IEI Technology Corp.

ECK-3699GH

Embedded System with Mini-ITX motherboard
Intel® Pentium 4 / Celeron D CPU
Dual PCIe GbE, COM, VGA, USB 2.0 and Audio

User Manual

Rev. 1.0, January 2007

RoHS Lead Free

REVISION HISTORY

Title	ECK-3699GH Intel Pentium 4 / Celeron D Embedded System	
Revision Number	**Description**	**Date of Issue**
1.0	**Initial release**	**January 2007**

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1

Introduction

1.1 ECK-3699GH Embedded System Overview

Figure 1-1: ECK-3699GH KINO Series Embedded System

There are three KINO series based embedded solutions in the ECK-3699G series. All motherboards have been optimized for multimedia applications that require minimum installation space. The KINO series boards support a full range of functions for an AT/ATX-compatible industrial computer.

1.1.1 ECK-3699GH Benefits

The ECK-3699GH embedded system has the following benefits:

- Easy installation saves installation time
- Complete integration saves solution development time and cost
- Compact size saves space
- Powerful preinstalled Intel Pentium 4 / Celeron D CPU and motherboard ensures rigorous processing needs can be met

1.1.2 ECK-3699GH Features

The ECK-3699GH has the following feature:

- RoHS compliant design
- Built-in DC-to-DC power converter
- Intel® Pentium 4 / Celeron D CPU support
- Two 6cm ball bearing system fan
- Supports one 2.5” HDD

1.2 Technical Specifications

The specifications for the ECK-3699GH embedded systems are listed below.

	ECK-3699GH
CPU	Intel® Pentium® 4 / Celeron® D with 533/800 MHz FSB
System Chipset	SiS661CX + SiS966
System Memory Speed	DDR 400MHz or 333MHz
System Memory Type	2 x 184-pin DIMM socket supports up to 2GB
Ethernet	Dual Broadcom BCM5787 PCIe GbE
Display	Support CRT
USB	6 x USB 2.0 supported, two at front and four at rear
Storage	Optional 2.5” HDD
Audio	Line-in / Line-out
Chassis Construction	Front bezel: acrylic Chassis: heavy duty metal
System Cooling	2 x 6010 ball bearing fan
Power Supply	Internal DC-to-DC power converter, input voltage: 19V DC External power adapter, input voltage: 100V AC ~ 240V AC @ 50Hz ~ 60Hz, 150W
Operating Shock	IEC68-2-27 Testing Procedures **Operating Shock Half-Sine Wave Shock**: a) 3G: 11ms: 3 shocks per axis: Vertical / Transverse / Longitudinal. **Non-Operation Shock Half-Sine Wave Shock**: 10G: 11ms: 3 shocks per axis: Vertical/Transverse/Longitudinal.

Operating Vibration	MIL-STD-810F 514.5C-1 **Operating Random Vibration Mode**: a) Axes: 3 axes / Vertical / Transverse / Longitudinal. b) 10-500 Hz, 60min/axis. c) Equivalent to Z:1.04 Grms X:0.204 Grms Y:0.74 Grms **Non-Operating Sine Mode**: a) Axes: 3 axes / Vertical / Transverse / Longitudinal. b) 0.1in. p-p, 5-17Hz, 1.5g peak, 17-640Hz Swept Sine, 3 Swept per axis. c) 60 min/axis
Operating Temperature	0ºC ~ 45ºC
Operation Humidity	10% ~ 90%
Weight (Net/Gross)	2.8Kg/4.2Kg
Dimensions (D x W x H)	258mm x 210mm x 65mm
EMC	FCC Class A, CE

Table 1-1: Technical Specifications

1.3 Power Module Specifications

The specifications for the QT-16045 are shown in **Table 1-2**

Model Name:	**QT-16045**			
Input	16VDC~19VDC			
Output	**Voltage**			**Current**
	Min.	**Typ.**	**Max.**	**Max.**
12V	11.4V	12V	12.6V	8A
5V	4.75V	5.00V	5.25V	8A
3.3V	3.135V	3.3V	3.465V	5A
-12V	11.16V	12V	12.84V	0.2A

5VSB	4.75V	5.00V	5.25V	3A
Dimensions:	45mm x 160mm			
Temperature:	80°C			

Table 1-2: Power Module Specifications

1.4 Power Adapter

The ECK-3699GH models are shipped with a 150W power adapter.

Figure 1-2: Power Adapter

The specifications for the adapter are listed in **Table 1-3**:

Output	**Nominal**	19.0V
	Regulation	18.5V to 19.9V
	Ripple/Noise	200mV
	Min.	0.0A
	Max.	7.9A
Protection	**Short Circuit**	The power supply is protected from short circuit at any outputs with no damage.
	Over-Voltage	25VDC

Time	**Hold Up**	8ms	
Input	**Min.**	90V	
	Max.	264V	
	Frequency	47Hz ~ 63Hz	
	Inrush Current	No damage (cold start)	
	Max. AC Current	2A@100VAC	
	Efficiency	83%	
Environment	**Temperature**	Operating	10ºC ~ 40ºC
		Storage	0ºC ~ 85ºC
	Relative Humidity	Storage (non-condensing)	5% ~ 95%
Reliability	**MTBF**	100,000 hours per MIL-HDBK-217 at 25 DegC and 100 % of rated load.	

Table 1-3: Power Adapter Specifications

1.5 CPU Cooling Kit Specifications

The ECK-3699GE is shipped with a 1U CPU cooling kit.

Figure 1-3: ECK-3699GE Cooling Kit

The specifications for the cooling kit are listed in **Table 1-4**.

Rated Voltage	12V DC
Operating Range	5V~13.2V DC
Consuming Current	0.45A (Max.)
Consuming Power	5.40W (Max.)
Rated Speed	4800rpm ± 10%rpm
Airflow	28.74 CFM (at rated voltage)
Static Pressure	3.34mmH_2O
Operating Temperature	-10ºC~70ºC
Storage Temperature	-20ºC ~75ºC
Dimensions	90mm x 90mm

Table 1-4: CPU Cooling Kit Specifications

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Chapter

2

Mechanical Description

2.1 ECK-3699GH Mechanical Overview

The ECK-3699GH is made of a metal chassis. The chassis is covered with a top cover and comprises multiple air vents to allow for the free flow of cooling air through the system. The front panel of the chassis covered with acrylic front bezel contains buttons, indicator and USB ports. The rear panel of the chassis connects to all the external interface connectors on a preinstalled IEI KINO series motherboard. The motherboard is directly connected to the DC-to-DC power module converter. Two cooling fans are preinstalled in the side of the chassis.

2.2 Physical Dimensions

The physical dimensions of the ECK-3699GH embedded systems are listed below.

2.2.1 ECK-3699GH Dimensions

The dimensions of the ECK-3699GH are listed below and shown in **Figure 2-1**.

- **Height**: 65.00mm
- **Width:** 258.20mm
- **Length**: 210.00mm

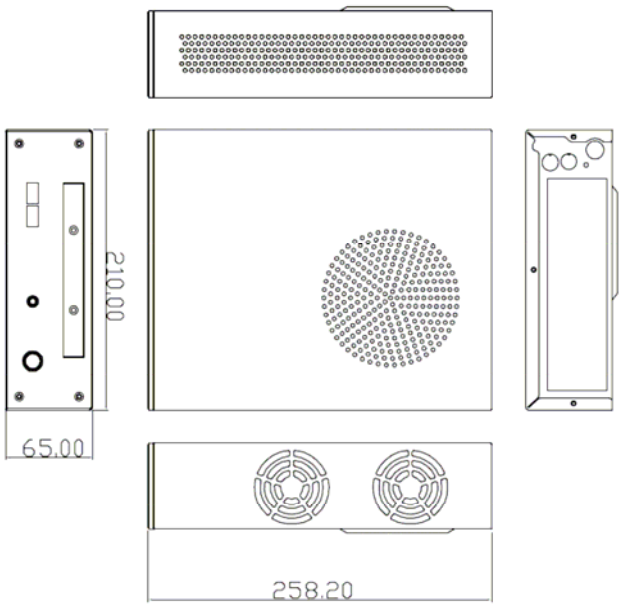


Figure 2-1: ECK-3699GH Dimensions (mm)

2.2.2 Motherboard Dimensions

The KINO series dimension are listed below and shown in **Figure 2-2**.

- **Length**: 170.00mm
- **Width**: 170.00mm

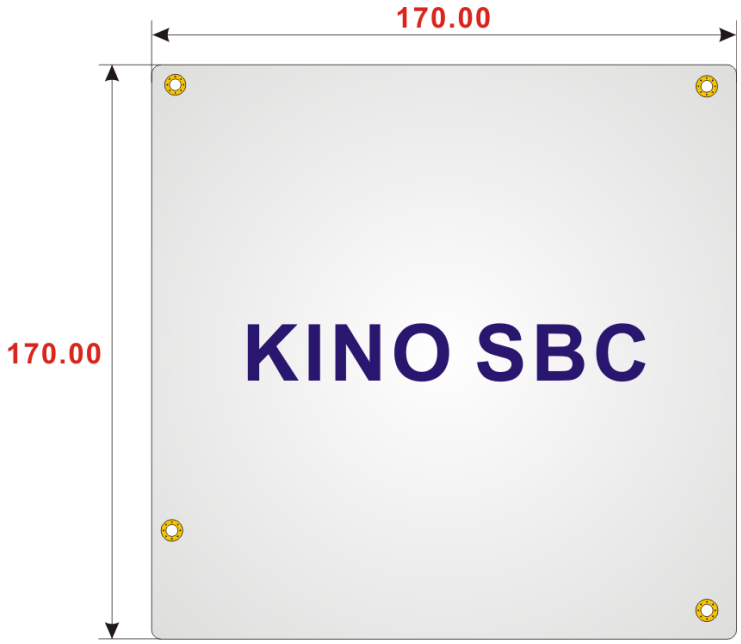


Figure 2-2: KINO SBC Dimensions (mm)

2.2.3 Power Module Dimensions

The power module dimensions are listed below and shown in **Figure 2-3**.

- **Length**: 160.00mm
- **Width**: 45.00mm

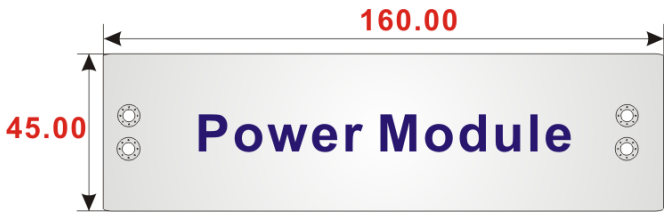


Figure 2-3: Power Module Dimensions (mm)

2.3 External Overview

2.3.1 Front Panel

2.3.1.1 Front Panel Overview

The front panel of the ECK-3699GH contains indicators, buttons, USB ports and CD drive bay. See **Figure 2-4**.

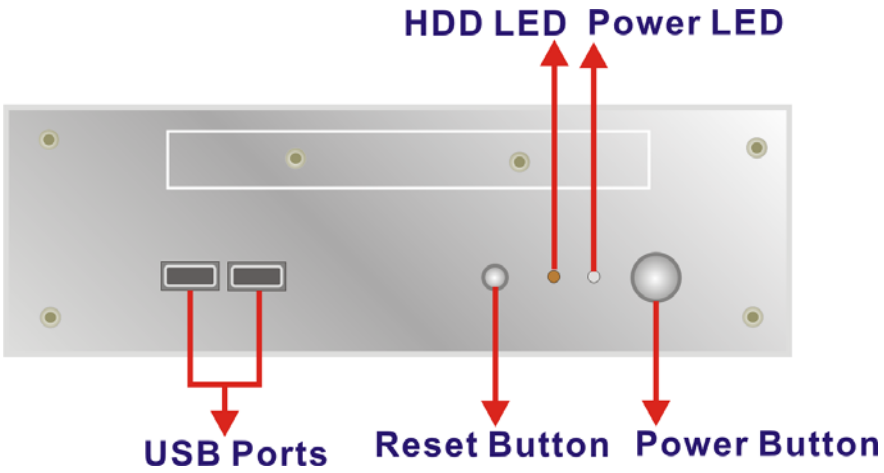


Figure 2-4: ECK-3699GH Front Panel

2.3.1.2 Front Panel Buttons and Indicators

The connectors, indicators and buttons listed in this section are shown in **Figure 2-4** above. The front panel I/O connectors are listed below:

- 2 x USB port connectors

The front panel also contains the following buttons:

- 1 x Power Button
- 1 x Reset Button

Status indicator LEDs on the front panel include:

- 1 x Power LED
- 1 x HDD LED

All the front panel items listed above are shown in **Figure 2-4** above.

2.3.2 Rear Panel

2.3.2.1 Rear Panel Overview

The ECK-3699GH contains all the external I/O interface connectors, power connectors and audio jacks. An overview of the rear panel is shown in **Figure 2-5** below.

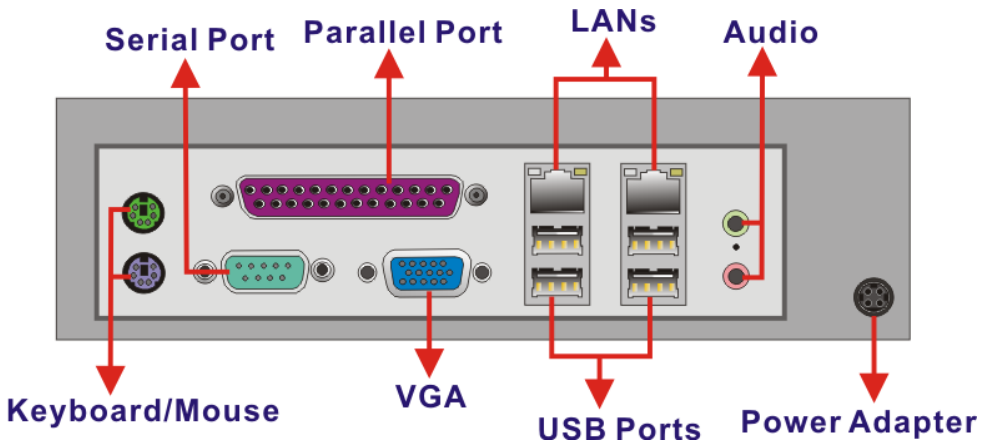


Figure 2-5: ECK-3699GH Rear Panel

2.3.2.2 Rear Panel Connectors

The connectors, indicators and switches listed in this section are shown in **Figure 2-5** above. The rear panel I/O connectors are listed below:

- 1 x Power adapter connector
- 2 x Audio jacks
- 4 x USB port connectors
- 2 x RJ-45 Ethernet connectors
- 1 x Parallel port connector
- 1 x RS-232 serial port connector
- 1 x VGA connector
- 1 x Mouse connector
- 1 x Keyboard connector

All the rear panel items listed above are shown in **Figure 2-5** above.

2.3.3 Top Cover

WARNING:

Never remove the top cover from the chassis while power is still being fed into the system. Before removing the top cover, make sure the system has been turned off and all power connectors unplugged.

The top cover of the ECK-3699GH covers the top and both sides of the ECK-3699GH. The top cover is secured to the ECK-3699GH with three retention screws on the rear panel. Each side of the top cover all contains air vents.

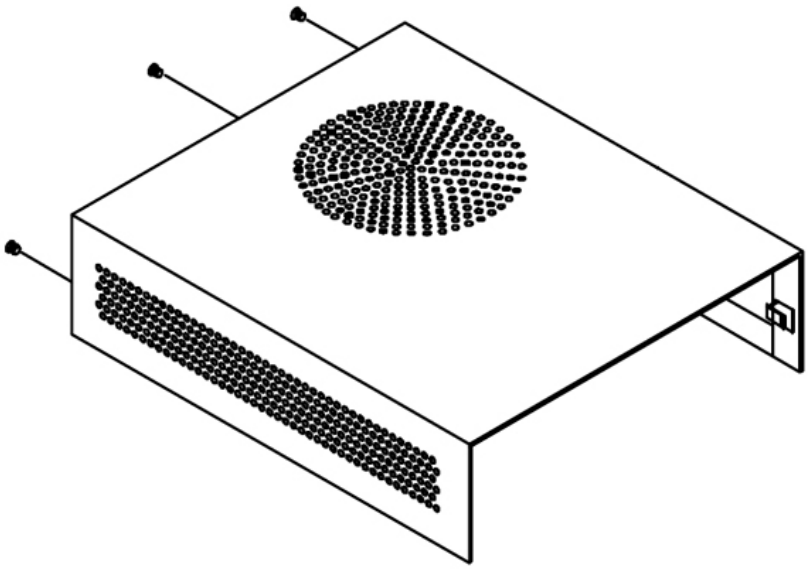


Figure 2-6: ECK-3699GH Top Cover

2.3.4 Bottom Surface

The bottom surface of the ECK-3699GH contains one air vent.

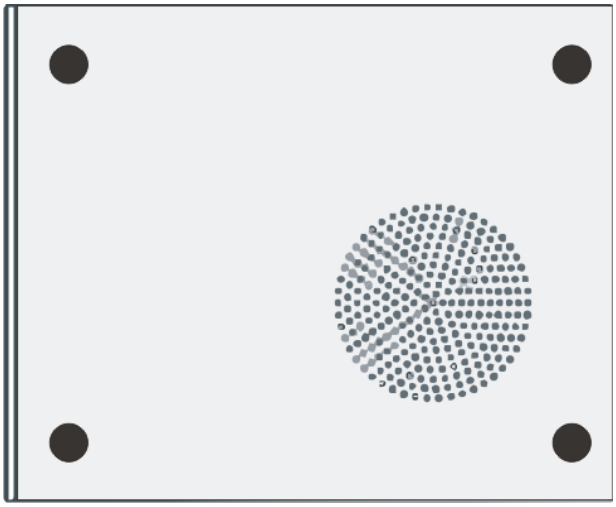


Figure 2-7: Bottom Surface

2.4 Internal Overview

The ECK-3699GH internal components are listed below:

- 1 x IEI KINO motherboard
- 1 x Power module
- 2 x System cooling fans
- 1 x USB board
- 1 x Switch/LED board
- 1 x 2.5” HDD (optional)

All the components are accessed by removing the top cover.

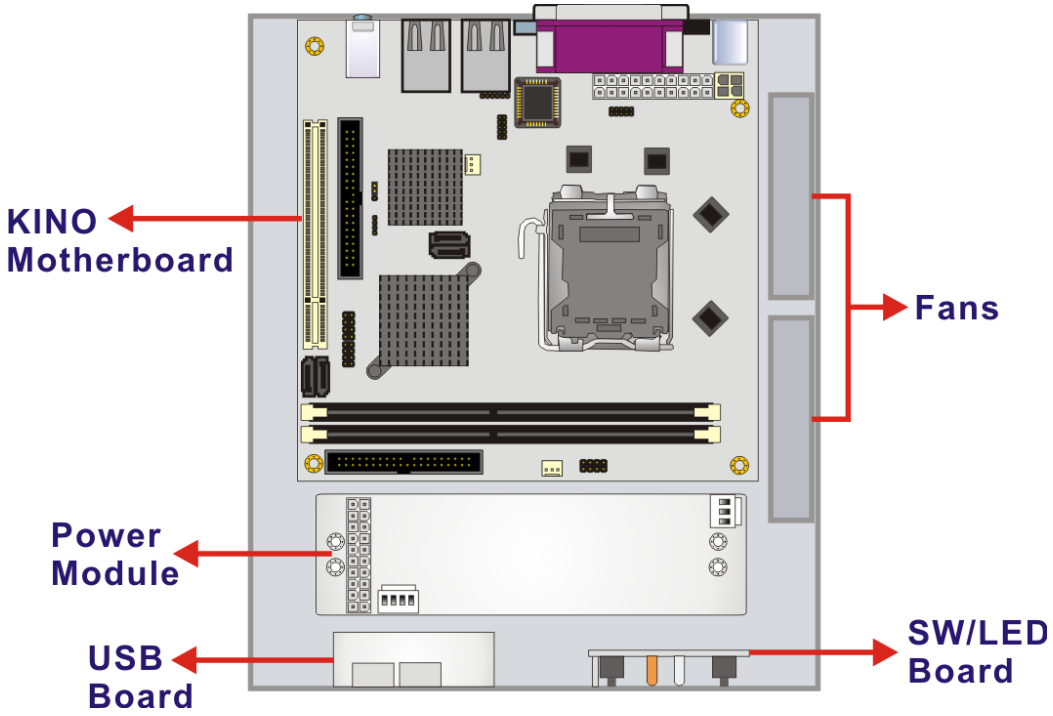


Figure 2-8: ECK-3699GH Internal Overview

2.5 Cooling Fans

The embedded system has two internal cooling fans mounted at the right side of the chassis and connected directly to the power module. The cooling fan dimensions are shown in **Figure 2-9** and the specifications are shown in **Table 2-1**.

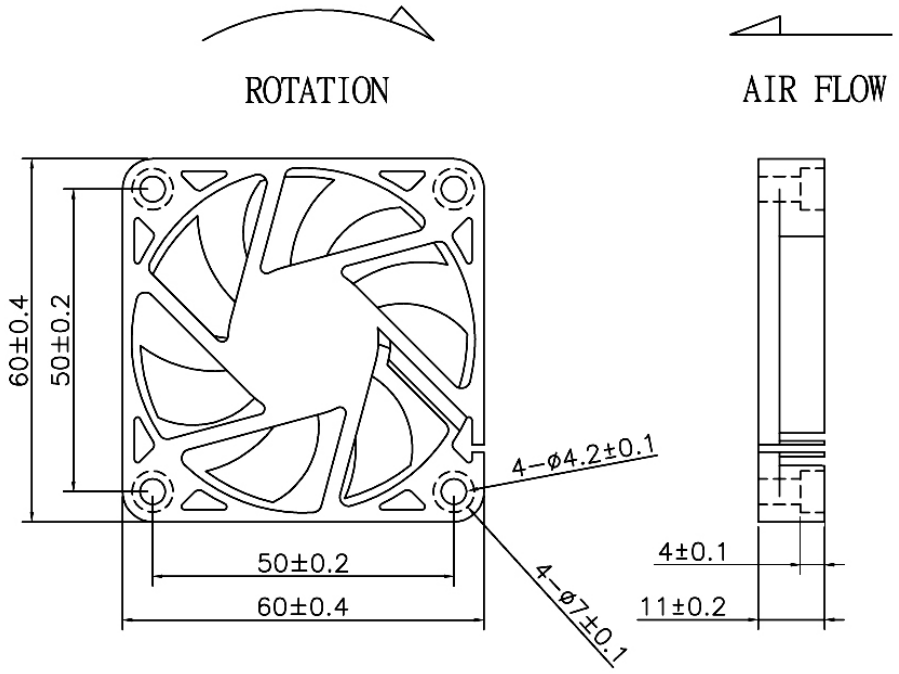


Figure 2-9: Cooling Fan Dimensions (mm)

Specification	Units	Details
Dimensions	mm	60 x 60 x 11 (L x W x Thickness)
Bearing System		Dual Ball Bearing, NMB or ISC
Rated Voltage	VDC	12.0
Operating Voltage Range	VDC	11.0~15.0 at 25 °C
Start-up Voltage	VDC	10.8 at 25 °C, power On/Off
Rated Current	Amp	0.15 (Max.) in free air rated
Operating Current	Amp	0.07 (Fan alone)
Rated Input Power	Watt	1.8 (Max.) in rated voltage
Rated Speed	RPM	2800±10% after 10 min. rotating
Air Flow	CFM (CMM)	10.1955(0.289) at zero static pressure

		and 25 °C, rated speed
Static Air Pressure	mmH_2O	1.18 at zero air flow and 25 °C
Operating Temperature		-10°C,~+70°C, /66%(RH)
Storage Temperature		-40°C,~+70°C, /66%(RH)
Noise Level	dBA	22.0 at rated voltage
Environment Humidity		Less than 85%(RH)
Life Expectancy	hours	40,000

Table 2-1: Cooling Fan Specifications

Chapter

3

System Components

3.1 ECK-3699GH Embedded System Motherboard

3.1.1 ECK-3699GH Embedded System Motherboard

NOTE:

The jumpers and connectors shown in the section below are those jumpers and connectors that are relevant to the configuration and installation of the embedded system. For a complete list of jumpers and connectors on the KINO-6614 motherboard, please refer to the KINO-6614 user manual.

The ECK-3699GH models have a KINO-6614 motherboard installed in the system. The following sections describe the relevant connectors and jumpers on the motherboard.

3.1.2 KINO-6614 Motherboard Overview

The locations of the KINO-6614 jumpers and connectors used on the ECK-3699GH are shown in **Figure 3-1** below.

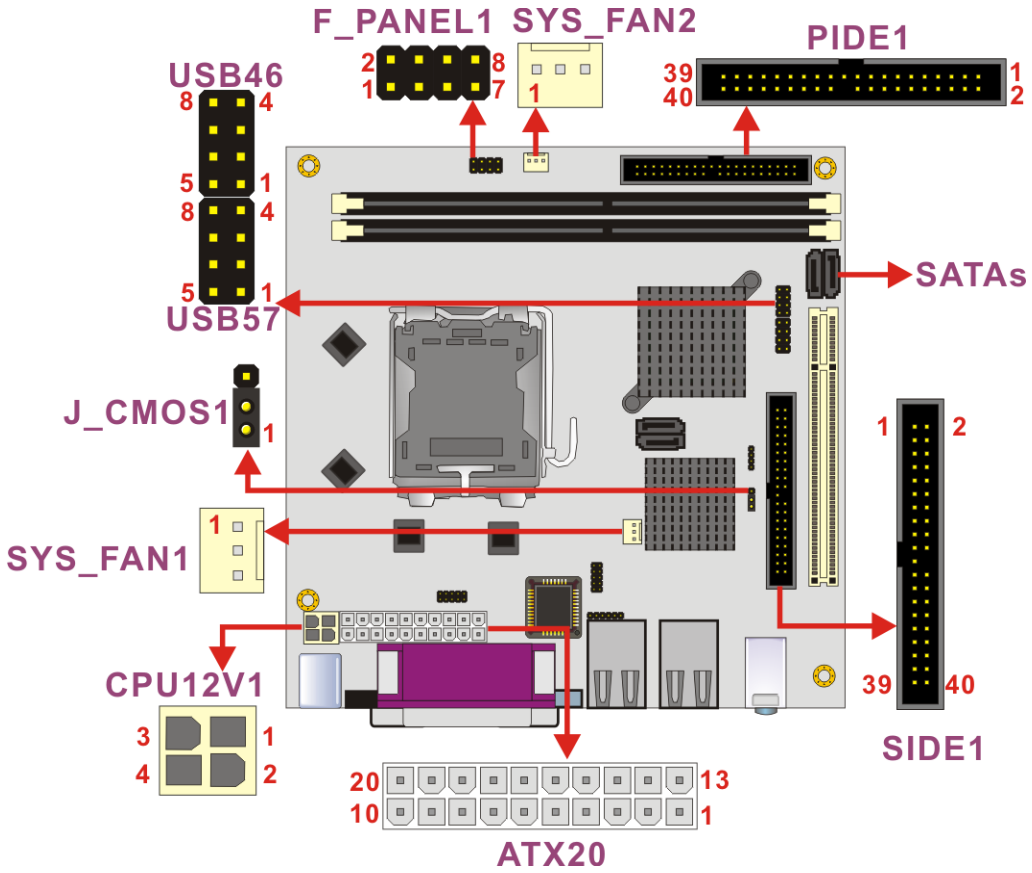


Figure 3-1: KINO-6614 Jumper and Connector Locations

3.1.3 Onboard Connectors and Jumpers

The connectors listed in **Table 3-1** on the KINO-6614 motherboard are connected to front panel components, storage devices and the power module as specified later in this chapter. Detailed descriptions of these connectors can be found in **Section 3.2**. For a more comprehensive list of jumpers and connectors, please refer to KINO-6614 user manual.

