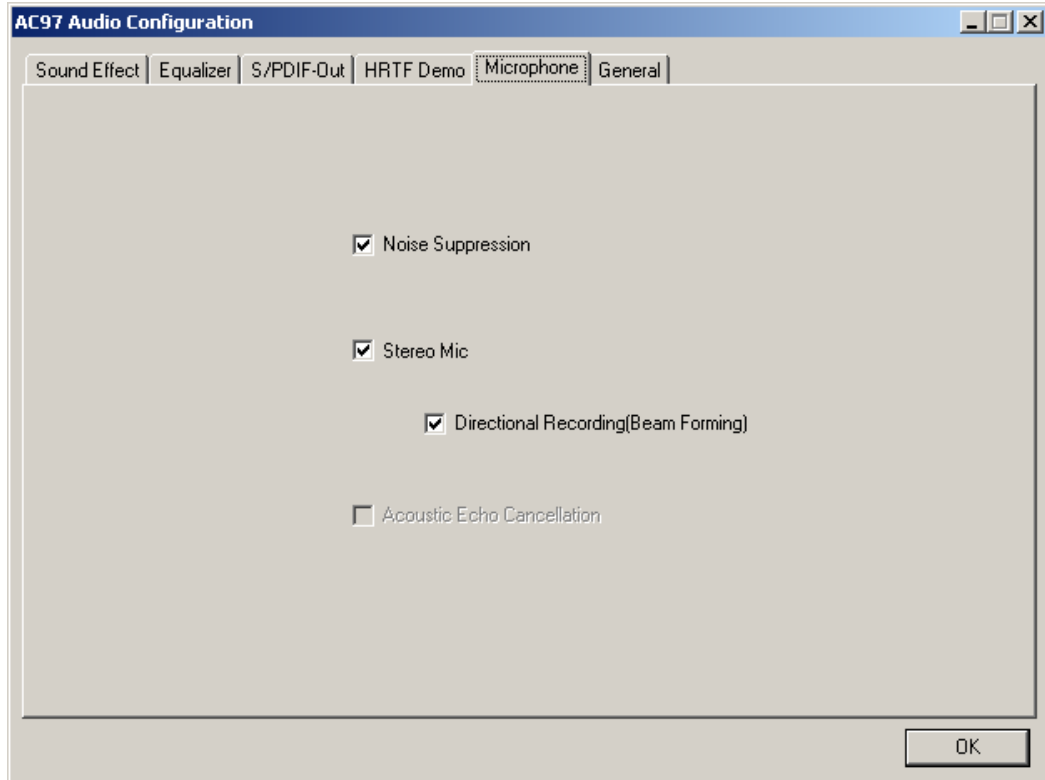
Figure D-8: HRTF Demo

This tab provides Noise Suppression and Stereo Mic options. Select each check box to enable the option.

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D.11 General
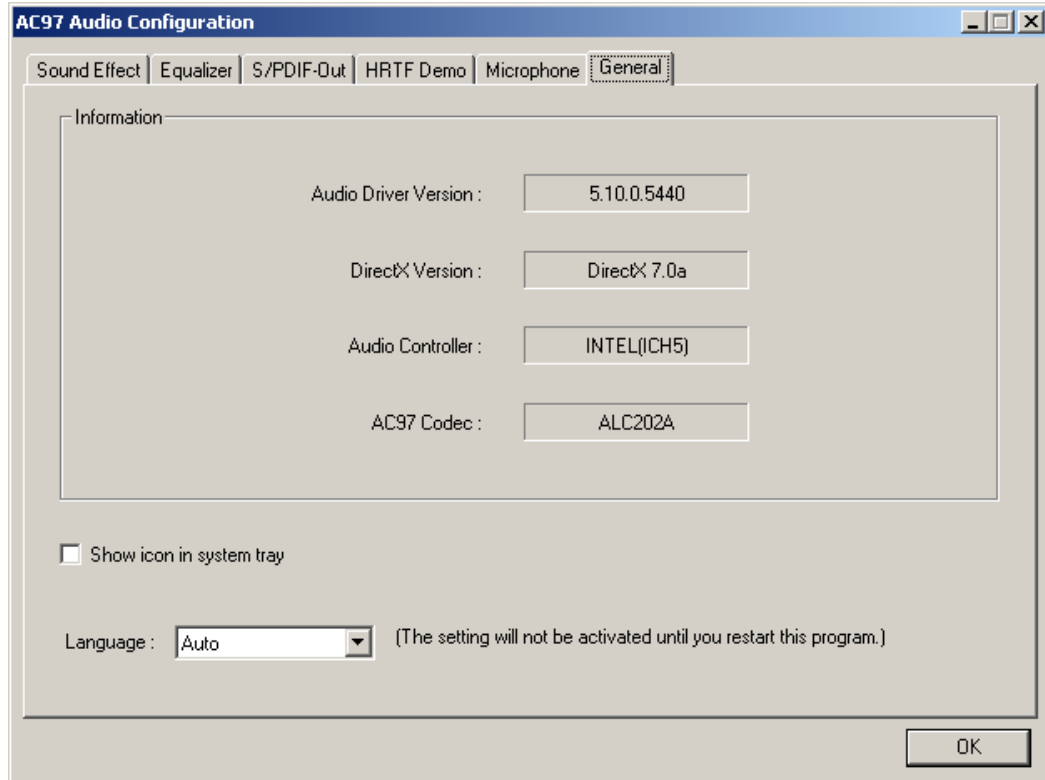
Figure D-9: General

The general tab (**Figure D-9**) provides information about the audio configuration utility
including **Audio Driver** version, **DirectX** version, **Audio Controller**, and **AC'97 Codec**.
There is a pull down menu to change the language and a checkbox to show the sound
effect manger icon in the system tray.

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Index