Connector	Type	Label
ATX Power connector	20-pin connector	ATX20
CPU power connector	4-pin connector	CPU12V1
Front panel connector	8-pin header	F_PANEL1
IDE Interface connector (Primary)	40-pin box header	PIDE1

IDE Interface connector (Secondary)	40-pin box header	SIDE1
System fan connector	3-pin wafer connector	SYS_FAN1
System fan connector	3-pin wafer connector	SYS_FAN2
SATA connector	7-pin SATA connector	S_ATA1
SATA connector	7-pin SATA connector	S_ATA2
USB connector (1)	8-pin header	USB46
USB connector (2)	8-pin header	USB57

Table 3-1: Peripheral Interface Connectors

3.1.4 External Interface Connectors

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

Connector	Type	Label
Audio connector	Audio Jacks	AUDIO_CV1
CRT connector	15-pin female connector	VGA1
Ethernet connector (1)	RJ-45 connector	LAN1_USB01
Ethernet connector (2)	RJ-45 connector	LAN2_USB23
Keyboard/Mouse connector	6-pin mini din connector	KB_MS1
Serial port connector	DB-9 male connector	COM_C1
Parallel port connector	DB-25 female connector	LPT_C1
USB 2.0 port (1)	USB port connector	LAN1_USB01
USB 2.0 port (2)	USB port connector	LAN2_USB23

Table 3-2: Peripheral Interface Connectors

3.1.5 Onboard Jumpers

Table 3-3 lists the onboard jumper. Detailed descriptions of the jumper can be found in **Section 3.3.2**. For a more comprehensive list of jumpers and connectors, please refer to KINO-6614 user manual.

Description	Label	Type
Clear CMOS	J_CMOS1	3-pin header

Table 3-3: Onboard Jumper

3.2 KINO-6614 On-board Connector Pinouts

The following sections describe the motherboard pinouts and the embedded system components to which they have been connected.

3.2.1 ATX Power Connector

CN Label: ATX20

CN Type: 20-pin connector (2x10)

CN Location: See Figure 3-2

CN Pinouts: See Table 3-4

This 20-pin power connector supports the ATX power supply.

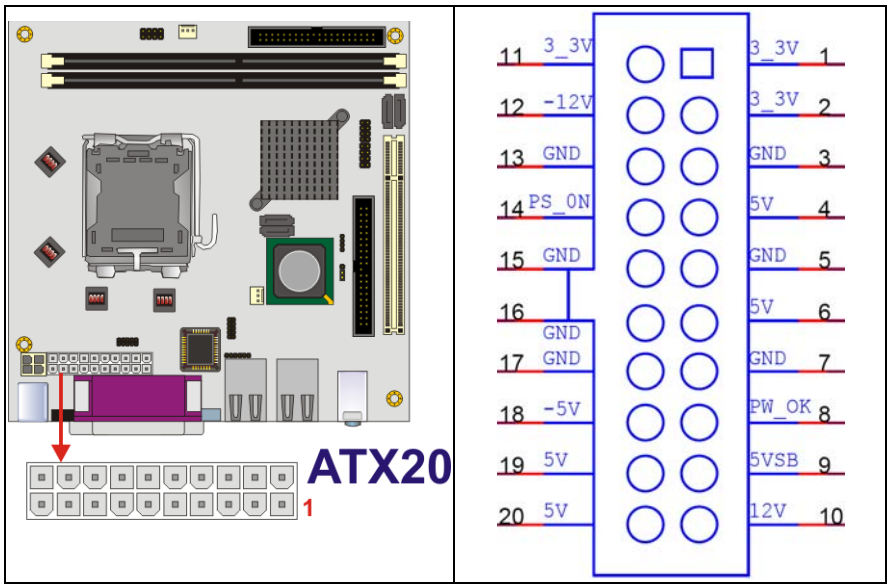


Figure 3-2: Power Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3Vdc	11	+3.3Vdc
2	+3.3Vdc	12	-12Vdc
3	GND	13	GND
4	+5Vdc	14	PS-ON
5	GND	15	GND
6	+5Vdc	16	GND
7	GND	17	GND
8	PWR-OK	18	-5Vdc
9	+5VSby	19	+5Vdc
10	+12Vdc	20	+5Vdc

Table 3-4: Power Connector Pinouts

3.2.2 CPU Power Connector

CN Label: CPU12V1

CN Type: 4-pin connector (2x2)

CN Location: See Figure 3-3

CN Pinouts: See Table 3-5

The connector supports the 12V power supply.

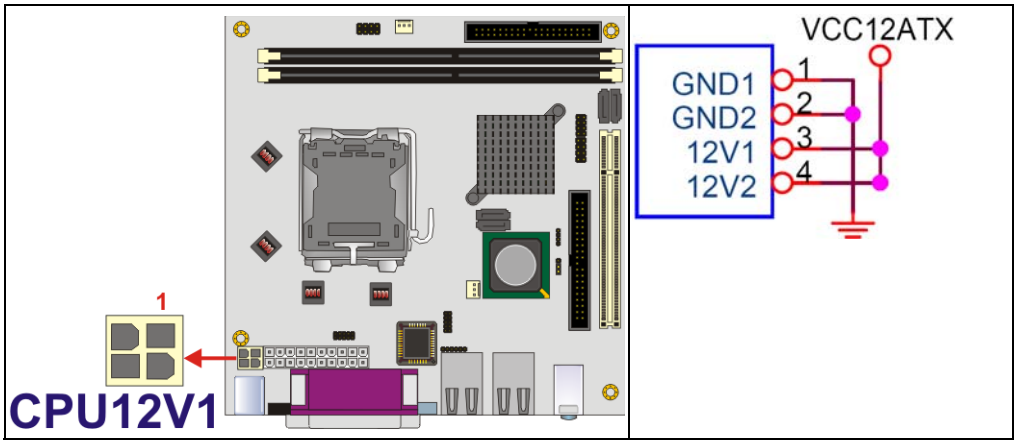


Figure 3-3: CPU 12V Power Connector Location

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

Table 3-5: CPU 12V Power Connector Pinouts

3.2.3 Fan Connectors

CN Label: SYS_FAN1 and SYS_FAN2

CN Type: 3-pin wafer connector

CN Location: See Figure 3-4

CN Pinouts: See Table 3-6

The cooling fan connectors on the KINO-6614 provide a 12V, 500mA current to a CPU cooling fan and a system cooling fan. All cooling fans have linear fan speed controlled by BIOS.

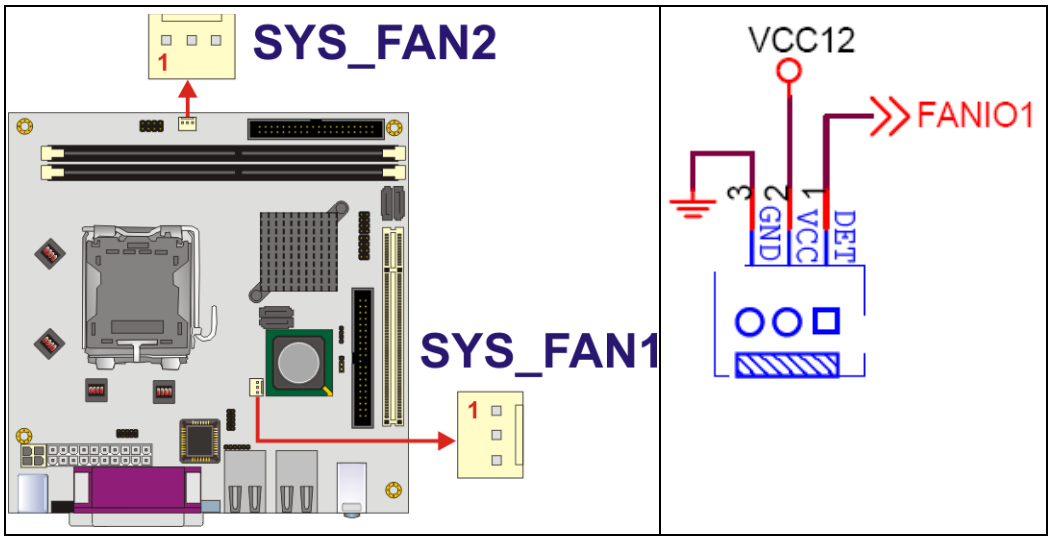


Figure 3-4: Fan Connector Locations

PIN NO.	DESCRIPTION
1	Rotation Signal
2	+12V
3	Ground

Table 3-6: System Fan Connector Pinouts

3.2.4 Front Panel Connector

CN Label: F_PANEL1

CN Type: 8-pin header (2x4)

CN Location: See Figure 3-5

CN Pinouts: See Table 3-7

The front panel connector connects to several external switches and indicators on the front panel to monitor and control the motherboard. These indicators and switches include:

- Power LED
- ATX Power button
- Reset button
- HDD LED

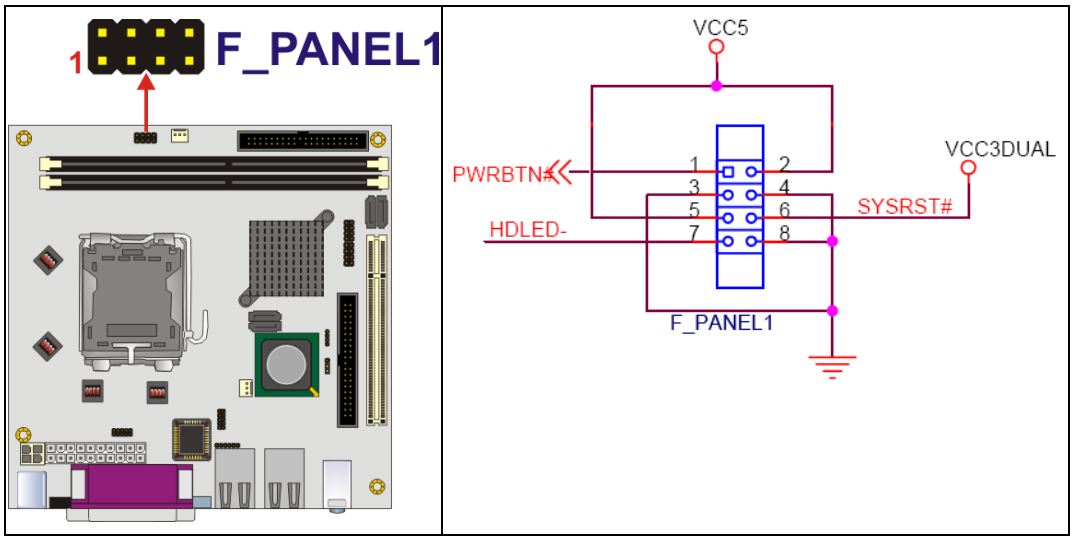


Figure 3-5: Front Panel Connector Location

	PIN	DESCRIPTION	PIN	DESCRIPTION	
Power Button	1	PWRBTN+	2	PWRLED+	Power LED
	3	PWRBTN-	4	PWRLED-	
HD LED	5	HDDLED+	6	RESET+	RESET
	7	HDLED-	8	RESET-	

Table 3-7: Front Panel Connector Pinouts

3.2.5 IDE Connectors

CN Label: PIDE1 and SIDE1

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

CN Location: See Figure 3-6

CN Pinouts: See Table 3-8

One 40-pin IDE device connector on the KINO-6614 motherboard supports connectivity to ATA 133 IDE devices with data transfer rates up to 133MB/s.

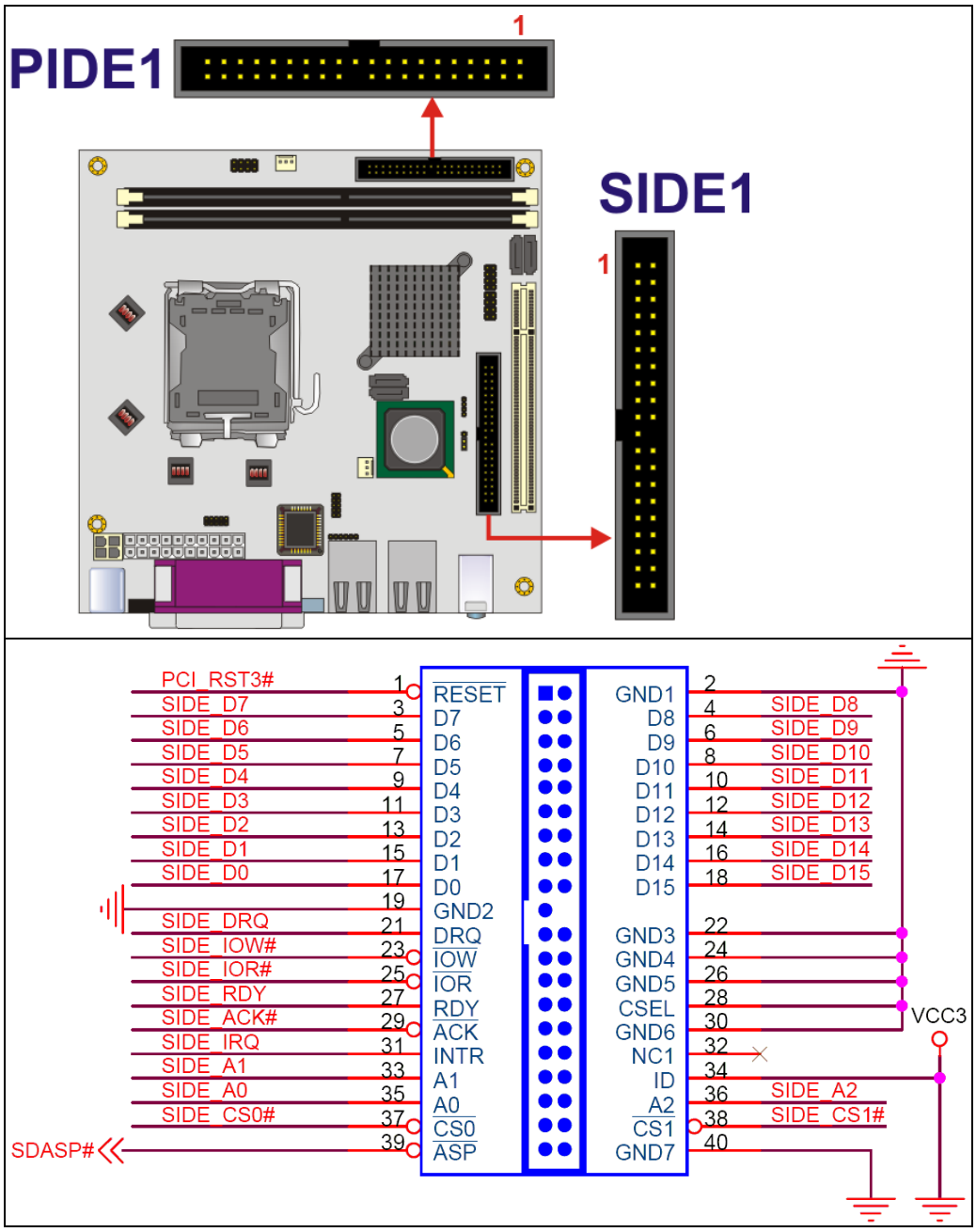


Figure 3-6: IDE Device Connector Location

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

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	IDE DRQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IDE CHRDY	28	BALE – DEFAULT
29	IDE DACK	30	GND
31	INTERRUPT	32	N/C
33	SA1	34	PDIAG#
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GND

Table 3-8: IDE Connector Pinouts

3.2.6 SATA Drive Connectors

CN Label: S_ATA1, S_ATA2, S_ATA3 and S_ATA4

CN Type: 7-pin SATA drive connector

CN Location: See Figure 3-7

CN Pinouts: See Table 3-9

The four SATA drive connectors are connected to four SATA drives. SATA drives transfer data at speeds as high as 1.5Gb/s.

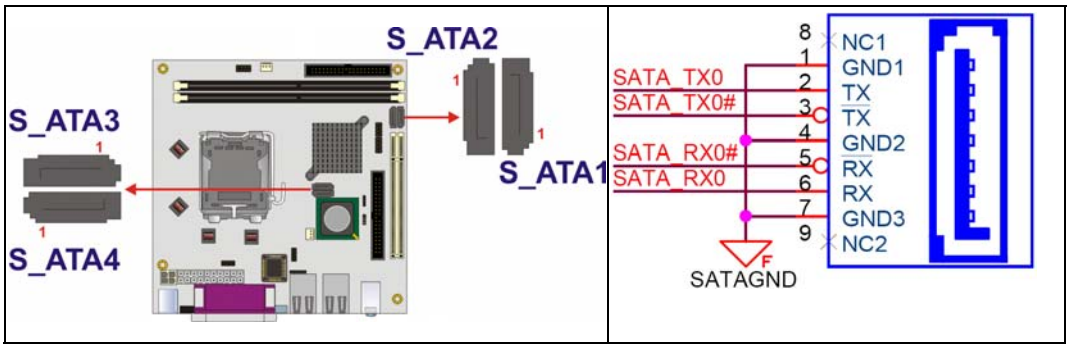


Figure 3-7: SATA Drive Connector Locations

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 3-9: SATA Drive Connector Pinouts

3.2.7 Internal USB Connectors

CN Label: USB46 and USB57

CN Type: 8-pin header (2x4)

CN Location: See Figure 3-8

CN Pinouts: See Table 3-10

One 2x4 pin connector provides connectivity to two USB 2.0 ports. The USB connector supports the USB ports on the front panel.

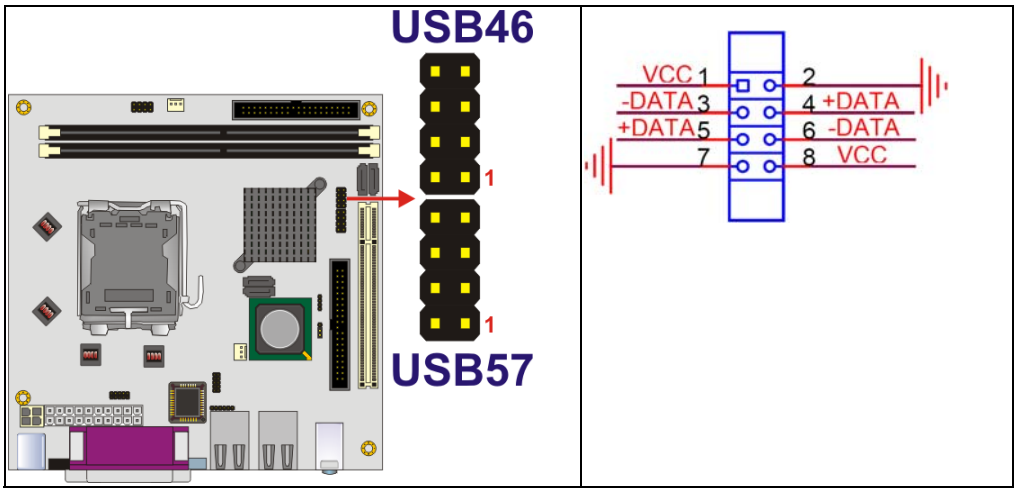


Figure 3-8: Internal USB Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	5	GND
2	DATA-	6	DATA+
3	DATA+	7	DATA-
4	GND	8	VCC

Table 3-10: Internal USB Connector Pinouts

3.3 External Interface Connectors

3.3.1 External Interface Connector Overview

Figure 3-9 shows the KINO-6614 motherboard external interface connectors. These external interface connectors can connect to external peripheral devices and are seen on the rear panel (**Figure 2-5**) of the ECK-3699GH embedded system. The KINO-6614 on-board external interface connectors are listed below and shown in **Figure 3-9**:

- 3 x Audio jacks
- 1 x VGA connector
- 2 x RJ-45 Ethernet connectors
- 2 x Keyboard/mouse connectors
- 1 x Serial port connectors
- 1 x Parallel port connector
- 4 x USB 2.0 connectors

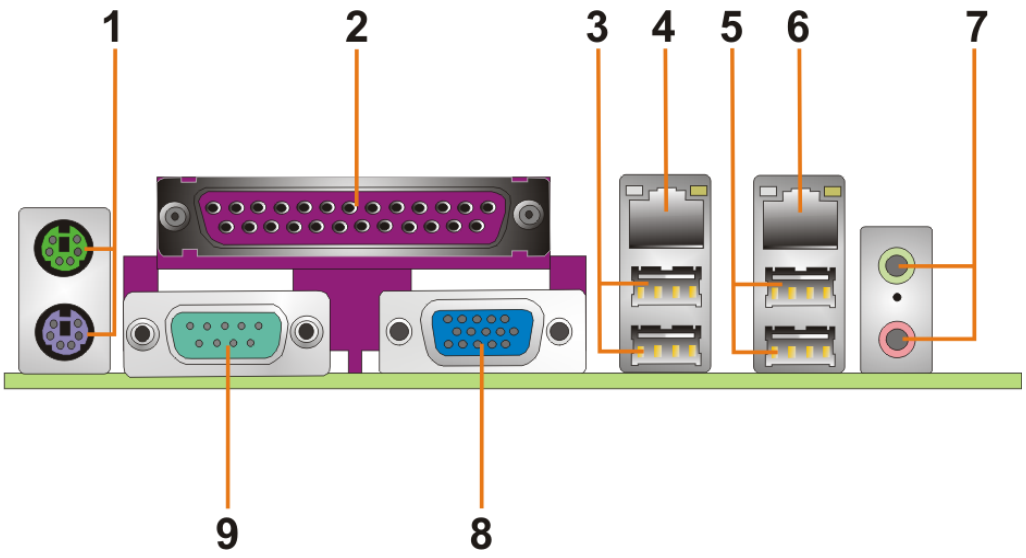


Figure 3-9: KINO-6614 On-board External Interface Connectors

3.3.2 Audio Connectors

CN Label:	AUDIO_CV1
CN Type:	Audio jack
CN Location:	See Figure 3-9 (labeled number 7)
CN Pinouts:	See Figure 3-10

- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.

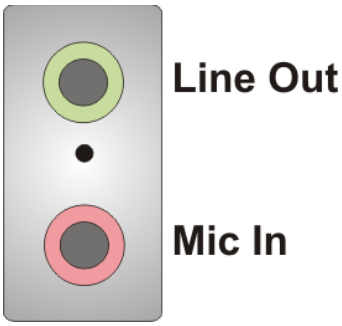


Figure 3-10: Audio Connector

3.3.3 Ethernet Connectors

CN Label: LAN1_USB01 and LAN2_USB23

CN Type: RJ-45

CN Location: See Figure 3-9 (labeled number 4 and 6)

CN Pinouts: See Table 3-11

The KINO-6614 is equipped with two built-in GbE Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MDIA3-	5	MDIA1+
2	MDIA3+	6	MDIA2+-
3.	MDIA2-	7	MDIA0-
4.	MDIA1-	8	MDIA0+

Table 3-11: Ethernet Connector Pinouts

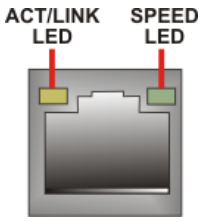


Figure 3-11: RJ-45 Ethernet Connector

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 3-12**.

SPEED LED		ACT/LINK LED	
STATUS	DESCRIPTION	STATUS	DESCRIPTION
GREEN	10/100Mbps connection	YELLOW	Linked
ORANGE	1Gbps connection	BLINKING	Data Activity

Table 3-12: RJ-45 Ethernet Connector LEDs

3.3.4 USB Connectors

CN Label: LAN1_USB01 and LAN2_USB23

CN Type: USB port

CN Location: See Figure 3-9 (labeled number 3 and 5)

CN Pinouts: See Table 3-13

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

PIN NO.	DESCRIPTION
1	VCC
2	DATA-
3	DATA+
4	GROUND

Table 3-13: External USB Connector Pinouts

Figure 3-12: Ethernet Connector and USB Ports Pinout Locations

3.3.5 Keyboard/Mouse Connector

CN Label: KB_MS1

CN Type: PS/2 connector

CN Location: See Figure 3-9 (labeled number 1)

CN Pinouts: See Table 3-14 and Table 3-15

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

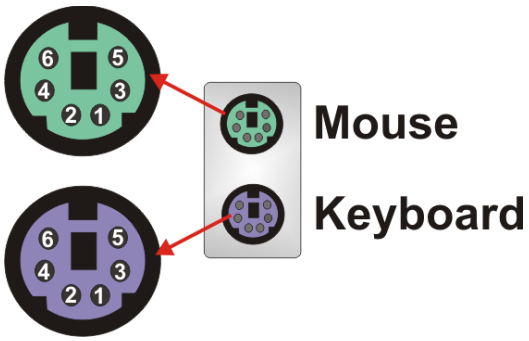


Figure 3-13: PS/2 Pinouts

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

Table 3-14: Keyboard Connector Pinouts

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

6	NC

Table 3-15: Mouse Connector Pinouts

3.3.6 Serial Port Connectors

CN Label: COM_C1

CN Type: D-sub 9 male connector

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

CN Pinouts: See Table 3-16

The serial ports can be connected to a serial communications device directly.

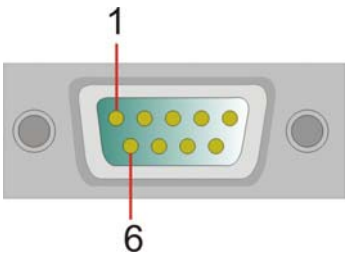


Figure 3-14: External Serial Port Connector

PIN	Description
1	DATA CARRIER DETECT (DCD1)
2	RECEIVE DATA (RXD1)
3	TRANSMIT DATA (TXD1)
4	DATA TERMINAL READY (DTR1)
5	GROUND (GND1)
6	DATA SET READY (DSR1)
7	REQUEST TO SEND (RTS1)
8	CLEAR TO SEND (CTS1)
9	RING INDICATOR (RI1)

Table 3-16: External Serial Port Pinouts

3.3.7 VGA Connector

CN Label: VGA1

CN Type: 15-pin female connector

CN Location: See Figure 3-9 (labeled number 8)

CN Pinouts: See Table 3-17

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

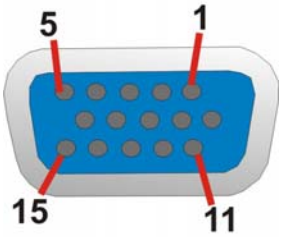


Figure 3-15: VGA Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-17: VGA Connector Pinouts

3.3.8 Parallel Connector

CN Label: LPT_C1

CN Type: DB-25 Female connector

CN Location: See Figure 3-9 (labeled 2)

CN Pinouts: See Figure 3-16 and Table 3-18

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

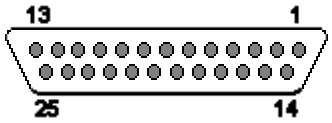


Figure 3-16: Parallel Connector Pinout Locations

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

Table 3-18: Parallel Connector Pinouts

3.4 KINO-6614 Motherboard On-board Jumpers

NOTE:

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

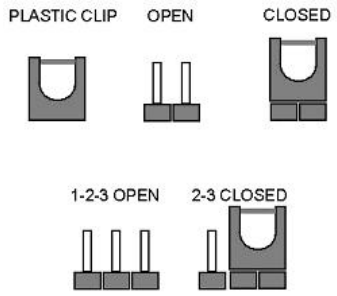


Figure 3-17: Jumpers

The KINO-6614 motherboard has one onboard jumper. The jumper is described in the following section.

3.4.1 Clear CMOS Jumper

Jumper Label:	J_COMS1
Jumper Type:	3-pin header
Jumper Settings:	See Table 3-19
Jumper Location:	See Figure 3-18

If the KINO-6614 fails to boot due to improper BIOS settings, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults

- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

Clear CMOS	DESCRIPTION
Short 1-2	Normal Operation (Default)
Short 2-3	Clear CMOS Setup

Table 3-19: Clear CMOS Jumper Settings

The clear CMOS jumper is located in **Figure 3-18**.

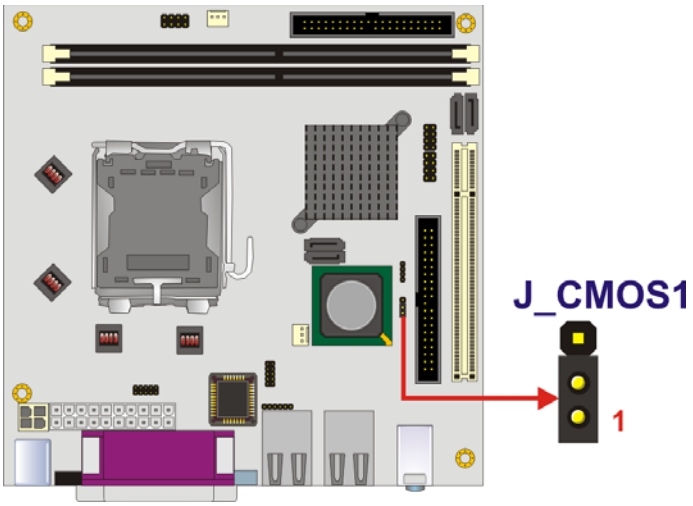


Figure 3-18: Jumper Location

3.5 Power Module Connectors and Jumpers

The connectors listed in and shown in are on the QT-16045 DC-to-DC power converters.

Connector	Type	Label
Input Power	3-pin header	CN1
Output Power	20-pin header	PW2
Output Power	4-pin header	PW1

Table 3-20: Power Module Connector Pinouts

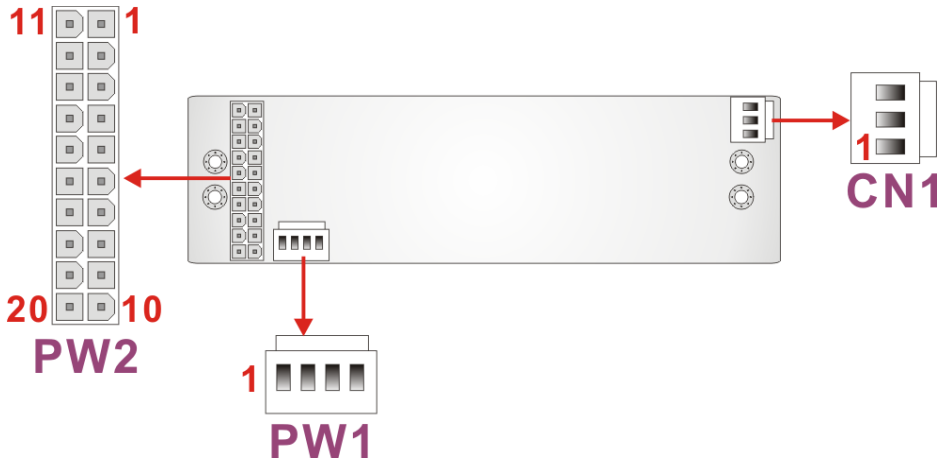


Figure 3-19: Power Module Connector Locations

The pin outs for these connectors are listed in the sections below.

3.5.1 Input Power Connector

The input power connector, CN1, is connected directly to the rear panel power socket. Power is received in this connector from an external power source and fed into the system.

PIN NO.	Description
1	Vin
2	Vin
3	GND

Table 3-21: Input Power Connector Pinouts

3.5.2 Output Power Connector [CPU Power]

The output power connector, PW1, is directly connected to the CPU power connector (CPU12V1) on the KINO-6614 motherboard.

PIN NO.	Description
1	+12V
2	GND
3	GND

4	+12V

Table 3-22: Output Power Connector Pinouts [CPU Power]

3.5.3 Output Power Connector [Motherboard]

The 20-pin output power connector, PW2, is connected directly to the main ATX power connector (ATX20) on the KINO series motherboard.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	NC
9	5V_SB	19	5V
10	+12V	20	5V

Table 3-23: Output Power Connector Pinouts [Motherboard]

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

If the following anti-static precautions are not followed, a user may be injured and the system irreparably damaged.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the KINO series motherboard and the power module. (Dry climates are especially susceptible to ESD.) It is therefore critical that whenever the ECK-3699GH is opened and any electrical component handled, the following anti-static precautions are strictly adhered to.

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

4.2 Installation Procedure

4.2.1 Installation Procedure Overview

To properly install the ECK-3699GH, the following steps must be followed. Detailed descriptions of these instructions are listed in the sections that follow.

Step 1: Unpacking

Step 2: Configure the jumper settings

Step 3: Install the DIMM memory module.

Step 4: Install the HDD

Step 5: Connect the front panel peripheral connectors

Step 6: Power the system up

4.2.2 Unpacking

After the ECK-3699GH is received make sure the following components are included in the package. If any of these components are missing, please contact the ECK-3699GH reseller or vendor where it was purchased or contact an IEI sales representative immediately.

- 1 x Embedded system
- 1 x KINO series motherboard (pre-installed)
- 1 x DC-to-DC power converter (pre-installed)
- 2 x Cooling fans (pre-installed)

Other items that should have come with the system are listed below:

- 1 x CPU cooler
- 1 x Screw set
- 1 x SATA cable
- 1 x 44-pin IDE cable
- 1 x 40-pin IDE cable
- 1 x (20+4)-pin power cable
- 1 x Optical drive converter module
- 1 x Power adapter
- 1 x Power cord
- 1 x Driver CD
- 1 x User Manual CD
- 1 x QIG

4.2.3 Opening the ECK-3699GH

Before the jumper settings can be configured and the DIMM memory module and 2.5” HDD can be installed, the top cover or the bottom surface access panel must be removed.

4.2.3.1 Top Cover Removal

To remove the top cover, please follow the steps below:

Step 1: Remove the three top cover retention screws. The top cover is secured to the chassis with three retention screws at the rear panel of the chassis.

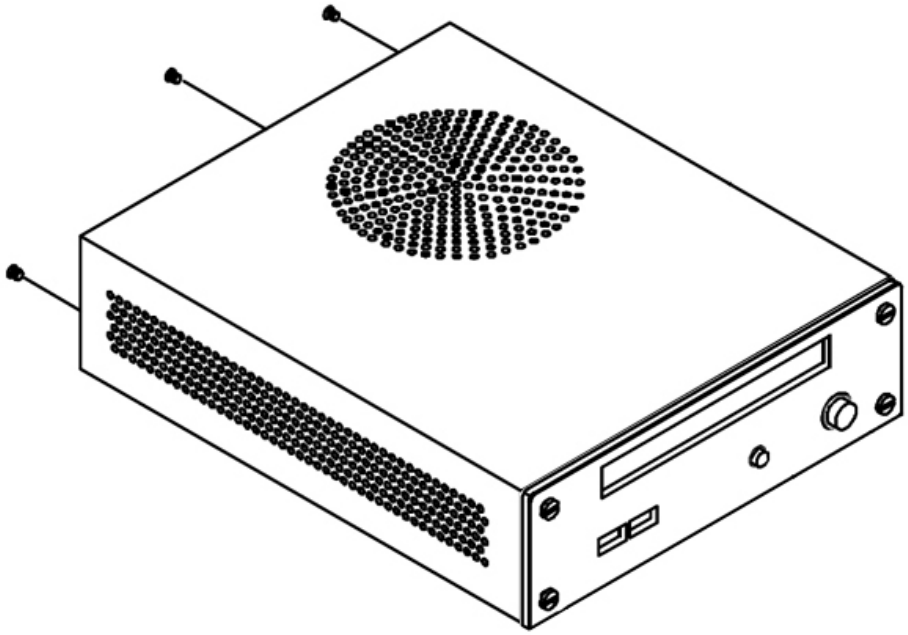


Figure 4-1: Top Cover Retention Screws

Step 2: Slide the top cover toward the rear panel and gently lift the cover off the chassis

4.3 Socket LGA775 CPU Installation

4.3.1 CPU Selection: HT Functionality Requirements

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

CPU: An Intel® Pentium 4 Processor with HT Technology must be installed

Chipset: An Intel® Chipset that supports HT Technology (that has been met by the KINO-6614)

OS: An operating system that has optimizations for HT Technology

4.3.1.1 CPU Installation

WARNING:

CPUs are expensive and sensitive components. When installing the CPU

please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure that a heat sink and CPU cooling fan are properly installed before the KINO-6614 is run.

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

The LGA775 socket is shown in **Figure 4-2**.

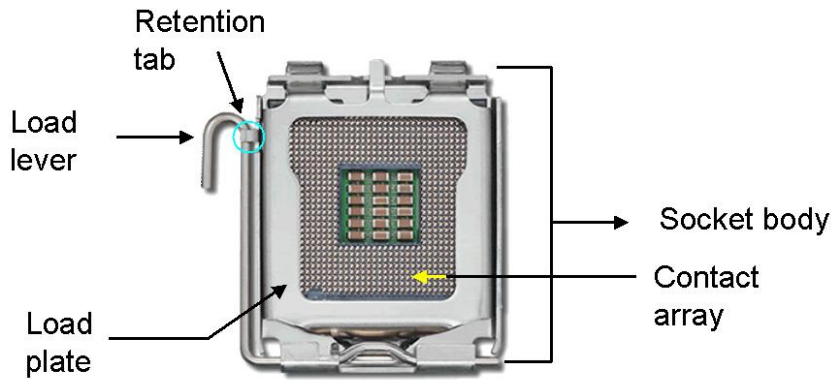


Figure 4-2: Intel LGA775 Socket

WARNING:

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

To install Socket LGA775 CPU onto the KINO-6614, follow the steps below:

Step 1: **Remove the top cover**. See **Section 4.2.3.1**.

Step 2: Remove the following connector cables (**Figure 4-3**):

- Fan connectors
- Front panel connector
- Power connectors

- USB connector

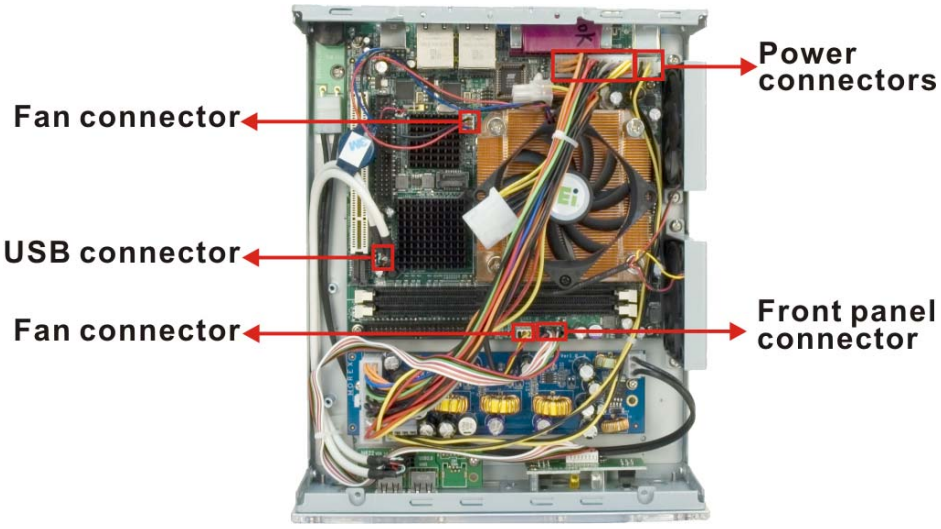


Figure 4-3: Motherboard Connectors

Step 3: **Remove the KINO-6614 retention screws**. The motherboard is secured to the chassis with four retention screws. Remove the four retention screws. See **Figure 4-4**.

Figure 4-4: Motherboard Retention Screws

Step 4: **Remove the protective cover.** Remove the black protective cover by prying it off the load plate. To remove the protective cover, locate the "**REMOVE**" sign and use the fingernail to pry the protective cover off. (See **Figure 4-5**)

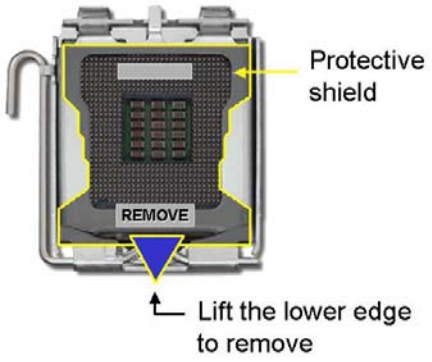


Figure 4-5: Remove the CPU Socket Protective Shield

Step 5: **Open the socket**. Disengage the load lever by pressing the lever down and slightly outward to clear the retention tab. Rotate the load lever to a fully open position. Then rotate the load plate towards the opposite direction. (See **Figure 4-6**)

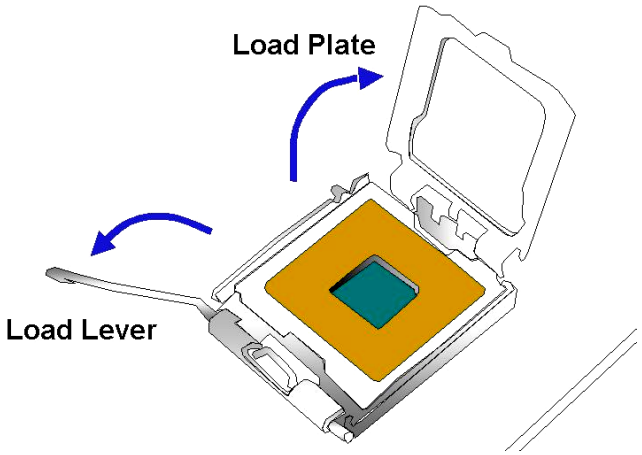


Figure 4-6: Open the CPU Socket Load Plate

Step 6: **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 7: **Orientate the CPU properly**. Make sure the IHS (Integrated Heat Sink) side is facing upward.

Step 8: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket.

Step 9: **Align the CPU pins.** Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 10: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 4-7**.

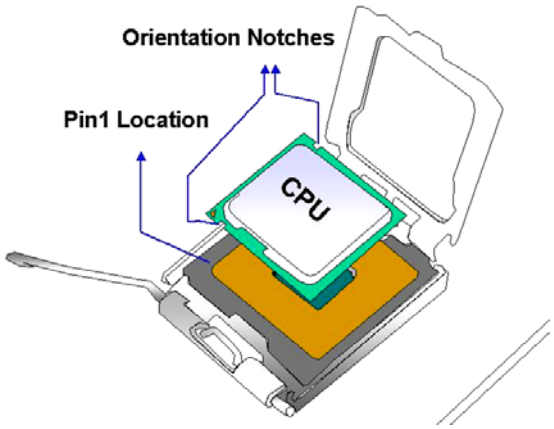


Figure 4-7: Insert the Socket LGA775 CPU

Step 11: **Close the CPU socket.** Close the load plate and engage the load lever by pushing it back to its original position. Secure the load lever under the retention tab on the side of CPU socket.

Step 12: **Connect the CPU power connector.** Connect the CPU 12V cable to the CPU 12V power connector after the cooling kit is installed.

4.3.2 Cooling Kit Installation

Figure 4-8: ECK-3699GH Cooling Kit

IEI provides a CPU cooling kit designed for the ECK-3699GH. (**Figure 4-8**) The cooling kit is comprised of a CPU heat sink and a cooling fan.

To install the ECK-3699GH CPU cooling kit, please follow the steps below.

Step 1: **Apply thermal paste**. Apply a thin, even layer of thermal paste provided to the underside of the heat sink.

Step 2: **Place the cooling kit onto the CPU**. Make sure that the power cable can be properly routed when the cooling kit is installed.

Step 3: **Properly align the cooling kit**. Make sure the threaded screws can pass through the pre-drilled holes on the PCB and the cooling kit.

Step 4: **Secure the cooling kit**. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (**Figure 4-9**).

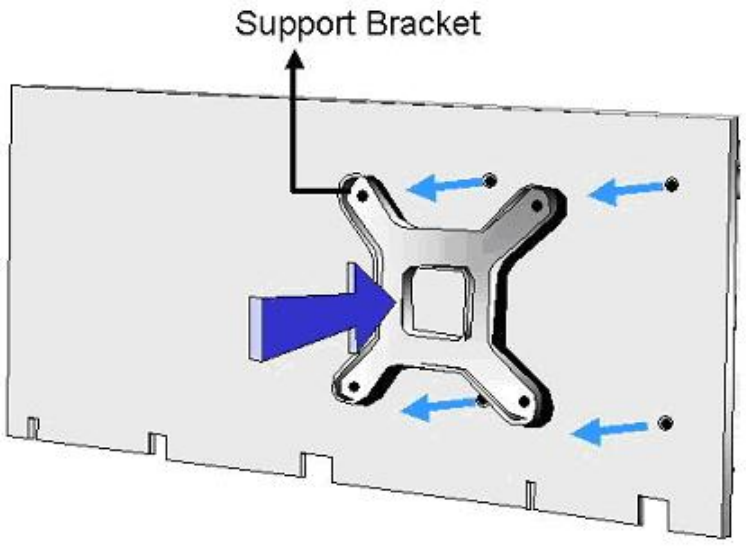


Figure 4-9: Securing the Cooling Kit

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

Step 6: **Connect the fan cable**. Connect the cooling kit fan cable to the CPU fan connector on the motherboard. Carefully route the cable and avoid heat generating chips and fan blades (**Figure 4-9**).

4.3.3 Configure the Jumper Settings

To configure the jumper settings, please follow the steps below.

Step 1: Remove the top cover. See **Section 4.2.3.1**.

Step 2: Locate the jumper settings on the embedded motherboard. See **Chapter 3**.

Step 3: Make the jumper settings in accordance with the settings described and defined in **Chapter 3**.

4.3.4 DIMM Module Installation

4.3.4.1 Purchasing the Memory Module

WARNING!

When purchasing the DIMM modules, make sure the modules are compatible with the DIMM slot specified in **Section 1.2**.

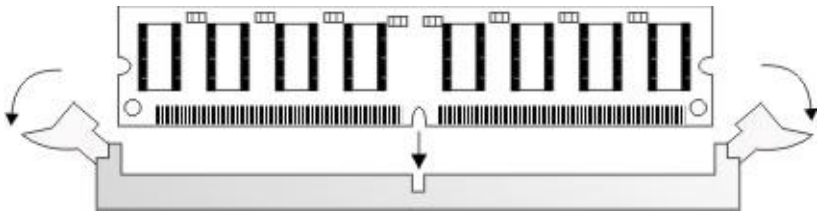
WARNING!

The board supports DDR DIMM modules only. DDR1 and DDR are not compatible. If a DDR1 DIMM module is installed, the system may be damaged and become inaccessible. Please only use DDR DIMM modules.

4.3.4.2 DIMM Module Installation

The ECK-3699GH has two DDR SDRAM DIMM socket. Follow the steps below to install the DIMM module.

Step 1: Make sure the two handles of the DIMM socket are in the "open" position, leaning outward (**Figure 4-10**).



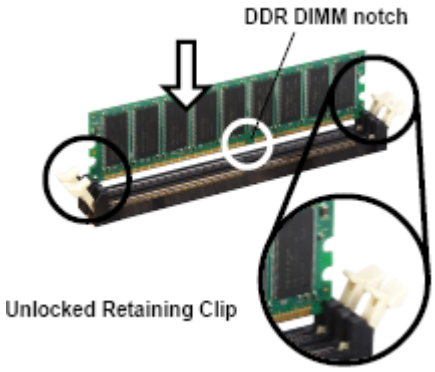


Figure 4-10: Installing the DIMM Module

Step 2: Slowly slide the DIMM module along the plastic guides on both ends of the socket. Press the DIMM module down into the socket until it clicks into position and the two handles have automatically locked the memory module into place (**Figure 4-11**).

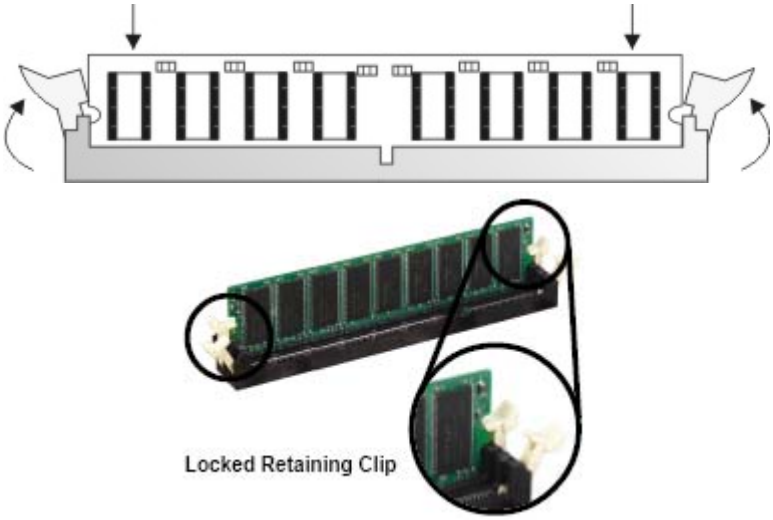


Figure 4-11: Locking the DIMM Module

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

4.3.5 Install the HDD

To install the HDD, please follow the steps below:

Step 1: Remove the top cover. See **Section 4.2.3.1** above.

Step 2: The HDD bracket is attached to the chassis by four retention screws. Remove the four retention screws from the chassis.

Step 3: Attach the HDD to the HDD bracket. To do this, align the four retention screw holes in the base of HDD bracket with the retention screw holes on the bottom of the HDD. Insert four retention screws into the bracket on the bottom of the HDD

Step 4: Install the HDD bracket into the ECK-3699GH.

Step 5: Connect the IDE/SATA cable from the IDE/SATA connector on the motherboard to the rear of HDD.

4.3.6 Cable Connections

The following cables can be connected to the rear panel of the system.

- VGA cable connector
- Serial port connector
- RJ-45 connectors
- Parallel port connector
- USB devices can be connected to the system
- Audio devices can be connected to the system
- Keyboard and mouse can be connected to the system

The cable connection locations are shown in **Figure 2-4**.

4.4 Power-On Procedure

4.4.1 Installation Checklist

WARNING:

Make sure a power supply with the correct input voltage is being fed into

the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

To power on the embedded system please make sure of the following:

- The memory module is installed
- The fans are properly connected
- The top cover is properly installed
- All peripheral devices (VGA monitor, serial communications devices etc.) are connected
- The power cables are plugged in

4.4.2 Power-on Procedure

To power-on the ECK-3699GH please follow the steps below:

Step 1: Push the power button.

Step 2: Once turned on, the green power LED should be turned on. See **Figure 4-12**.

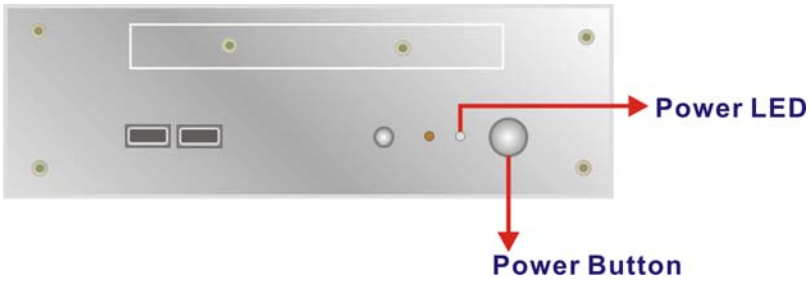


Figure 4-12: Power Button and Power LED

Chapter

5

BIOS Settings

5.1 Introduction

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

5.1.1 Starting Setup

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

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

If the message disappears before, restart the computer and try again.

5.1.2 Using Setup

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

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

F2 /F3 key	Change color from total 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

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

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Chapter** Error! Reference source not found., **Section 3.4.1**.

5.1.5 BIOS Menu Bar

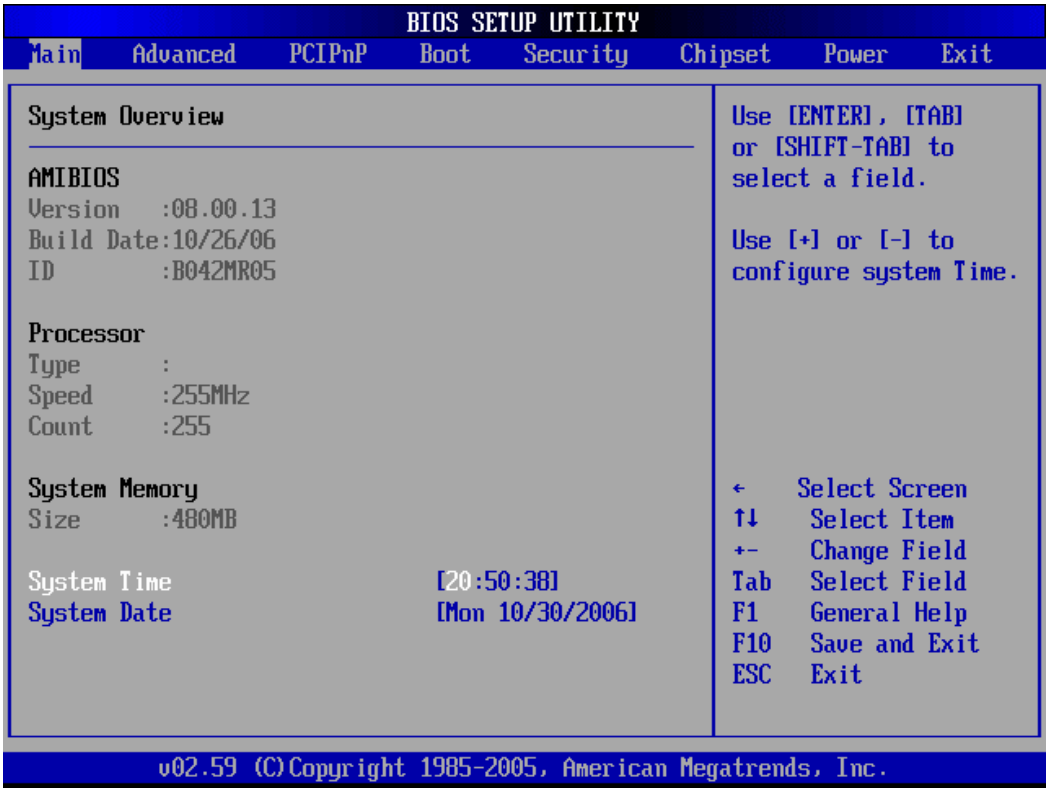
The **menu bar** on top of the BIOS screen has the following main items:

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

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

5.2 Main

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



BIOS Menu 1: Main

➔ **System Overview**

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

- **AMI BIOS**: Displays auto-detected BIOS information
  - **Version**: Current BIOS version
  - **Build Date**: Date the current BIOS version was made
  - **ID**: Installed BIOS ID
- **Processor**: Displays auto-detected CPU specifications
  - **Type**: Names the currently installed processor
  - **Speed**: Lists the processor speed
  - **Count**: The number of CPUs on the motherboard
- **System Memory**: Displays the auto-detected system memory.
  - **Size**: Lists memory size

The **System Overview** field also has two user configurable fields:

- **System Time [xx:xx:xx]**: The system time is set here.
- **System Date [Day xx/xx/xxxx]:** The system date is set here.

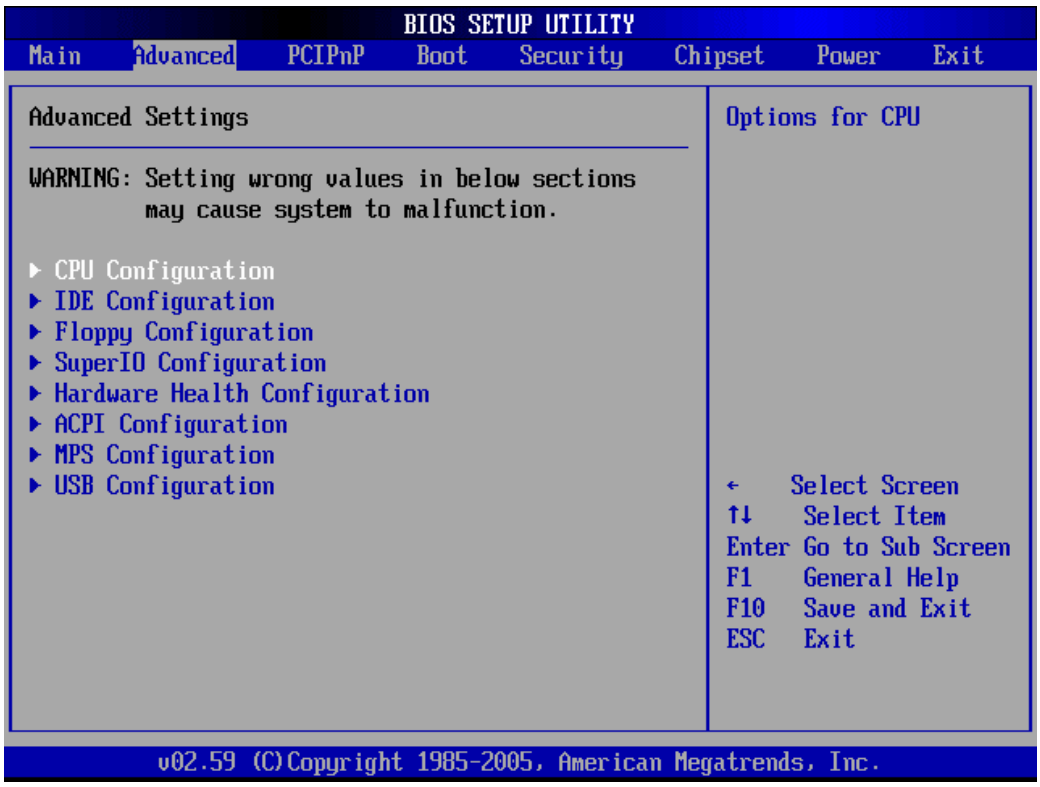
5.3 Advanced

The **Advanced** menu (**BIOS Menu 2**) allows access to the CPU and peripheral device configuration options through the following sub-menus:

WARNING:

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

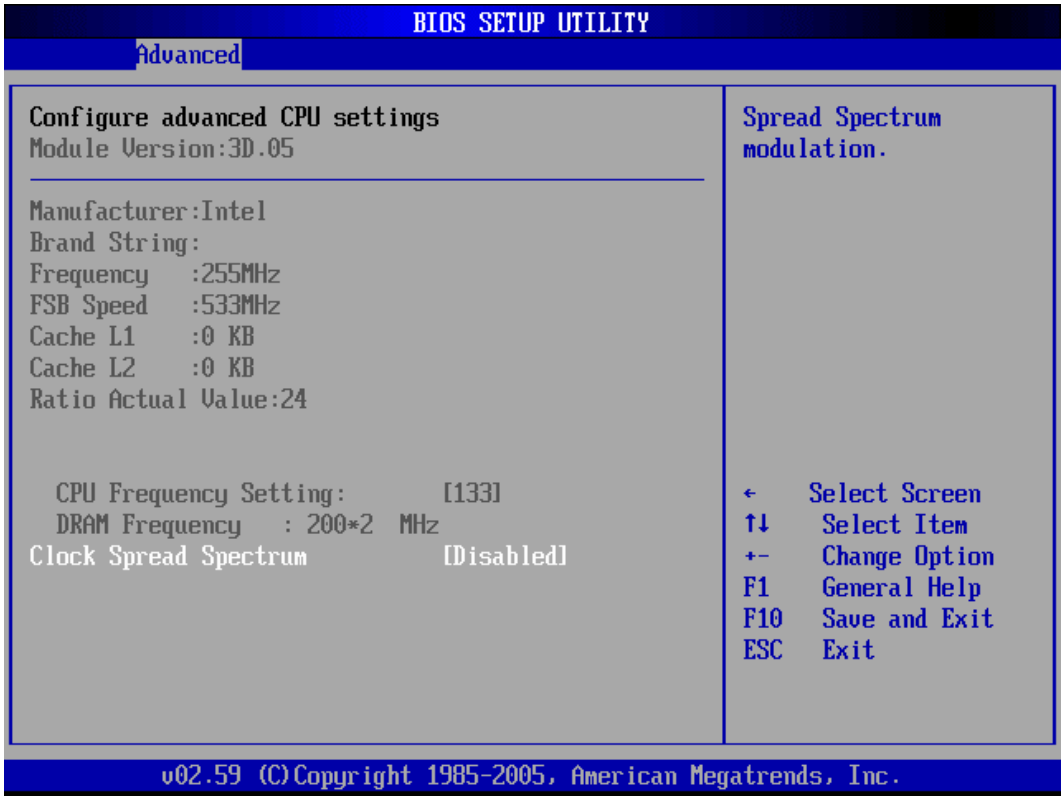
- CPU Configuration (see **Section 5.3.1**)
- IDE Configuration (see **Section 5.3.2**)
- Floppy Configuration (see **Section 0**)
- SuperIO Configuration (see **Section 0**)
- Hardware Health Configuration (see **Section 5.3.5**)
- ACPI Configuration (see **Section 5.3.6**)
- MPS Configuration (see **Section 5.3.7**)
- USB Configuration (see **Section 5.3.8**)



BIOS Menu 2: Advanced

5.3.1 CPU Configuration

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



BIOS Menu 3: CPU Configuration

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

- **Manufacturer**: Lists the name of the CPU manufacturer
- **Brand String**: Lists the brand name of the CPU being used
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size
- **Ratio Actual Value**: Lists the actual CPU ratio

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

➔ **Clock Spread Spectrum [Disabled]**

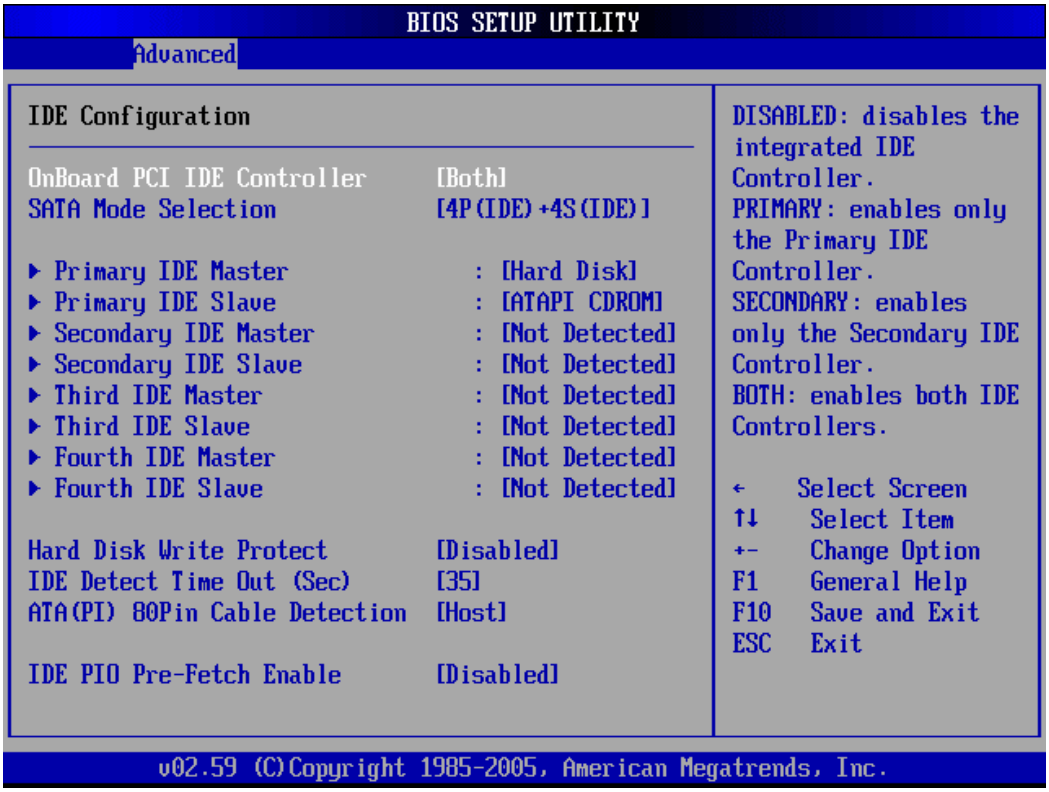
Use the **Clock Spread Spectrum** BIOS option to improve CPU EMI issues.

➔ **Disabled** **DEFAULT** The clock spread spectrum is disabled

➔ **Enabled** The clock spread spectrum is enabled

5.3.2 IDE Configuration

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



BIOS Menu 4: IDE Configuration

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

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

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

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

Primary Slave

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

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

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

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

- Disabled
- 4P(IDE) + 4S(RAID) **DEFAULT**
- 4P(IDE) + 4S(IDE)
- 2P2S(IDE) + 2S(RAID)
- 2P2S(IDE) + 2S(AHCI)
- 4P(IDE) + 2S(RAID)
- 4P(IDE) + 2S(AHCI)

➔ **IDE Master and IDE Slave**

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

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

- Fourth IDE Slave

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

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

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

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

➔ **IDE Detect Time Out (Sec) [35]**

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

- 0 seconds
- 5 seconds **DEFAULT**
- 10 seconds
- 15 seconds
- 20 seconds
- 25 seconds
- 30 seconds
- 35 seconds

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

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

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

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

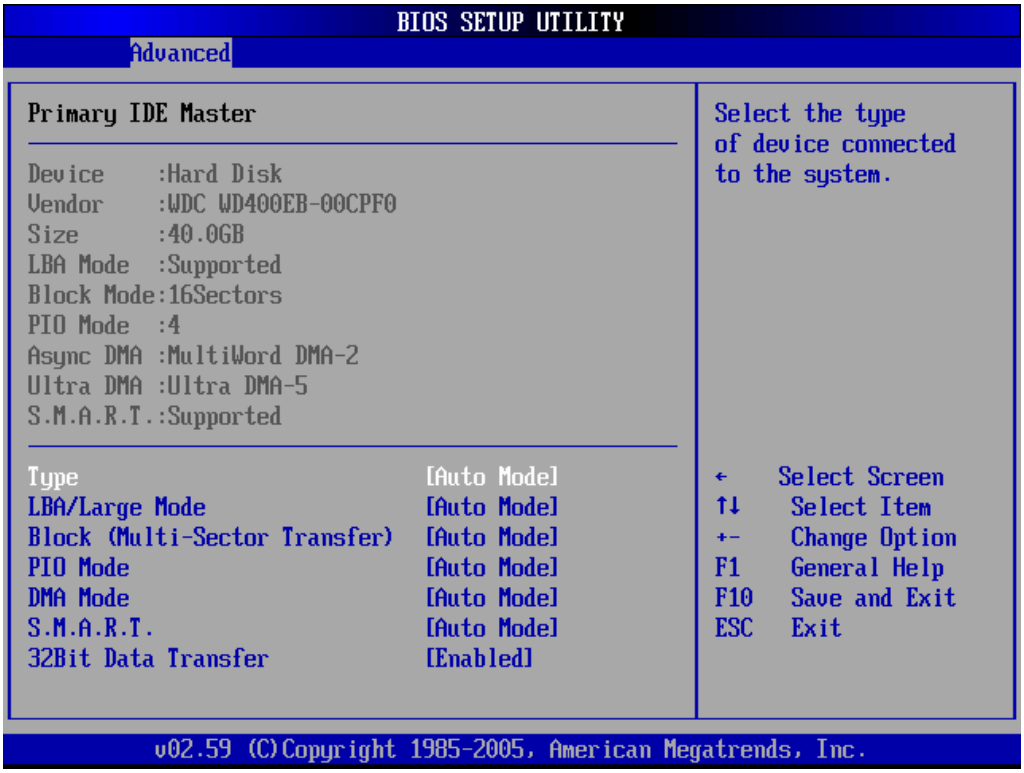
➔ **IDE PIO Pre-Fetch Enable [Disabled]**

The **IDE PIO PreFetch Enable** BIOS Option sets the IDE controller to prefetch IDE data.

➔ **Disabled**	**DEFAULT**	IDE controller cannot prefetch data
➔ **Enabled**		IDE controller can prefetch data

5.3.2.1 IDE Master, IDE Slave

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



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

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

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Vendor**: Lists the device manufacturer
- **Size**: The size of the device.
- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.

- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

➔ **Type [Auto]**

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

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

➔ **Auto** **DEFAULT** This selection enables the BIOS to auto detect the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.

➔ **CD/DVD** The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.

➔ **ARMD** This option specifies an ATAPI Removable Media Device. These include, but are not limited to:

- ➔ **ZIP**
- ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

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

➔ **Disabled** This selection prevents the BIOS from using the LBA

mode control on the specified channel.

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

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

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

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

➔ **PIO Mode [Auto]**

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

➔ **Auto** **DEFAULT** This setting allows the BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps

➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps

➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps

➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps

➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps (This setting generally works with all hard disk drives

manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

The **DMA Mode** BIOS selection adjusts the DMA mode options.

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

➔ **S.M.A.R.T [Auto]**

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

➔ **Auto** **DEFAULT** BIOS to auto detects if the hard disk drive supports S.M.A.R.T. Use this setting if the IDE disk drive support cannot be determined.

➔ **Disabled** Select this value to prevent the BIOS from using the SMART feature.

➔ **Enabled** Select this value to allow the BIOS to use the SMART feature on support hard disk drives.

➔ **32Bit Data Transfer [Enabled]**

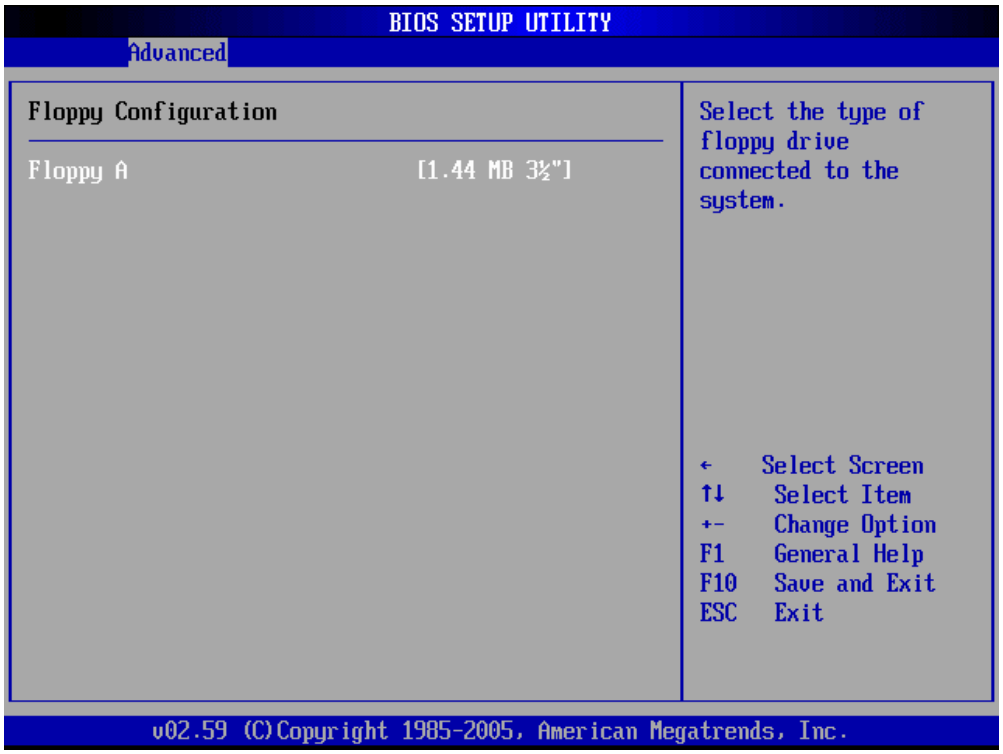
The **32Bit Data Transfer** BIOS option enables or disables 32-bit data transfers.

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

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

5.3.3 Floppy Configuration

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



BIOS Menu 6: Floppy Configuration

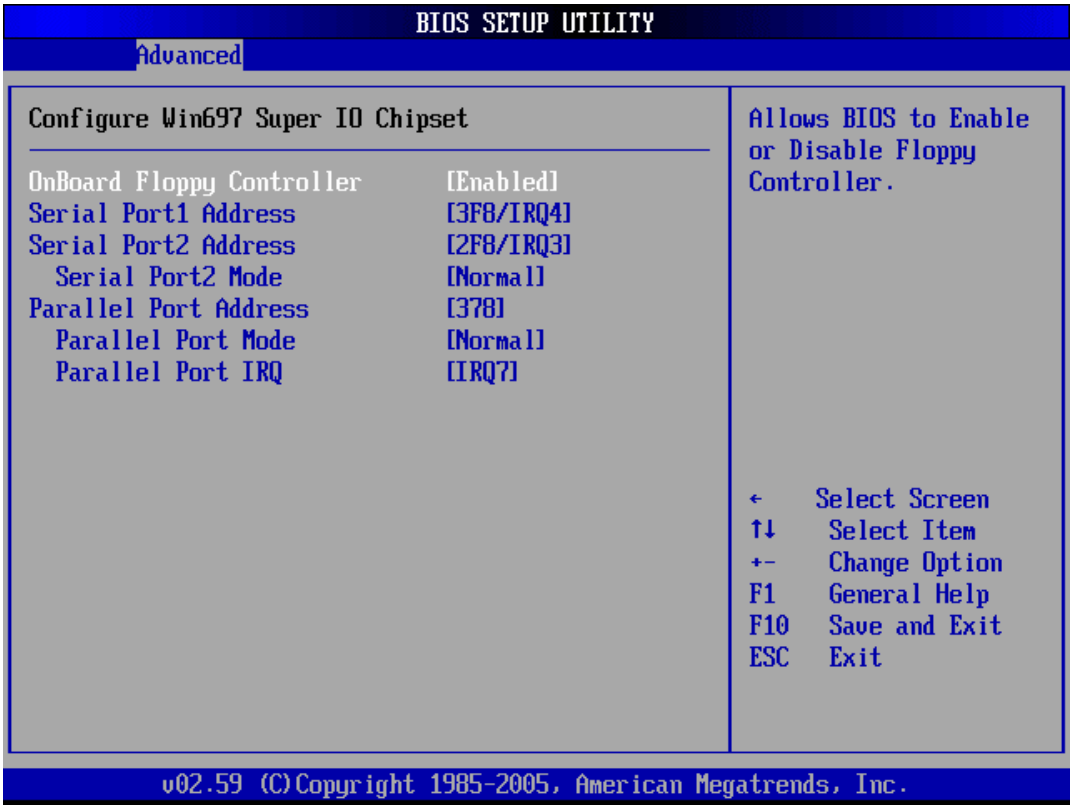
➔ **Floppy A [1.44 MB 3½"]**

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

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

5.3.4 Super IO Configuration

The **Super IO Configuration** menu (**BIOS Menu 7**) sets or changes the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 7: Super IO Configuration

➔ **OnBoard Floppy Controller [Enabled]**

Use the **OnBoard Floppy Controller** to enable or disable the floppy controller. If a floppy disk is not being used in the system, disabling this option frees up system resources that can be redirected elsewhere in the system.

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

➔ **Serial Port1 Address [3F8/IRQ4]**

The **Serial Port1 Address** option allows BIOS to select the Serial Port 1 base address.

- **Disabled** — No base address is assigned to Serial Port 1
- **3F8/IRQ4** **DEFAULT** — Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
- **3E8/IRQ4** — Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- **2E8/IRQ3** — Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port2 Address [2F8/IRQ3]**

The **Serial Port2 Address** option allows BIOS to select the Serial Port 2 base address.

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

➔ **Serial Port2 Mode [Normal]**

Allows BIOS to select the mode for Serial Port 2

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

➔ **Parallel Port Address [378]**

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

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

➔ **Parallel Port Mode [Normal]**

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

- **Normal** **DEFAULT** — The normal parallel port mode is the standard mode for parallel port operation.
- **Bi-directional** — Parallel port outputs are 8-bits long. Inputs are accomplished by reading 4 of the 8 bits on the status register.
- **EPP** — The parallel port operates in the enhanced parallel port mode (EPP). The EPP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode.
- **ECP+EPP** — The parallel port operates in the extended capabilities port (ECP) mode. The ECP mode supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode

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

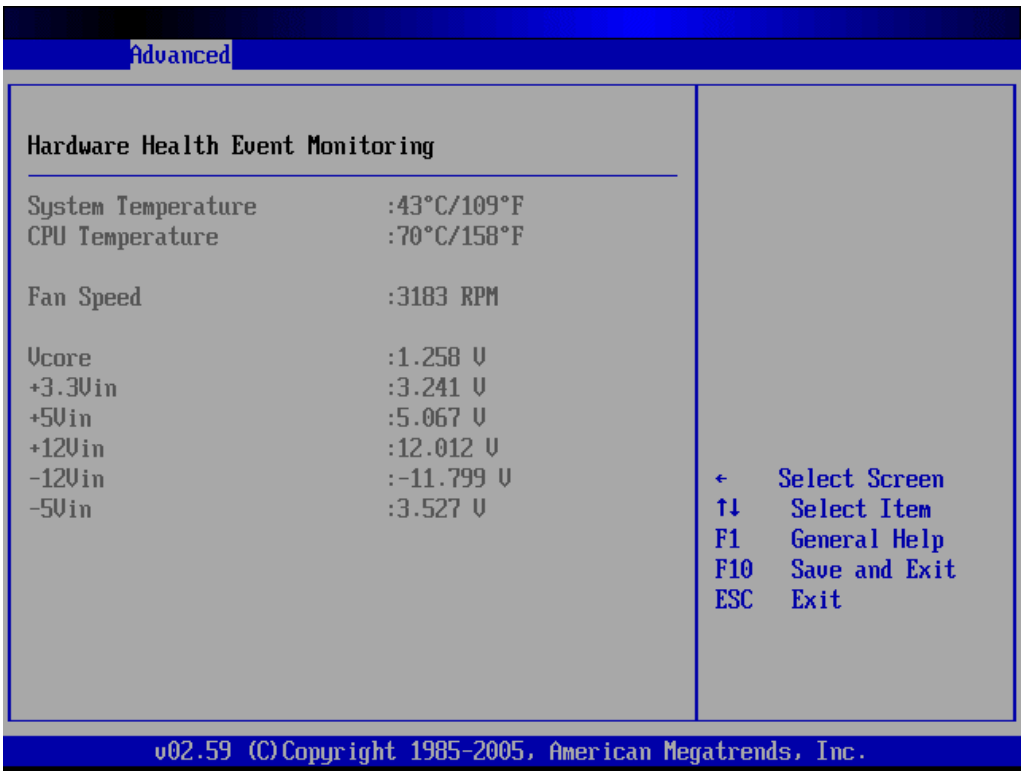
➔ **Parallel Port IRQ [IRQ7]**

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

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

5.3.5 Hardware Health Configuration

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



BIOS Menu 8: Hardware Health Configuration

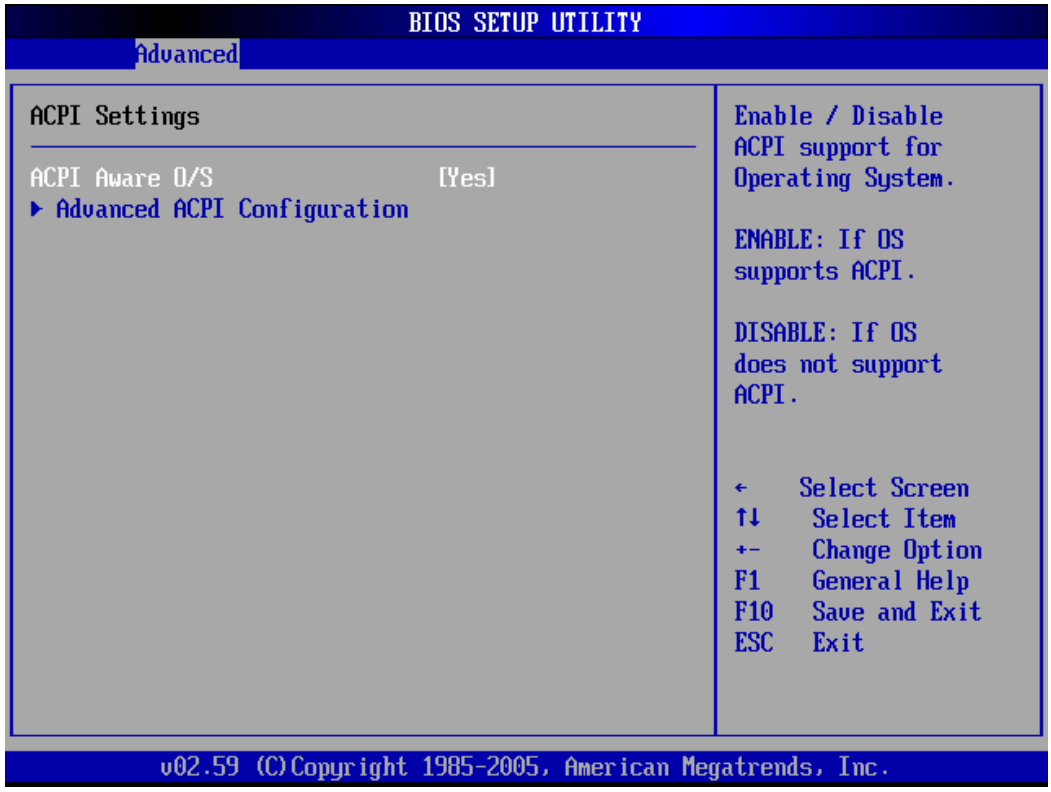
The following system parameters and values are shown. The system parameters that are monitored are:

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

- **Fan Speeds**: The CPU cooling fan speed is monitored.
- **Voltages**: The following system voltages are monitored
  - Vcore
  - +3.3Vin
  - +5Vin
  - +12Vin
  - –12Vin
  - –5Vin

5.3.6 ACPI Configuration

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



BIOS Menu 9: ACPI Configuration

➔ **ACPI Aware O/S [Yes]**

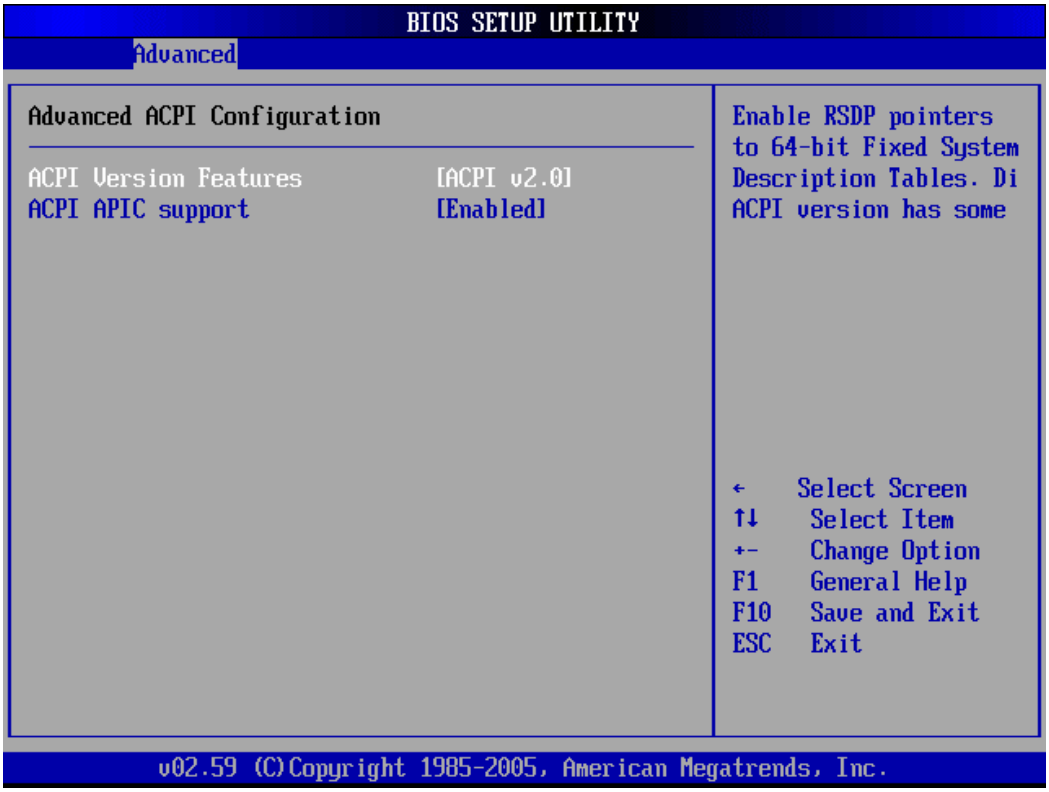
Use the **ACPI Aware O/S** option to enable the system to configure ACPI power saving options. ACPI can only be implemented if the system OS complies with the ACPI standard. Windows 98, Windows 2000, and Windows XP all comply with ACPI.

➔ **No** Disables the ACPI support for the OS. This selection should be disabled if the OS does not support ACPI

➔ **Yes** **DEFAULT** Enables the ACPI support for the operating system. This selection should be enabled if the OS does support ACPI

5.3.6.1 Advanced ACPI Configuration

Use the **Advanced ACPI Configuration** menu (Error! Reference source not found.) to select the ACPI state when the system is suspended.



BIOS Menu 10: Advanced ACPI Configuration

➔ **ACPI Version Features [ACPI v2.0]**

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

➔ **ACPI v2.0** **DEFAULT** ACPI version 2.0 is enabled.

➔ **ACPI APIC Support [Enabled]**

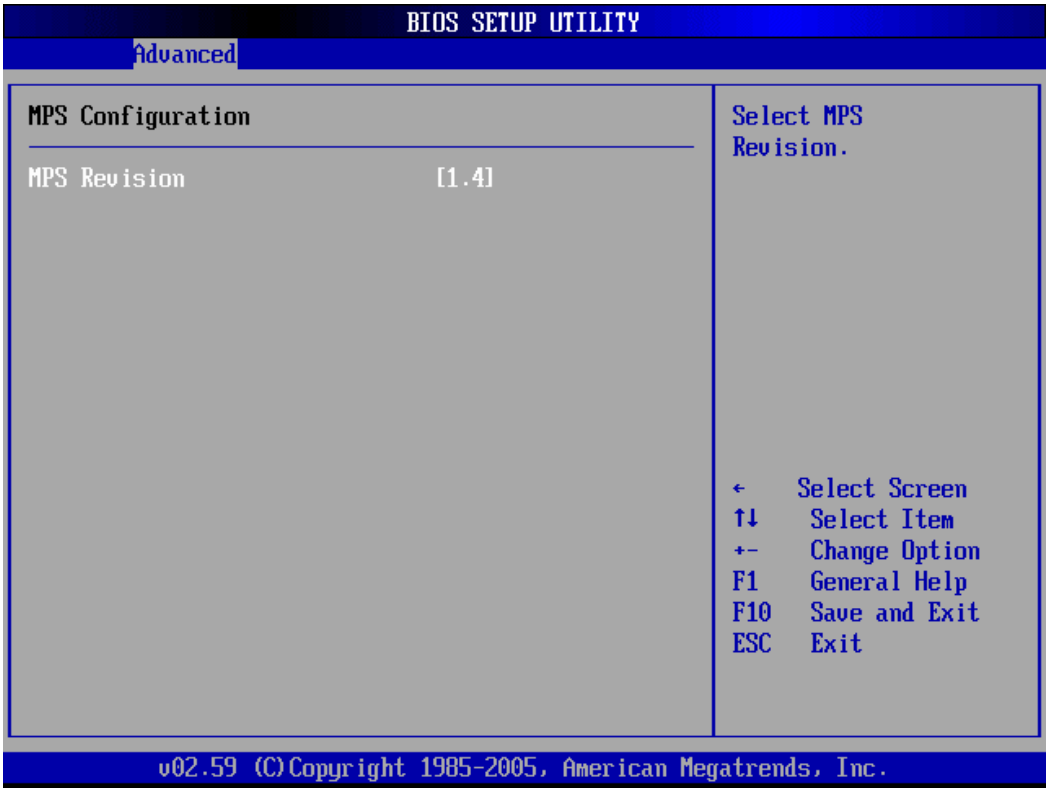
Use the **ACPI APIC Support** option to add a pointer to an ACPI APIC table in the RSDT (Root System Description Table). The RSDT is an array of pointers that direct the system to the physical addresses of other description tables. The RSDT is the main ACPI table. The RSDP is located in low memory space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

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

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

5.3.7 MPS Configuration

Use the **MPS Configuration** menu (**BIOS Menu 11**) to select `he multi-processor table.



BIOS Menu 11: MPS Configuration

➔ **MPS Revision [1.4]**

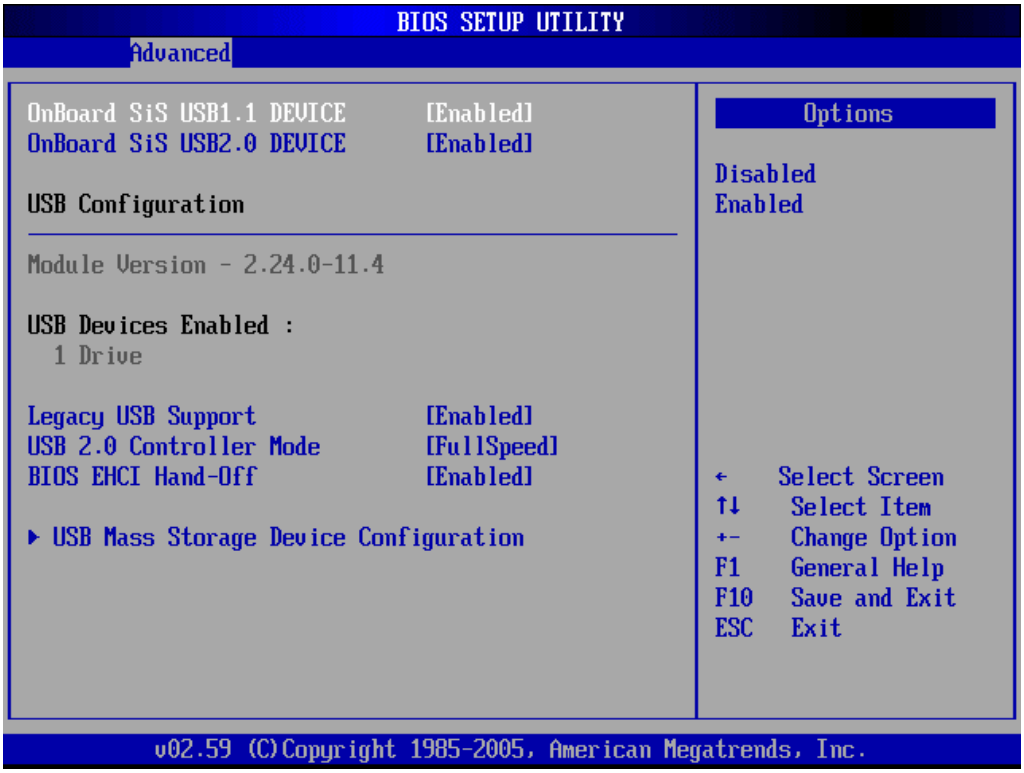
Use the **Multiprocessor Specification (MPS) for OS** option to specify the MPS version to be used.

➔ **1.1** MPS version 1.1 is used

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

5.3.8 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 12**) to read USB configuration information and configure the USB settings.



BIOS Menu 12: USB Configuration

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

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

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

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

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

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

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

➔ **Enabled** **DEFAULT** USB 2.0 interface is enabled and can be used.

➔ **USB Configuration**

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

- Module Version: x.xxxxx.xxxxx

➔ **USB Devices Enabled**

The **USB Devices Enabled** field lists the USB devices that are enabled on the system

➔ **Legacy USB Support [Enabled]**

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

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

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

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

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

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

➔ **BIOS EHCI Handoff [Enabled]**

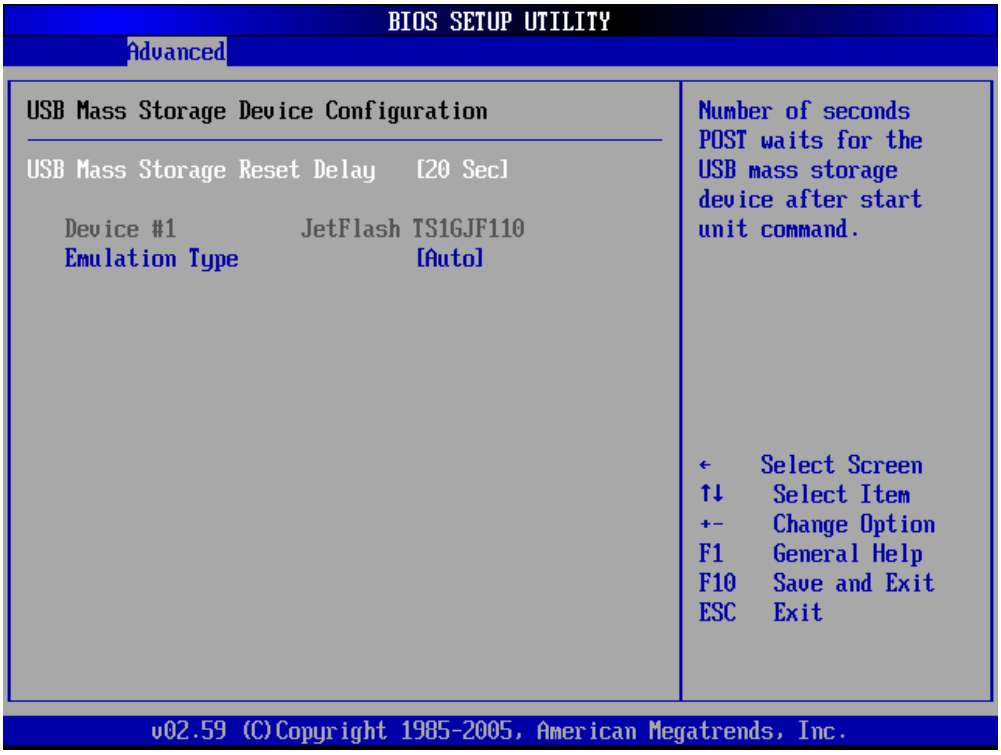
Use the **BIOS EHCI Handoff** option for systems running OSes that do not have EHCI hand-off support. The EHCI ownership change is managed by the EHCI driver.

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

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

5.3.8.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (**BIOS Menu 13**) to configure USB mass storage class devices.



BIOS Menu 13: USB Mass Storage Device Configuration

➔ **Device ##**

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

➔ **Emulation Type [Auto]**

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

NOTE:

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

➔ **Auto**	**DEFAULT**	BIOS auto-detects the current USB.
➔ **Floppy**		The USB device will be emulated as a floppy drive. The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.
➔ **Forced FDD**		Allows a hard disk image to be connected as a floppy image. This option works only for drives formatted with FAT12, FAT16 or FAT32.
➔ **Hard Disk**		Allows the USB device to be emulated as hard disk responding to INT13h calls that return DL values of 80h or above.
➔ **CDROM**		Assumes the CD-ROM is formatted as bootable media. All the devices that support block sizes greater than 512 bytes can only be booted using this

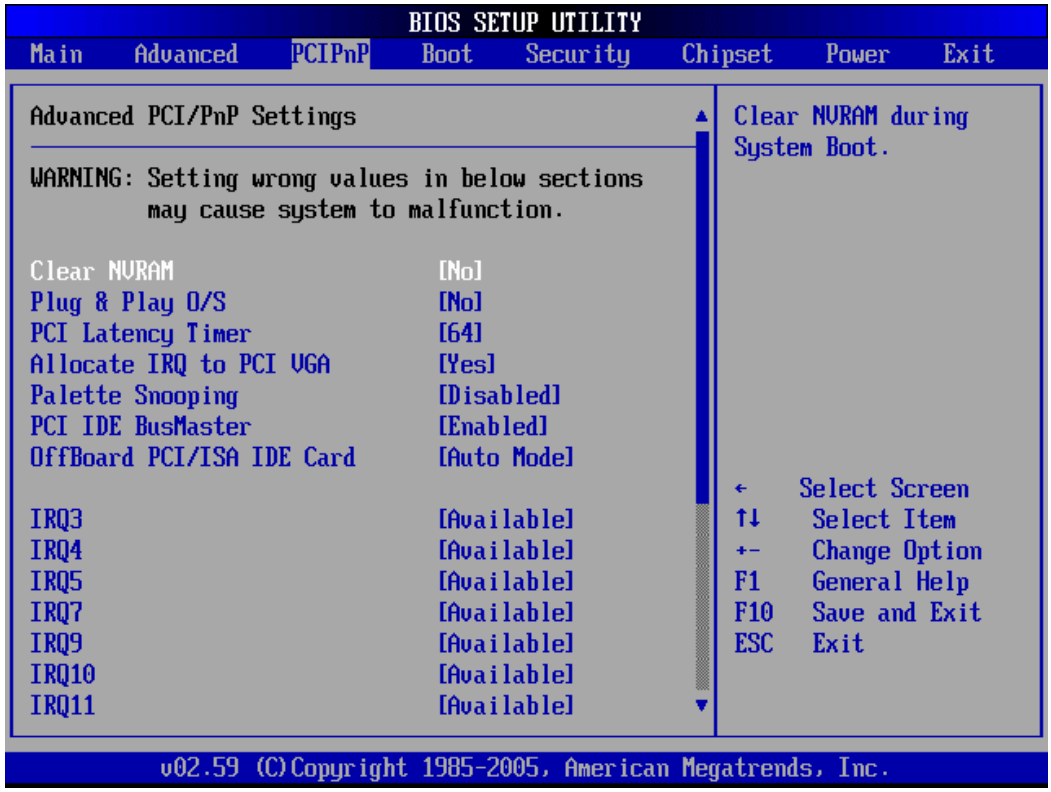
option.

5.4 PCI/PnP

Use the **PCI/PnP** menu (Error! Reference source not found.) to configure advanced PCI and PnP settings.

WARNING!

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



BIOS Menu 14: PCI/PnP Configuration

➔ **Clear NVRAM [No]**

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

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

➔ **Plug & Play O/S [No]**

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

- ➔ **No** **DEFAULT** If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.
- ➔ **Yes** This setting allows the operating system to change the interrupt, I/O, and DMA settings. Set this option if the system is running Plug and Play aware operating systems.

➔ **PCI Latency Timer [64]**

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

- 32
- 64 **DEFAULT**
- 96
- 128
- 160
- 192
- 224
- 248

➔ **Allocate IRQ to PCI VGA [Yes]**

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

- **Yes** **DEFAULT** Assigns an IRQ to a PCI VGA card if card requests IRQ
- **No** Does not assign IRQ to a PCI VGA card even if the card requests an IRQ

➔ **Palette Snooping [Disabled]**

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

- **Disabled** **DEFAULT** Unless the VGA card manufacturer requires palette snooping to be enabled, this option should be disabled.
- **No/Enabled** PCI devices are informed that an ISA based Graphics device is installed in the system so the ISA based Graphics card functions correctly. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with the adapter card manual first, before modifying the default settings in the BIOS.

➔ **PCI IDE BusMaster [Enabled]**

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

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

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

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

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

➔ **IRQ# [Available]**

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

- **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices
- **Reserved** The specified IRQ is reserved for use by Legacy ISA

devices

Available IRQ addresses are:

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

➔ **DMA Channel# [Available]**

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

➔ **Available**	**DEFAULT**	The specified DMA is available to be used by PCI/PnP devices
➔ **Reserved**		The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

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

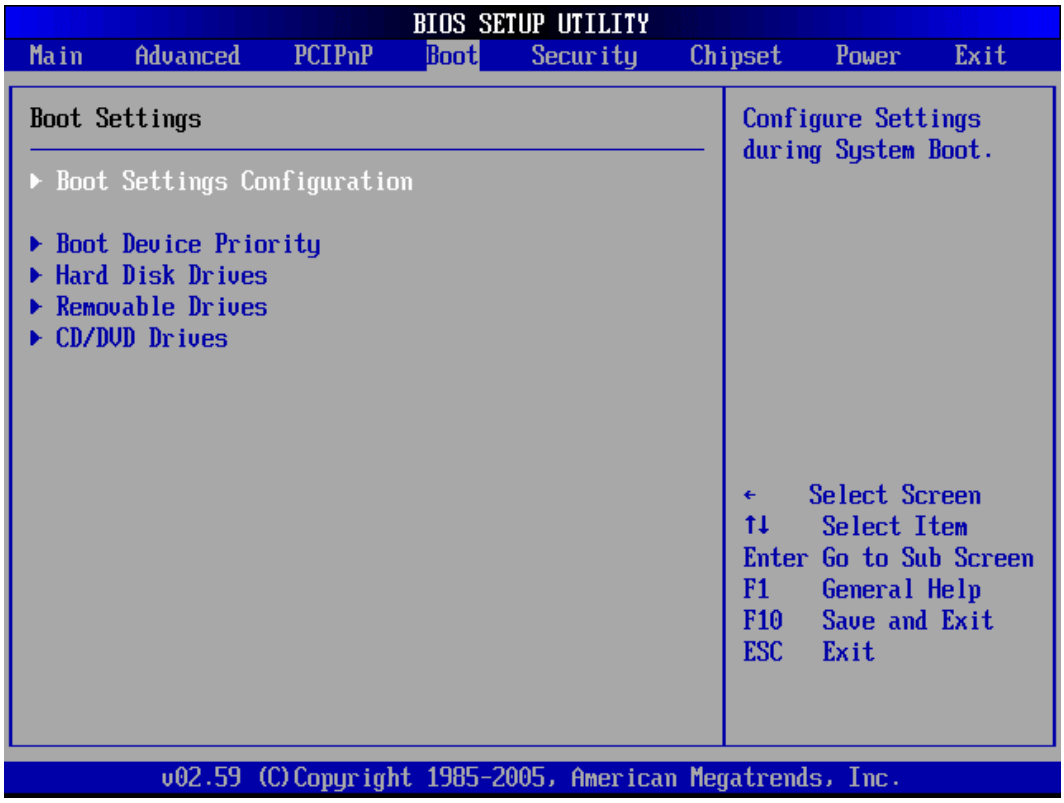
➔ **Reserved Memory Size [Disabled]**

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

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

5.5 Boot

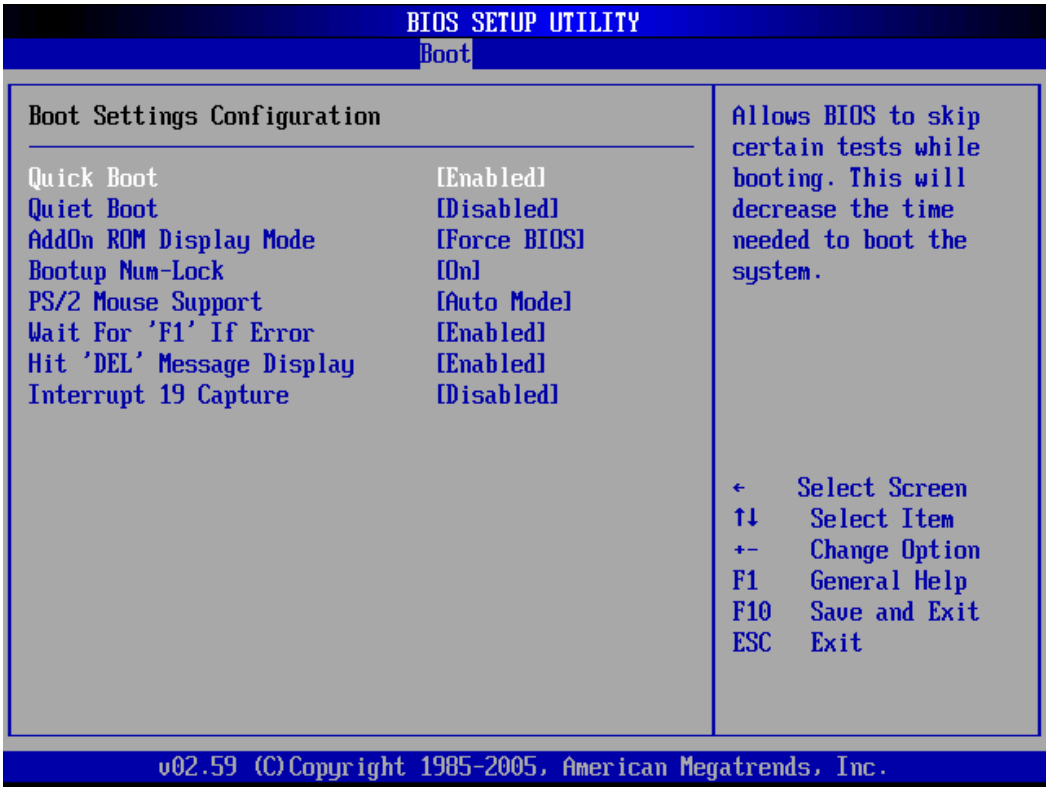
Use the **Boot** menu (**BIOS Menu 15**) to configure system boot options.



BIOS Menu 15: Boot

5.5.1 Boot Settings Configuration

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



BIOS Menu 16: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

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

➔ **Disabled** No POST procedures are skipped

➔ **Enabled** **DEFAULT** Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Disabled]**

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

➔ **Disabled** **DEFAULT** Normal POST messages displayed

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

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

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

➔ **Force BIOS** **DEFAULT** The system forces third party BIOS to display during system boot.

➔ **Keep Current** The system displays normal information during system boot.

➔ **Bootup Num-Lock [On]**

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

➔ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **PS/2 Mouse Support [Auto Mode]**

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

➔ **Disabled** PS/2 mouse support is disabled and prevented from using system resources.

➔ **Enabled** **DEFAULT** Allows the system to use a PS/2 mouse.

➔ **Auto Mode** The system auto-adjusts PS/2 mouse support.

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

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

➔ **Disabled** If there is an error when booting up, the system does not wait for user intervention but continues to boot up in the operating system. Only use this setting if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system. The computer system does not have a keyboard currently attached.

➔ **Enabled** **DEFAULT** If there is an error during boot up, the system waits for a user to press "F1" and enter the BIOS to rectify the problem. The BIOS can then be adjusted to the correct settings.

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

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

➔ **Disabled** No message displayed during POST

➔ **Enabled** **DEFAULT** Displays "**Press DEL to run Setup**" message in POST

➔ **Interrupt 19 Capture [Disabled]**

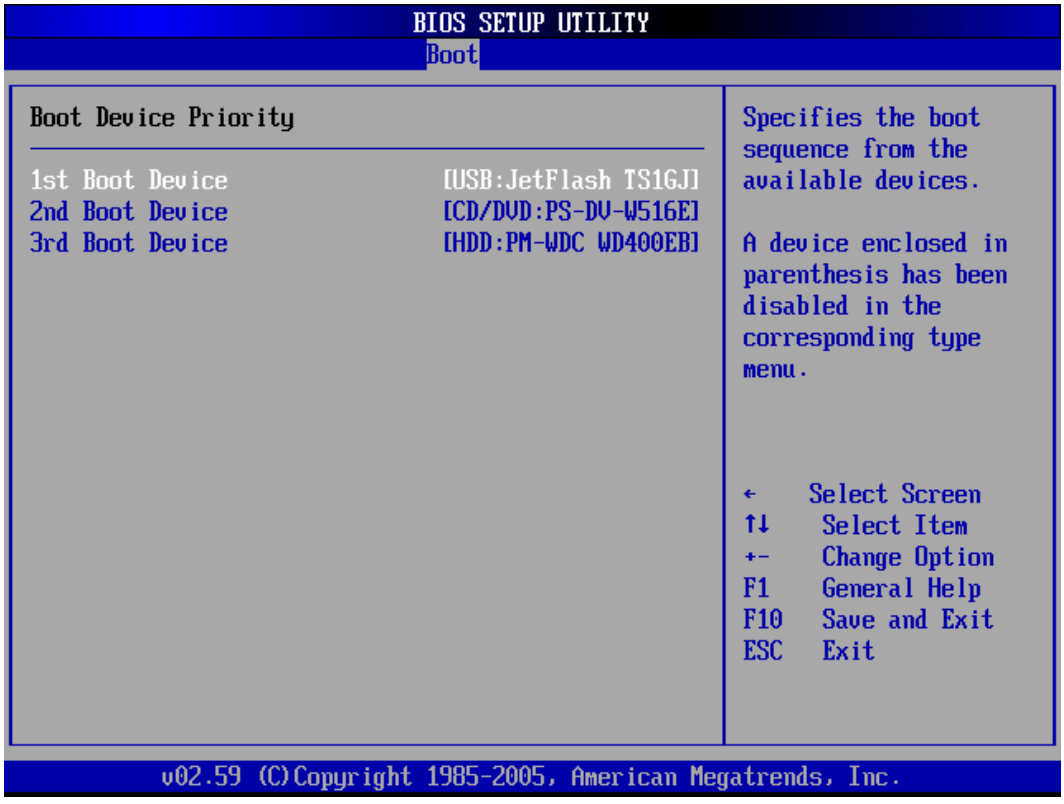
Use the **Interrupt 19 Capture** option to allow optional ROMs such as network controllers to trap BIOS interrupt 19.

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

5.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (**BIOS Menu 17**) to specify the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD



BIOS Menu 17: Boot Device Priority Settings

5.5.3 Hard Disk Drives

Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

- 1st Drive [HDD: PM-(part number)]

NOTE:

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

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

5.5.4 Removable Drives

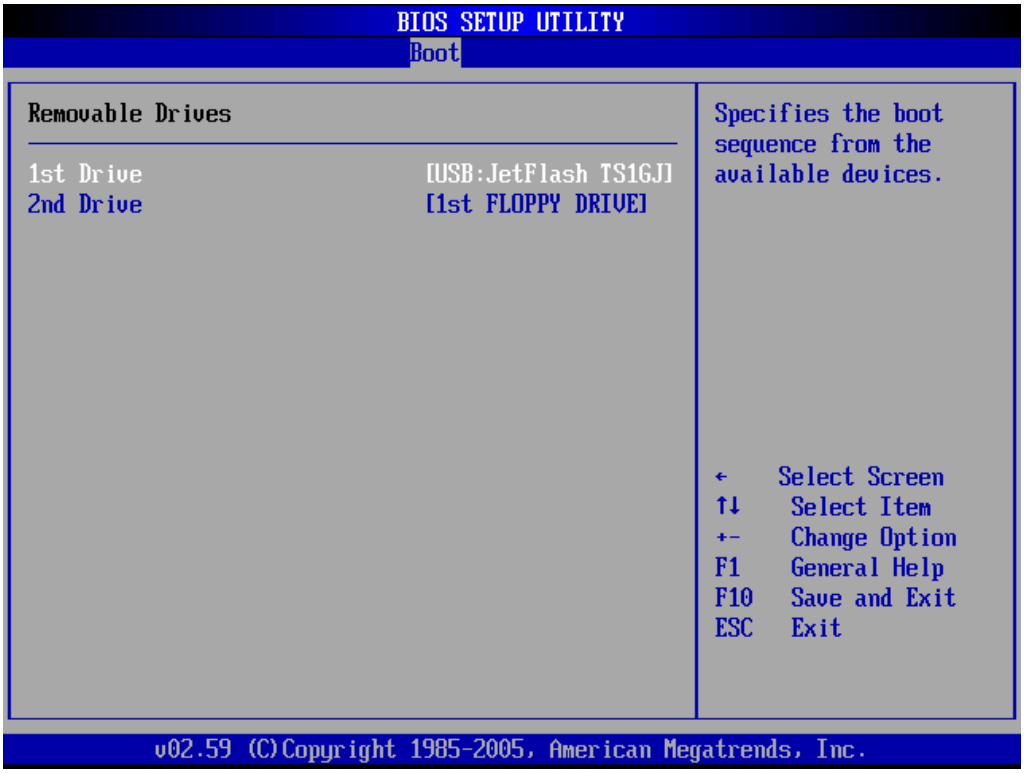
Use the **Removable Drives** menu (**BIOS Menu 18**) to specify the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

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

NOTE:

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

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



BIOS Menu 18: Removable Drives

5.5.5 CD/DVD Drives

Use the **CD/DVD Drives** menu to specify the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

- 1st Drive [CD/DVD: PM-(part ID)]

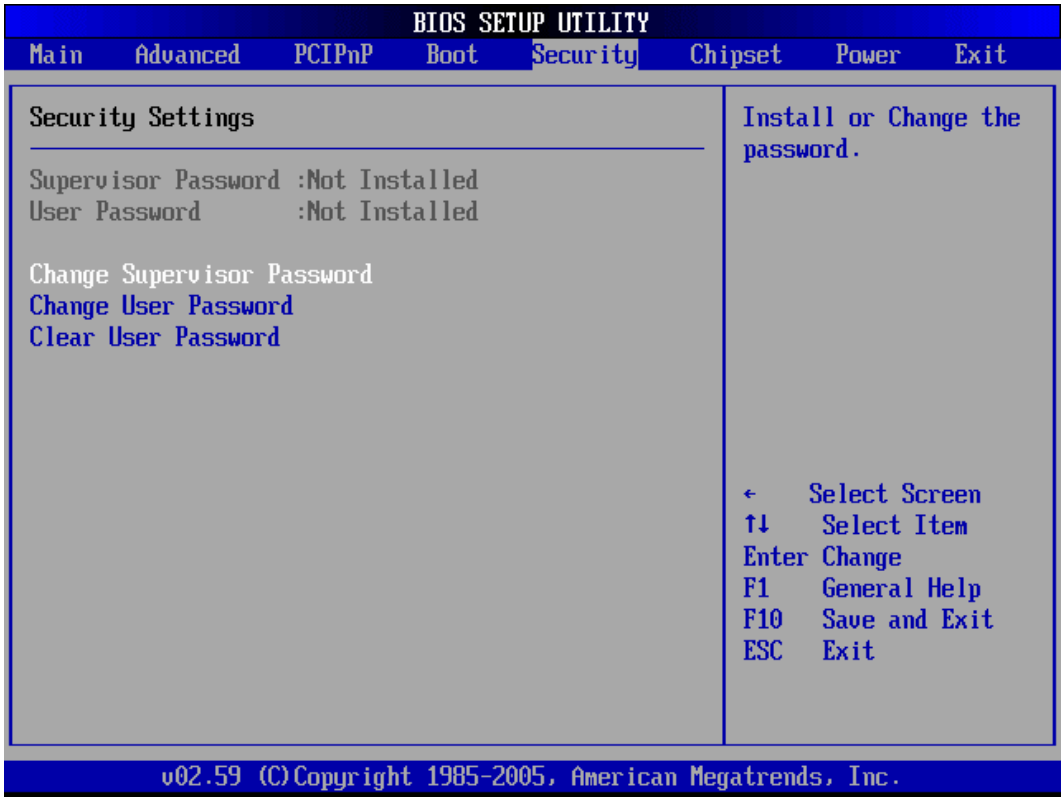
NOTE:

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

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

5.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



BIOS Menu 19: Security

➔ **Change Supervisor Password**

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

➔ **Change User Password**

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

5.7 Chipset

Use the **Chipset** menu (**BIOS Menu 20**) to access the NorthBridge and SouthBridge configuration menus

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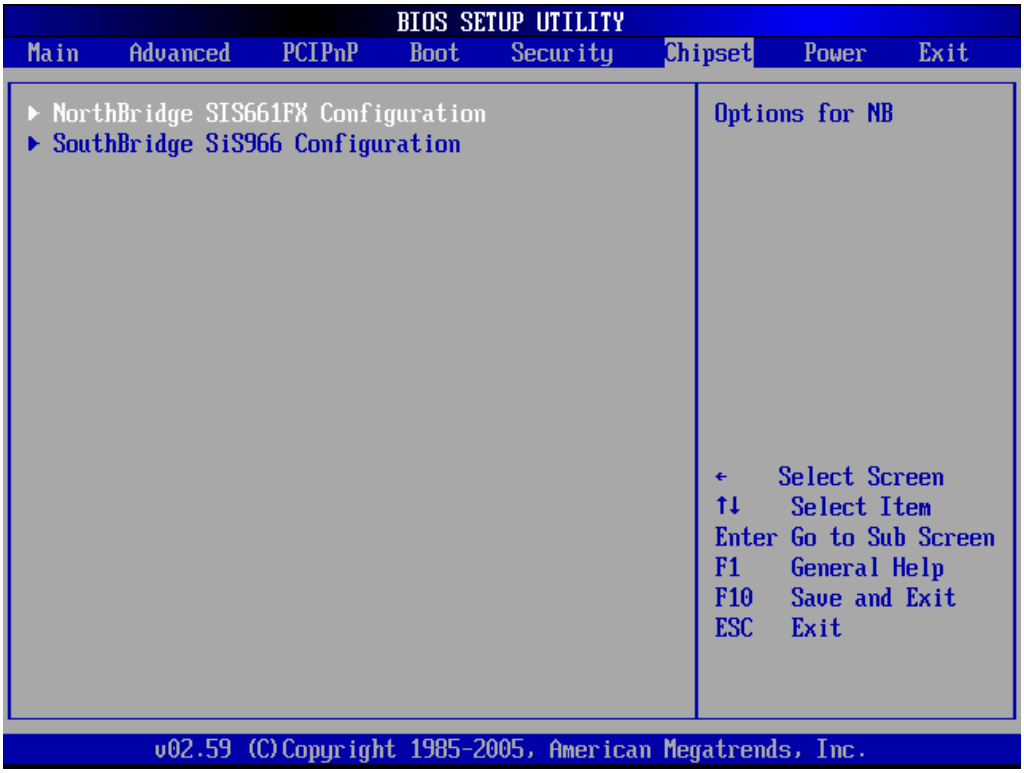
WARNING!

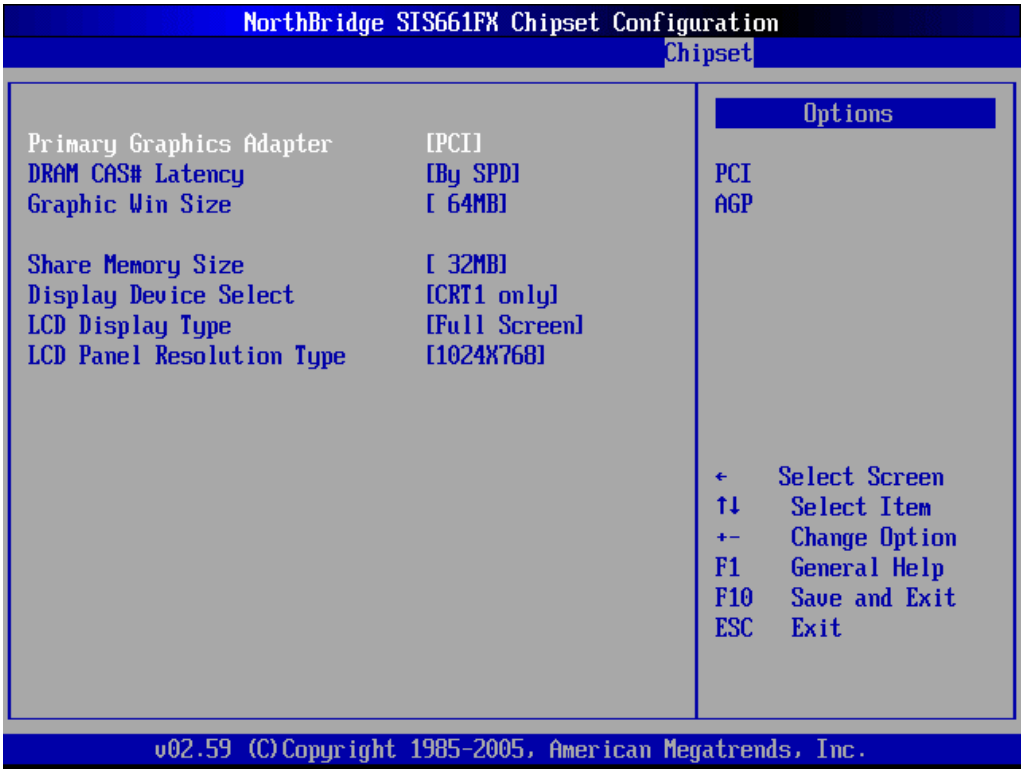
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 20: Chipset

5.7.1 North Bridge Configuration

Use the **NorthBridge Configuration** menu (**BIOS Menu 21**) to configure the northbridge chipset.



BIOS Menu 21:NorthBridge Chipset Configuration

➔ **Primary Graphics Adapter [PCI]**

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

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

➔ **AGP** AGP graphics adapter is used

➔ **DRAM CAS# Latency [By SPD]**

Use the **DRAM CAS# Latency** option to set the CAS (Column Address Strobe) latency. The CAS latency is the number of clock cycles (or Ticks, denoted with T) between the

receipt of a "read" command and when the RAM chip actually starts reading. The BIOS options are as follows:

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

➔ **Graphic Win Size [64MB]**

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

- 32MB
- 64MB **DEFAULT**
- 128MB
- 256MB

➔ **Share Memory Size [32MB]**

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

- 16MB
- 32MB **DEFAULT**
- 64MB
- 128MB
- Disabled

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

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

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

➔ **LCD Display Type [Full Screen]**

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

- Full Screen **DEFAULT**
- Center Screen

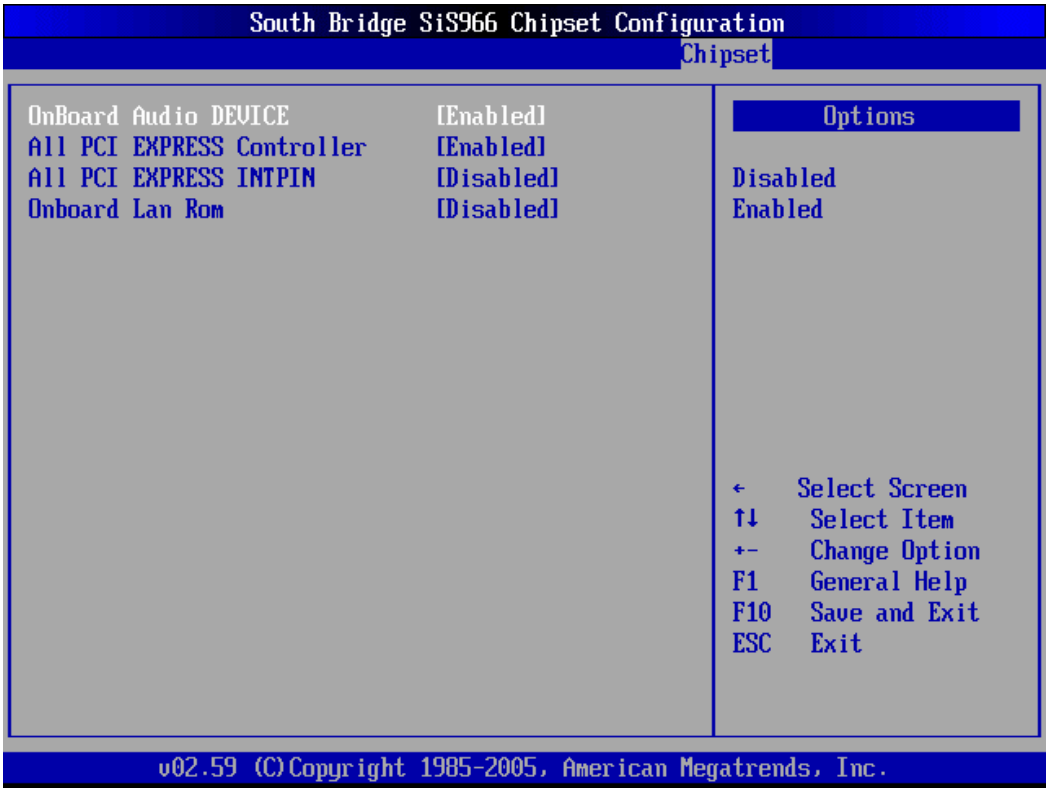
➔ **LCD Panel Resolution Type [1024X768]**

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

- 1024 x 768 **DEFAULT**
- 1280 x 1924
- 1400 x 1050
- 1280 x 768 (HT x VT = 1688 x 806)
- 1600 x 1200
- 1280 x 768 (HT x VT = 1408 x 806)

5.7.2 SouthBridge SiS966 Configuration

The **SouthBridge SiS966 Configuration** menu (Error! Reference source not found.) the southbridge chipset to be configured.



BIOS Menu 22: SouthBridge Chipset Configuration

➔ **OnBoard Audio DEVICE [Enabled]**

Use the **OnBoard Audio DEVICE** option to enable or disable the AC'97 CODEC.

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

➔ **Enabled** **DEFAULT** The onboard AC'97 is enabled

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

Use the **All PCI EXPRESS Controller** option to determine enable or disable the PCI Express controller.

➔ **Disabled** The PCI Express port is disabled.

➔ **Enabled** **DEFAULT** The PCI Express port is enabled.

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

Use the **All PCI EXPRESS INTPIN** option to determine enable or disable the PCI Express interrupt pin.

➔ **Disabled**	**DEFAULT**	The PCI Express interrupt pin is disabled.
➔ **Enabled**		The PCI Express interrupt pin is enabled.

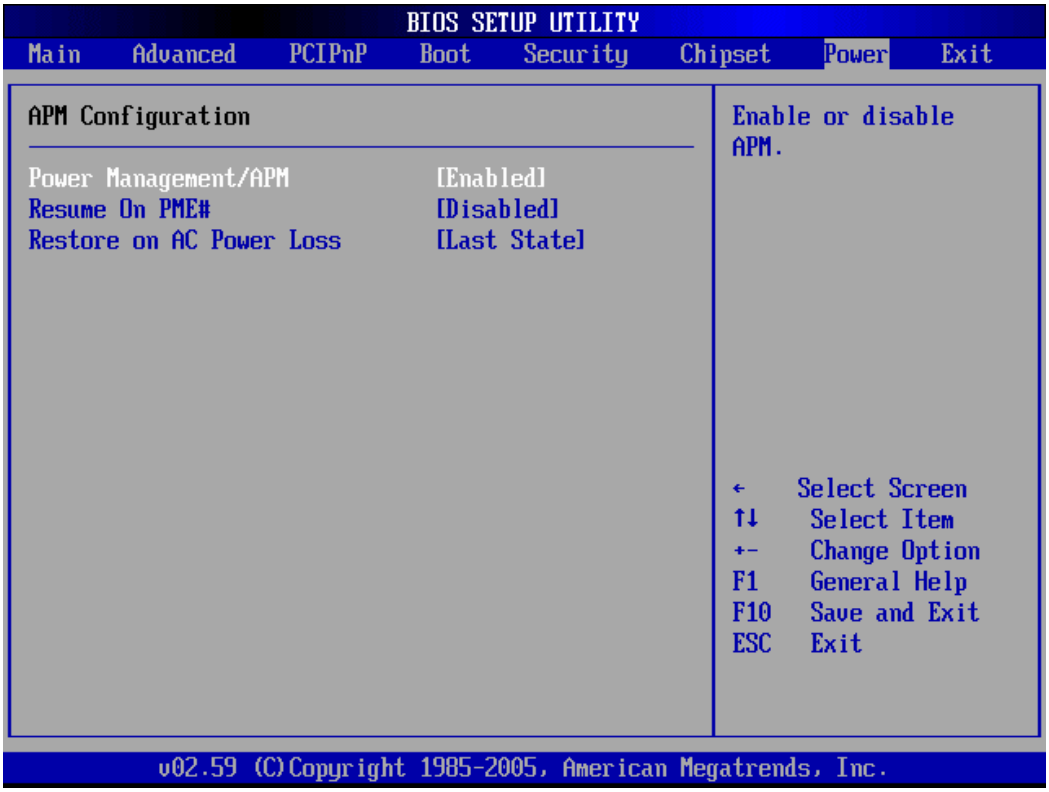
➔ **OnBoard Lan ROM [Disabled]**

The **OnBoard Lan DEVICE** option enables or disables the onboard LAN.

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

5.8 Power Key

The **Power** menu (Error! Reference source not found.) allows the advanced power management options to be configured.



BIOS Menu 23: Power

➔ **Power Management/APM [Enabled]**

Use the **Power Management/APM** BIOS option to enable access to the advanced power management features. If this option is disabled, the only other option on the screen is the **Power Button Mode**.

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

➔ **Resume on PME# [Disabled]**

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

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

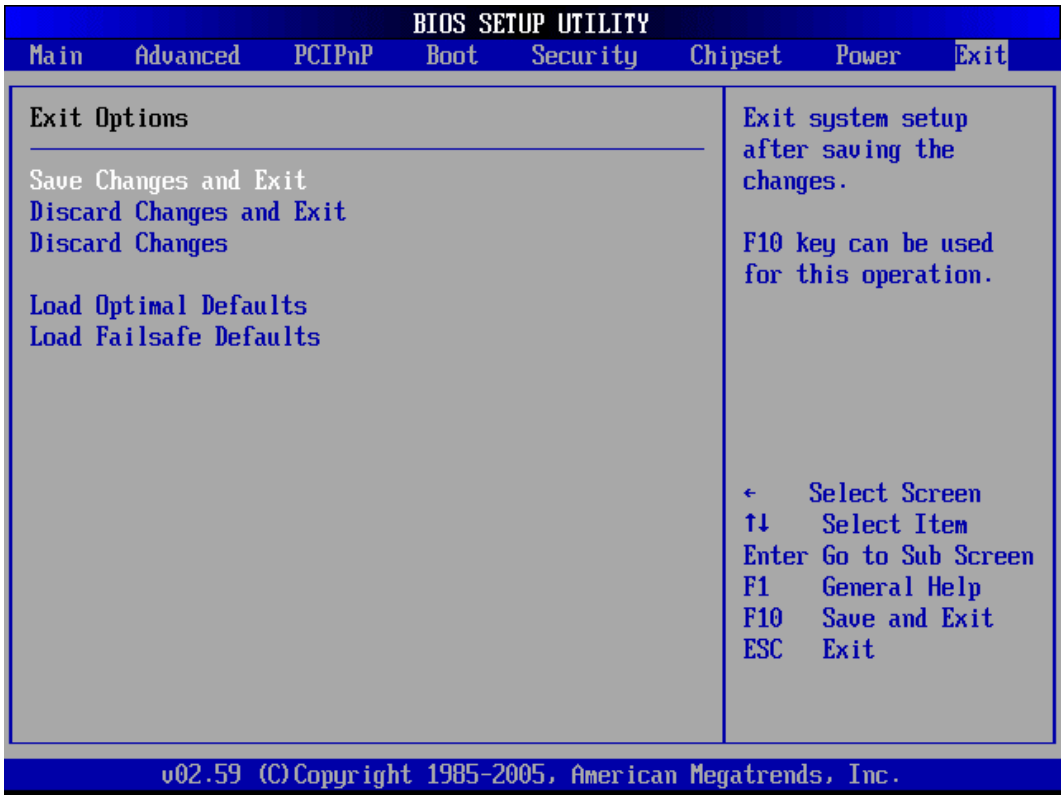
➔ **Restore on AC Power Loss [Last State]**

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

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

5.9 Exit

Use the **Exit** menu (**BIOS Menu 24**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 24:Exit

➔ **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

➔ **Discard Changes and Exit**

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

➔ **Discard Changes**

Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

➔ **Load Optimal Defaults**

Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

➔ **Load Failsafe Defaults**

Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

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Chapter

6

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 KINO-6614 motherboard has the following software drivers:

- VGA Driver
- Audio Driver
- LAN Driver
- SATA RAID Utility

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

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

NOTE:

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

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

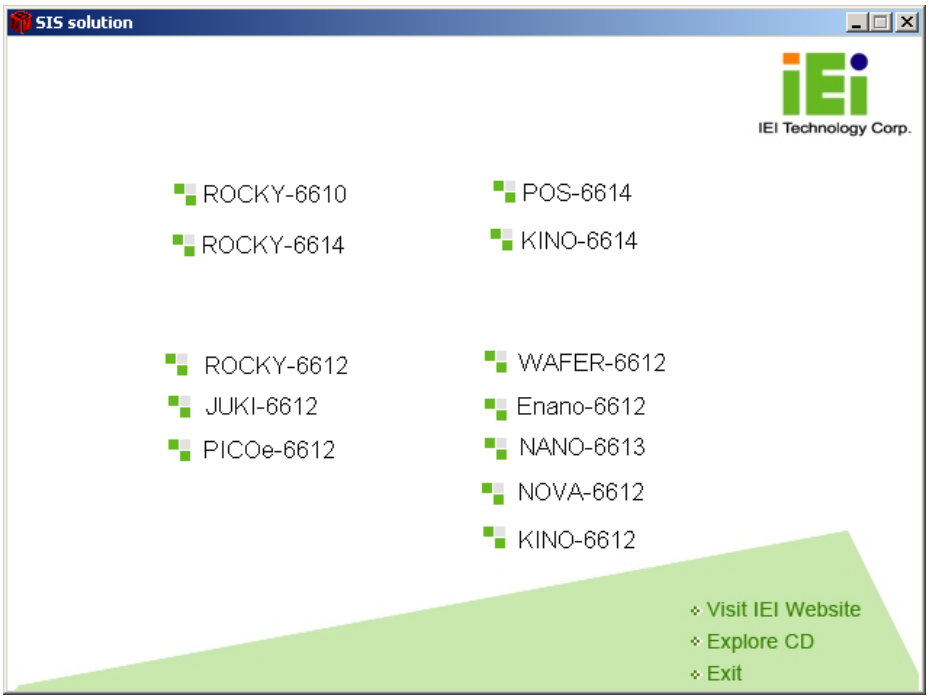

Figure 6-1: SIS Solution CD Main Menu

Step 2: A window appears listing the drivers available for installation.

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

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

6.2 VGA Driver Installation

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

Step 1: Select **VGA** from the SIS Solution CD driver menu.

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

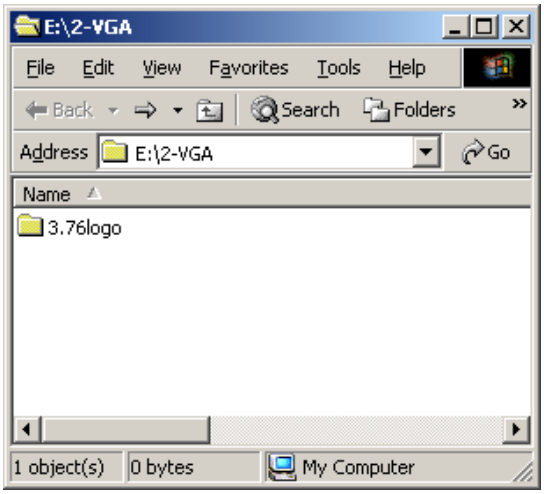

Figure 6-2: CD VGA Folder

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

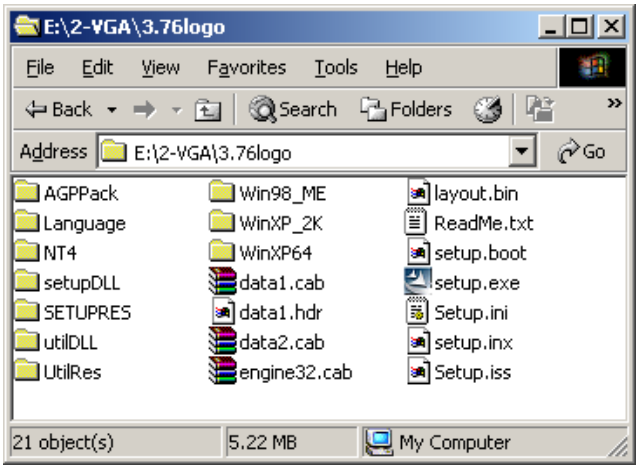

Figure 6-3: CD VGA\3.76logo Folder

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

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

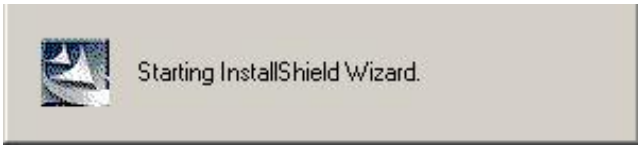

Figure 6-4: Starting InstallShield Wizard Screen

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

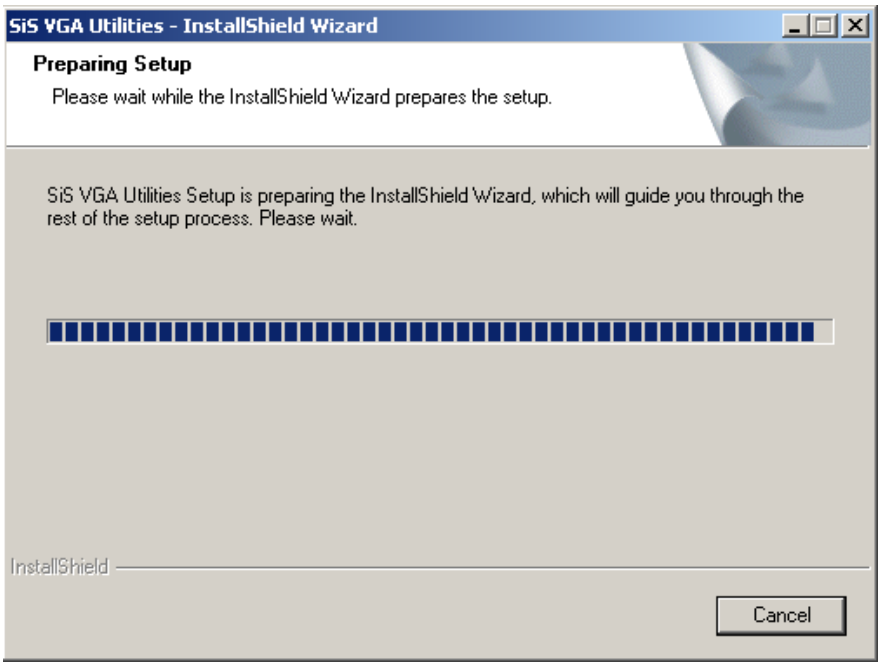

Figure 6-5: Preparing Setup Screen

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

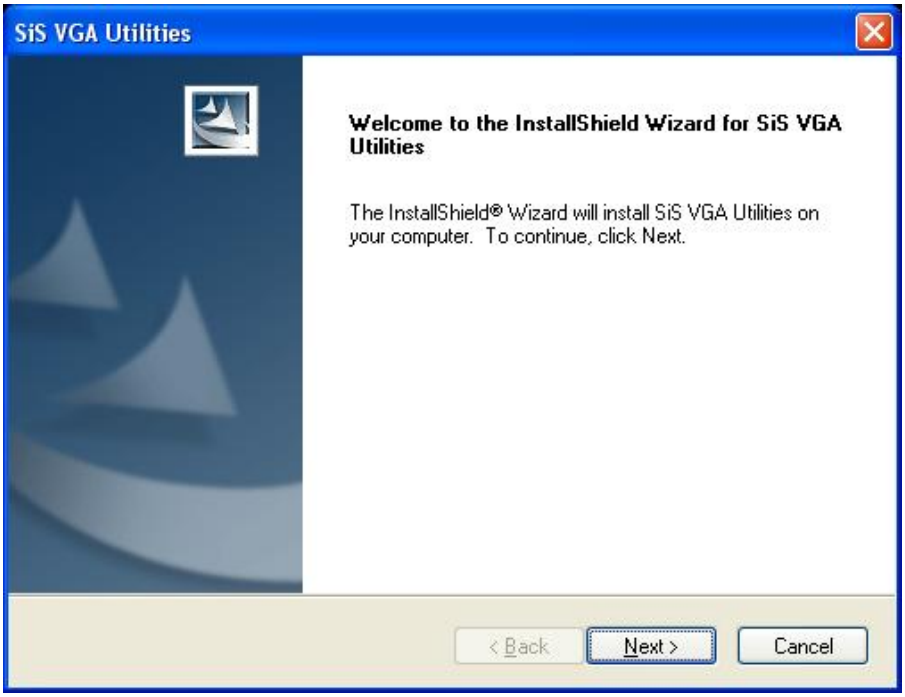

Figure 6-6: VGA Utilities Welcome Screen

Step 8: You then select the setup type (see **Figure 6-7**). Once the setup type is selected, click on the **NEXT** button in the setup type menu (see **Figure 6-7**).

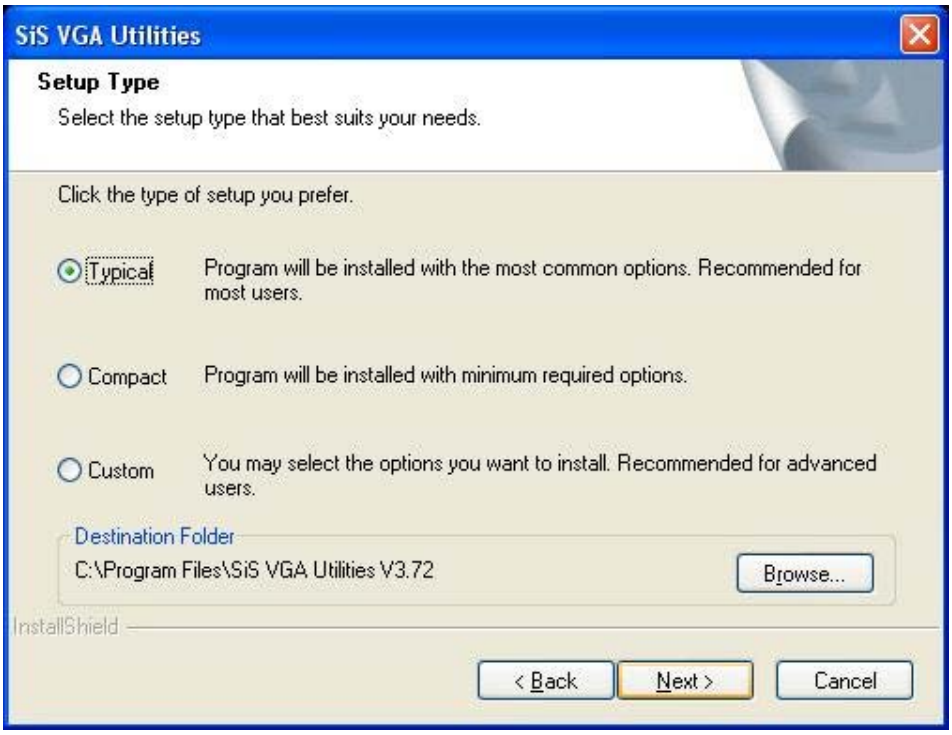

Figure 6-7: Select Setup Installation Type

Step 9: You are then prompted to select a folder to copy the files in (see **Figure 6-8**). Once the setup type is selected, click on the **NEXT** button.

Figure 6-8: Select Folders to Copy Files

Step 10: Before the files are copied, you can review you selected settings (see **Figure 6-9**). Once you have completed reviewing your settings, click on the **NEXT** button.

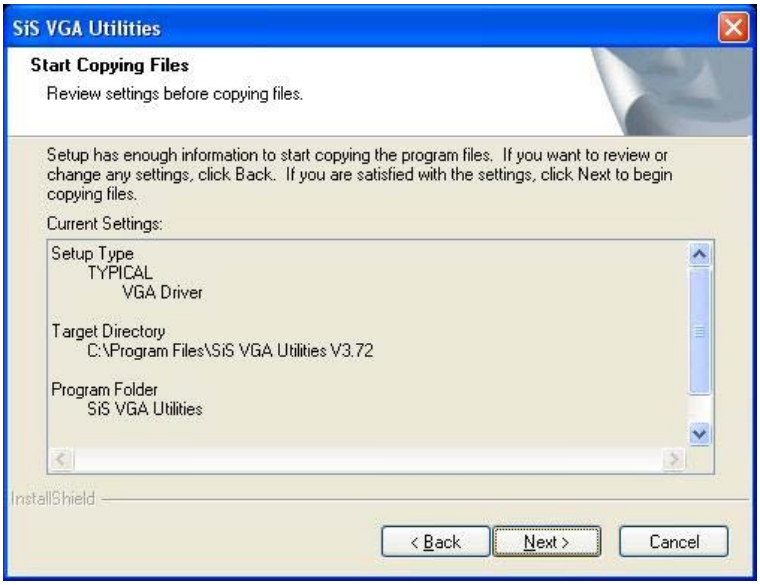

Figure 6-9: Review Settings

Step 11: The driver installation will then start.

Step 12: Once the installation is complete, you will be prompted to read the Read Me file. (see **Figure 6-10**)

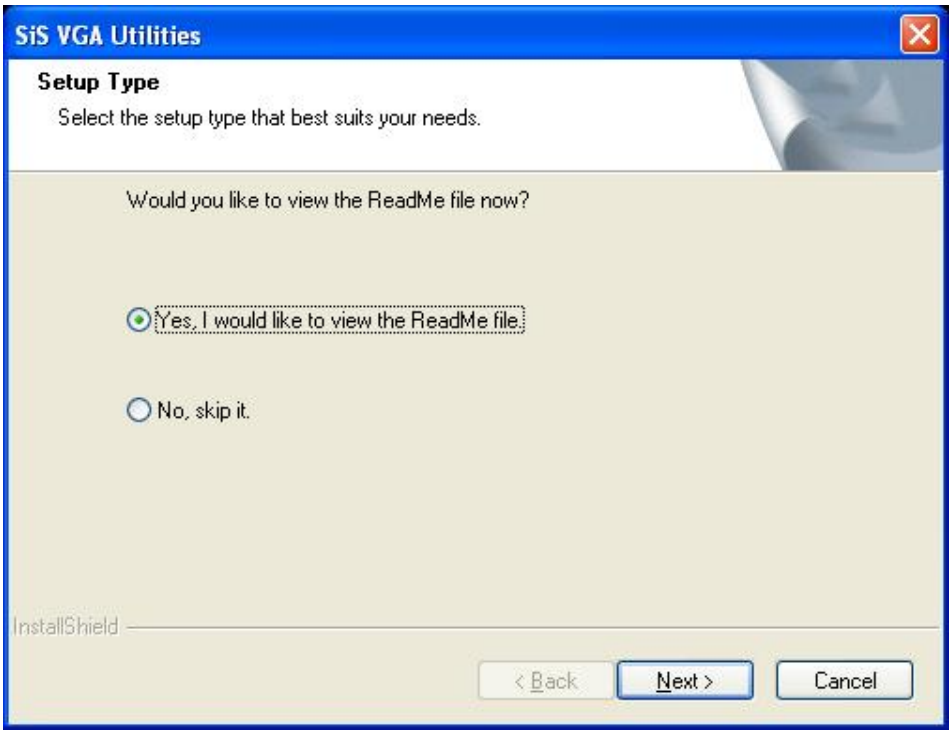

Figure 6-10: Read ReadMe File

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

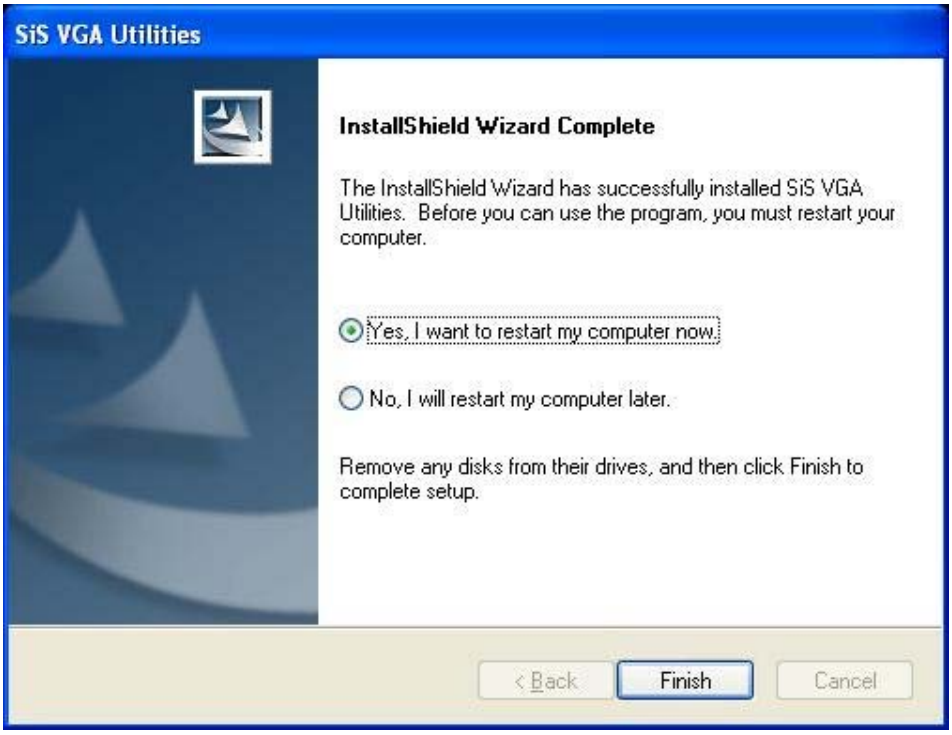

Figure 6-11: Restart the Computer

6.3 Audio Driver Installation

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

Step 1: Select **Audio** from the SIS Solution CD driver menu.

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

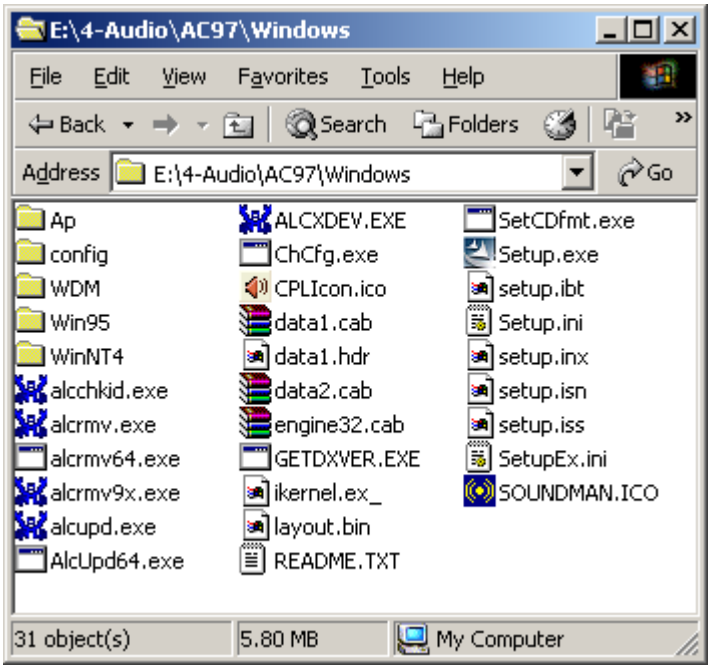

Figure 6-12: CD 4-Audio\AC97\Windows Folder

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

Step 4: Once you double click the **Setup** icon, the install shield wizard for the audio driver starts. See **Figure 6-13.**

Figure 6-13: Audio Driver Install Shield Wizard Starting

Step 5: The RealTek Audio Setup prepares the install shield to guide you through the rest of the setup process. See **Figure 6-14**.

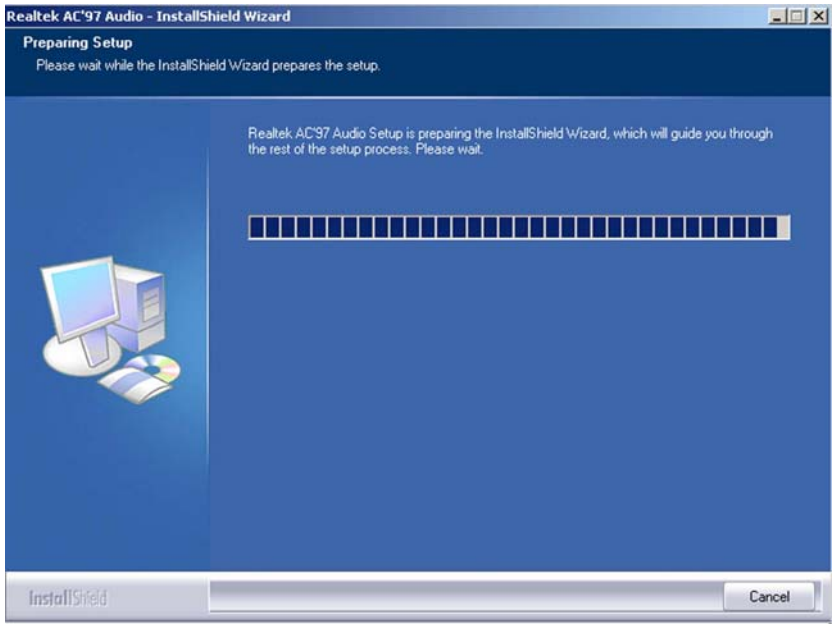

Figure 6-14: Audio Driver Setup Preparation

Step 6: After install shield is prepared, the welcome screen shown in **Figure 6-15** appears. To continue the installation process, click the "**NEXT**" button. The install shield starts to configure the new software as shown in **Figure 6-16**.

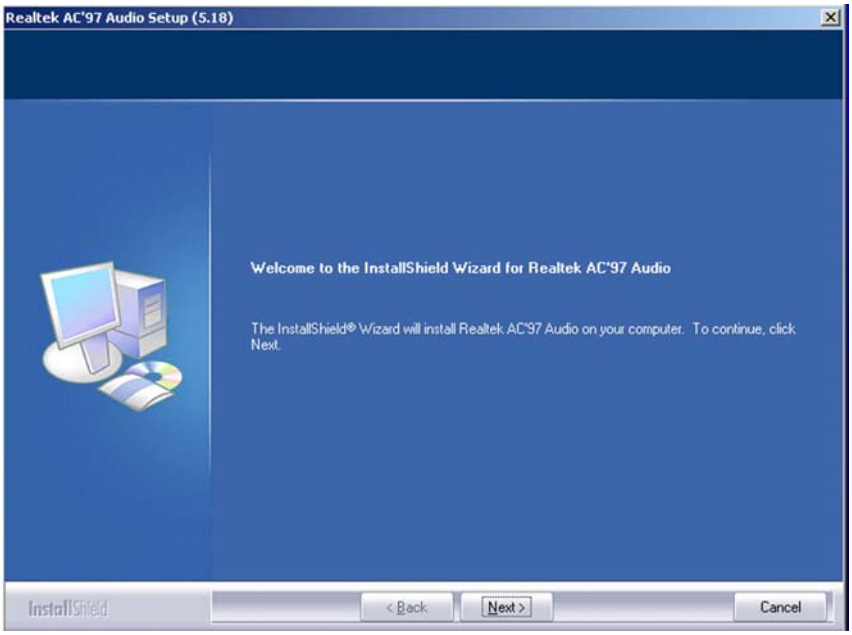

Figure 6-15: Audio Driver Welcome Screen

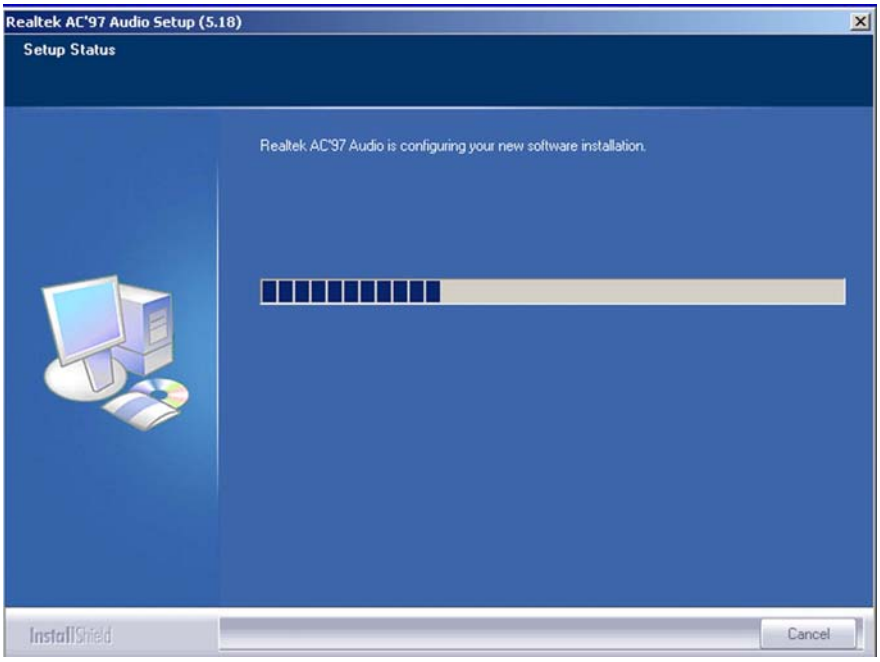

Figure 6-16: Audio Driver Software Configuration

Step 7: At this stage the "**Digital Signal Not Found**" screen shown in **Figure 6-17** appears. To continue the installation process, click the "**YES**" button. The installation notice shown below will appear.

Figure 6-17: Audio Driver Digital Signal

Step 8: At this stage the clicking the "**YES**" button in **Figure 6-17** appears, the installation of the driver begins. See **Figure 6-18**.

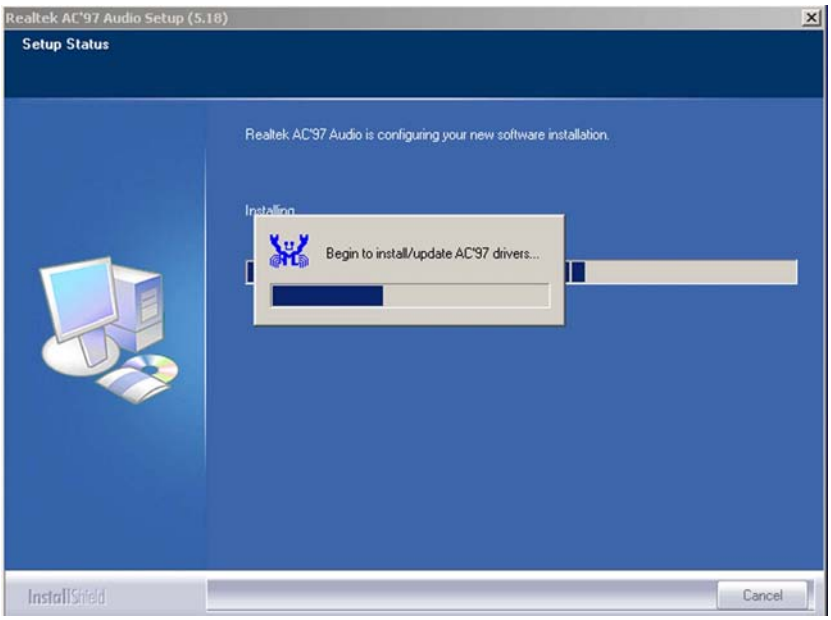

Figure 6-18: Audio Driver Installation Begins

Step 9: After the driver installation process is complete, a confirmation screen shown in **Figure 6-19** appears.

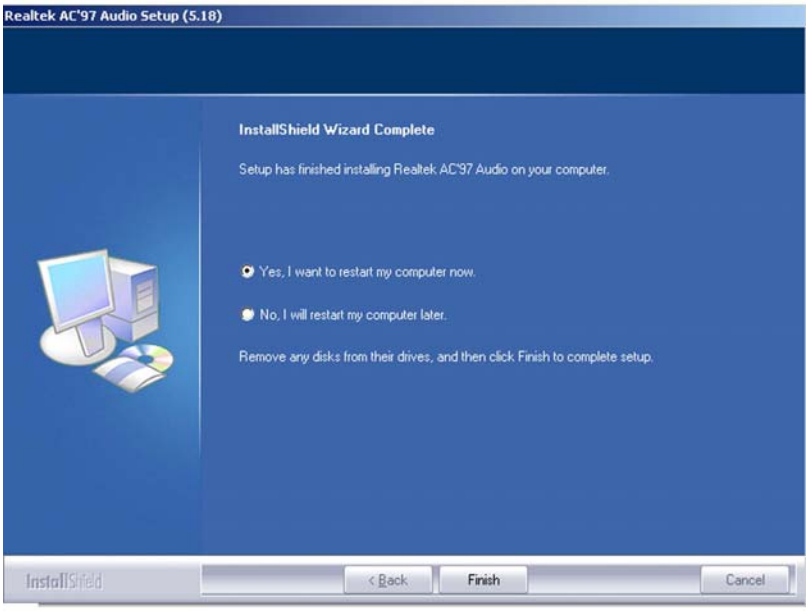

Figure 6-19: Audio Driver Installation Complete

Step 10: 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.

6.4 LAN Driver Installation

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

Step 1: Open **Windows Control Panel (Figure 6-20**).

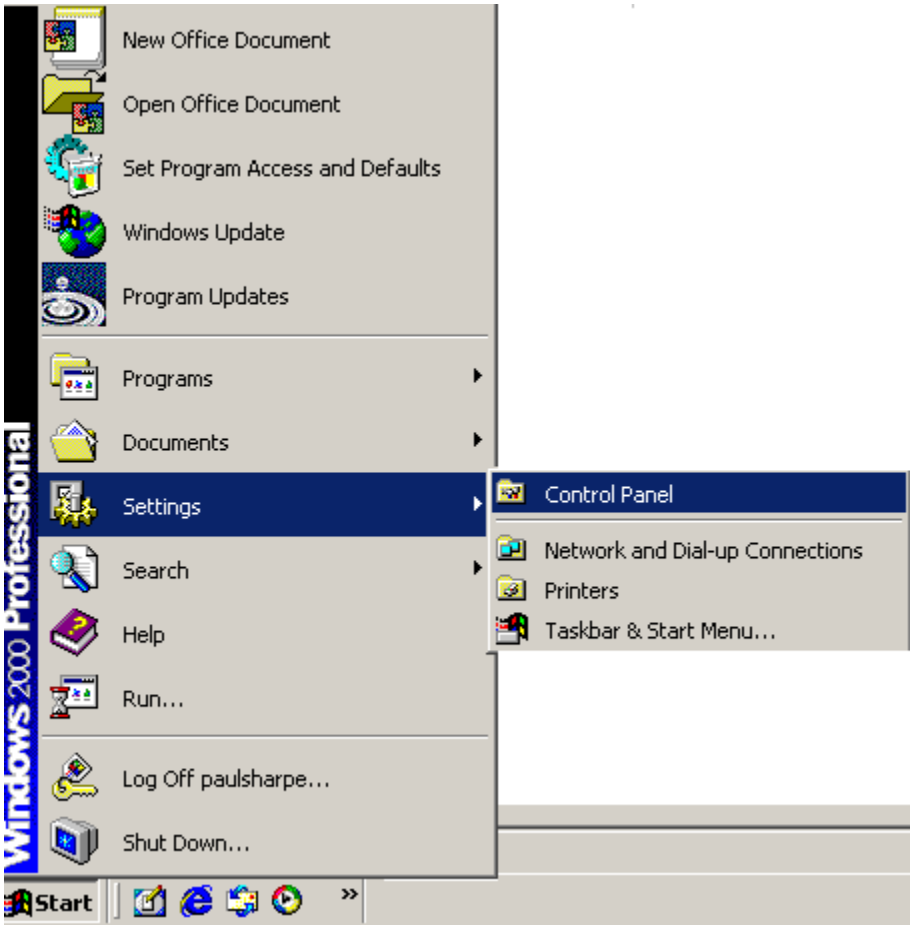

Figure 6-20: Access Windows Control Panel

Step 2: Double click the **System** icon (**Figure 6-21**).

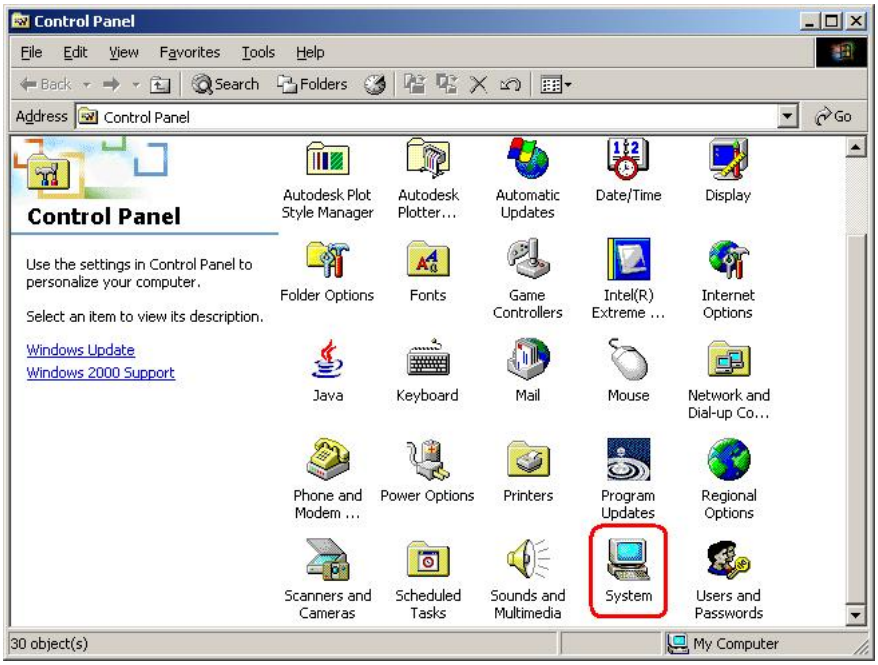

Figure 6-21: Double Click the System Icon

Step 3: Double click the **Device Manager** tab (**Figure 6-22**).

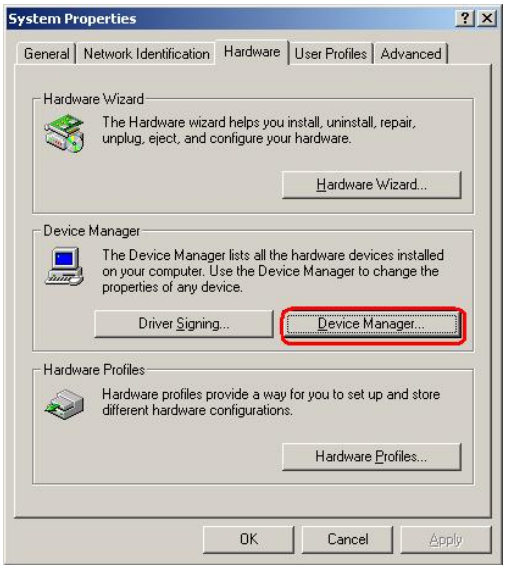

Figure 6-22: Double Click the Device Manager Tab

Step 4: A list of system hardware devices appears (**Figure 6-23**).

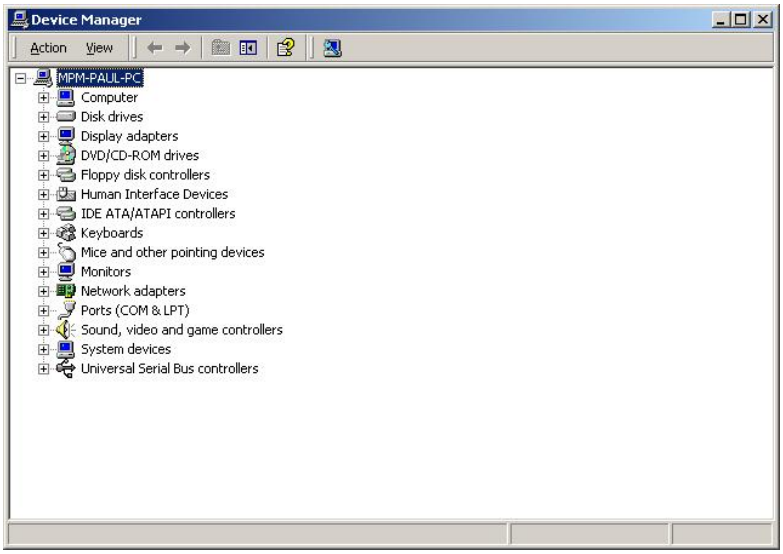

Figure 6-23: Device Manager List

Step 5: Double click the listed device that has question marks next to it. (This means Windows does not recognize the device).

Step 6: The **Device Driver Wizard** appears (**Figure 6-24**). Click **NEXT** to continue.

Figure 6-24: Search for Suitable Driver

Step 7: Select "**Specify a Location**" in the **Locate Driver Files** window (**Figure 6-25**). Click **NEXT** to continue.

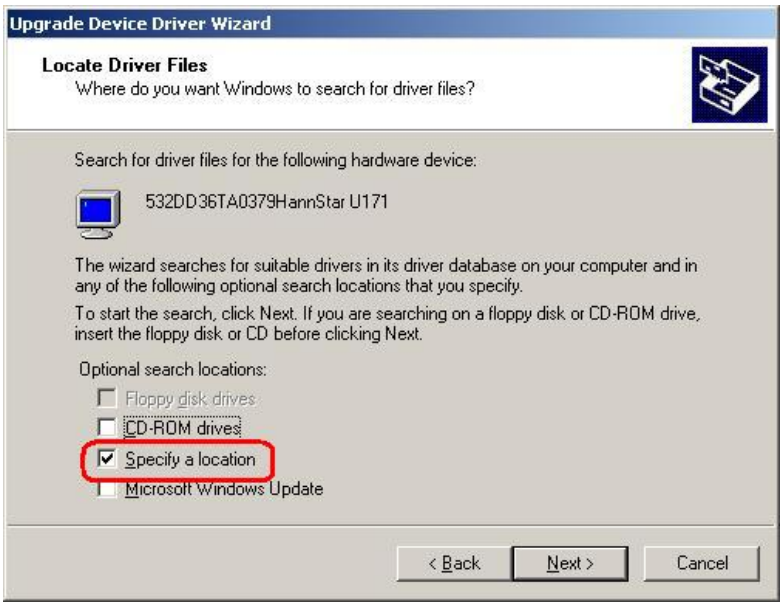

Figure 6-25: Locate Driver Files

Step 8: Select the proper OS folder under the "**X:\5-LAN\BROADCOM BCM57xx Drivers**" directory (**Figure 6-26**) in the location browsing window, where "**X:\"** is the system CD drive.

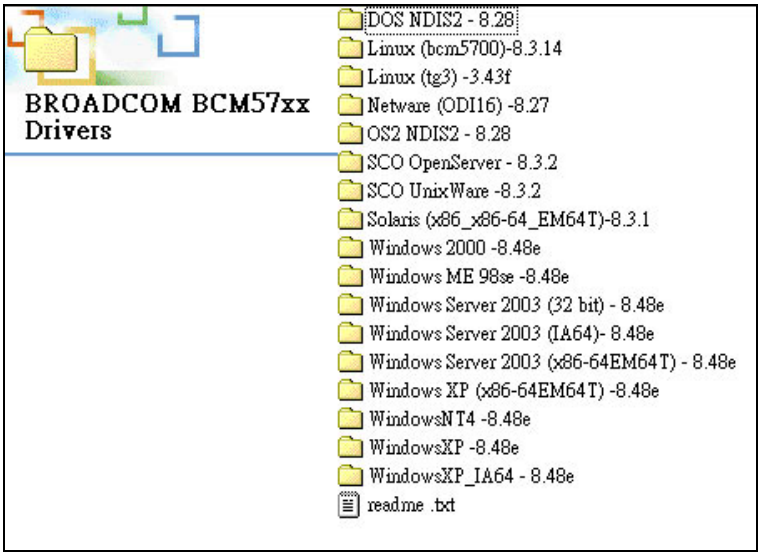

Figure 6-26: Location Browsing Window

Step 9: Click **OK** to continue. A driver files location menu window appears. Click **NEXT** to continue. The driver is installed.

6.5 SiS SATA RAID Utility Installation

NOTE:

The SATA RAID driver has to be installed in the SATA RAID mode.

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

Step 1: Select **SATA RAID** from the SIS Solution CD driver menu.

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

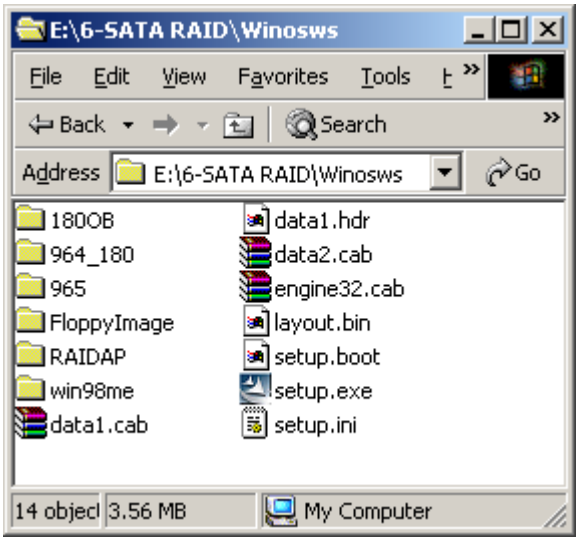

Figure 6-27: CD 6-SATA RAID\Windows Folder

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

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

Figure 6-28: Starting Install Shield Wizard

Step 5: The **Preparing Setup** window appears next (**Figure 6-29**).

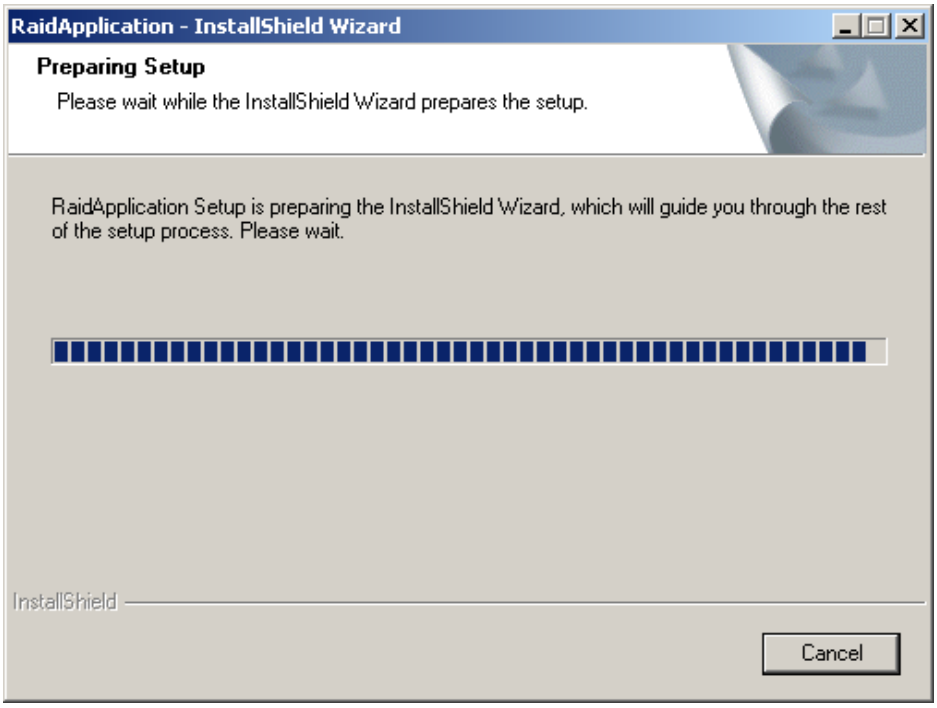

Figure 6-29: Preparing Setup

Step 6: The **InstallShield** window appears next (**Figure 6-30**).

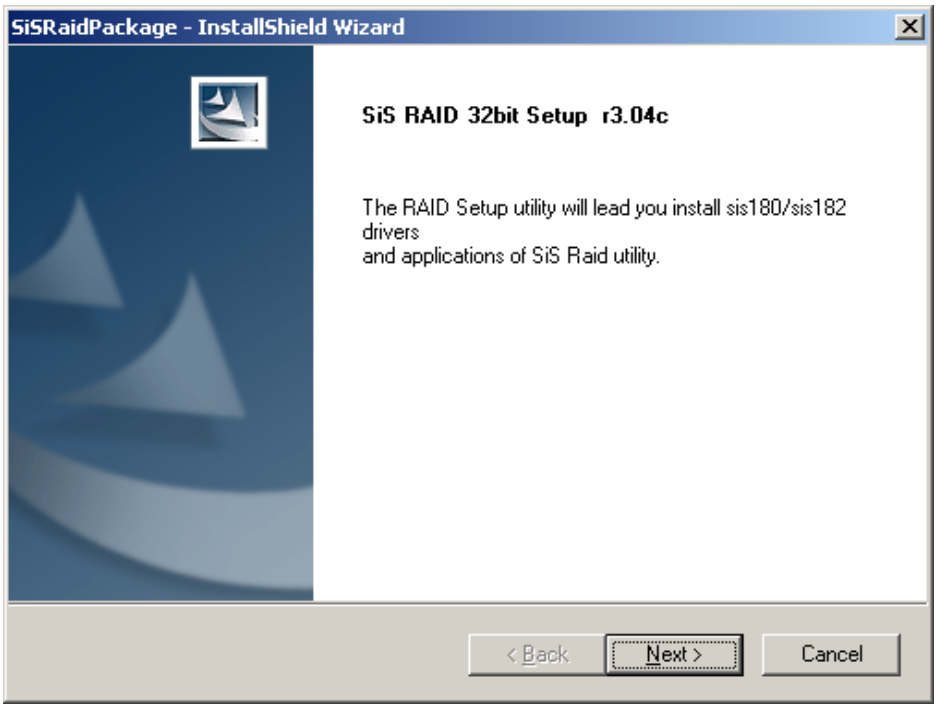

Figure 6-30: Install Shield

Step 7: Click **NEXT** and a **License Agreement** screen appears (**Figure 6-31**). Read the license agreement.

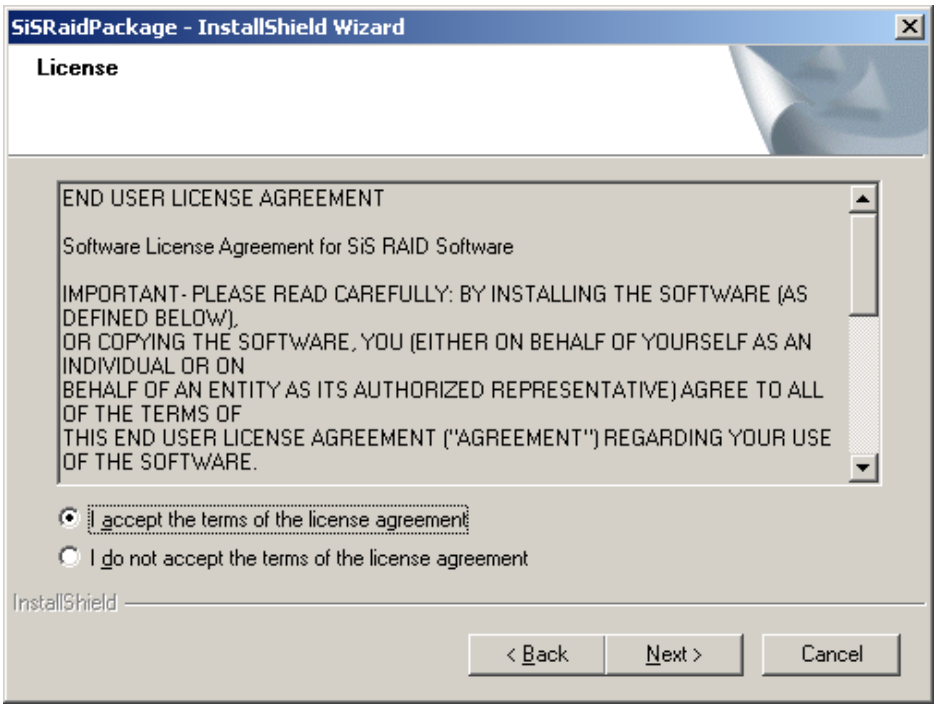

Figure 6-31: License Agreement

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

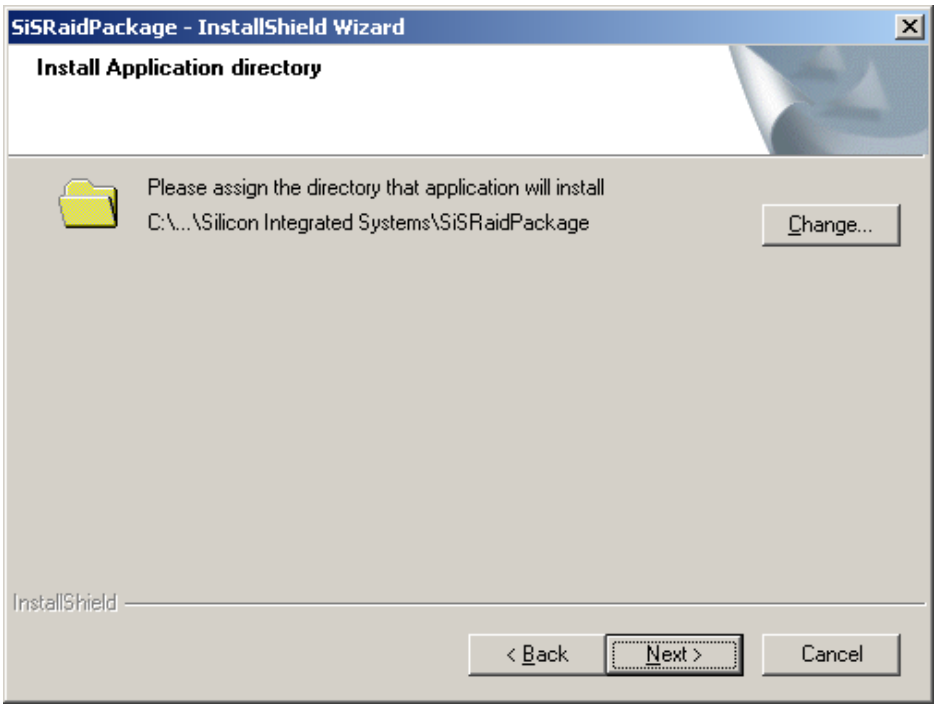

Figure 6-32: Install Application Directory

Step 9: The **Install Application Directory** window appears (**Figure 6-32**). Click **CHANGE** to manually select a destination folder for the program, or click **NEXT** to accept the default directory and continue the installation.

Step 10: The **Select Needed Components** window appears (**Figure 6-33**).

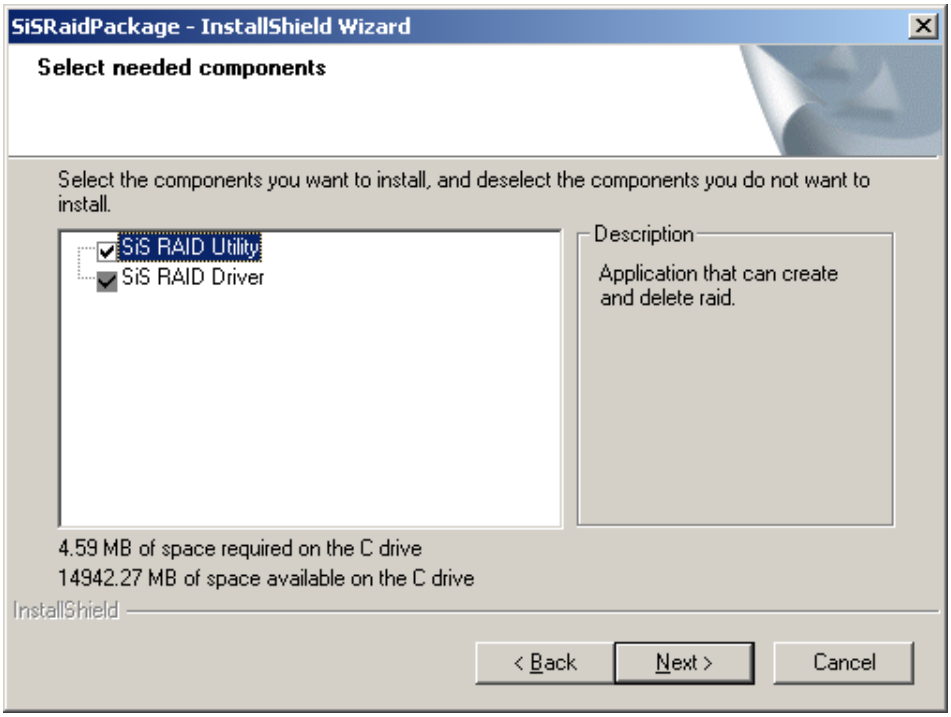

Figure 6-33: Select Needed Components

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

Step 12: The **Ready to Install** window appears (**Figure 6-34**).

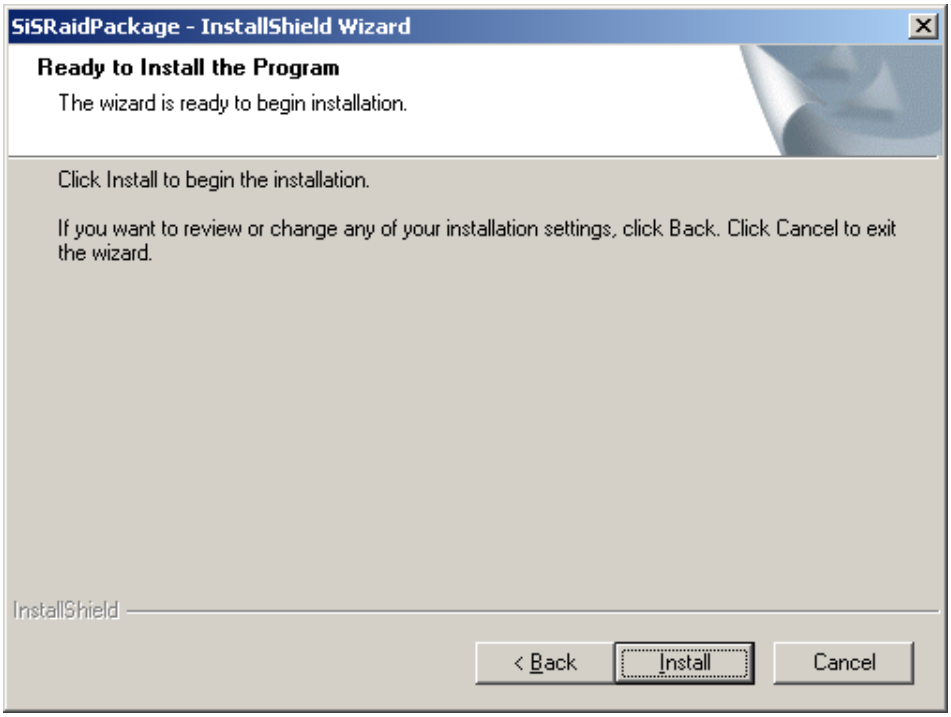

Figure 6-34: Ready to Install

Step 13: Click **INSTALL** and the install shield begins to extract and install the files (**Figure 6-35**).

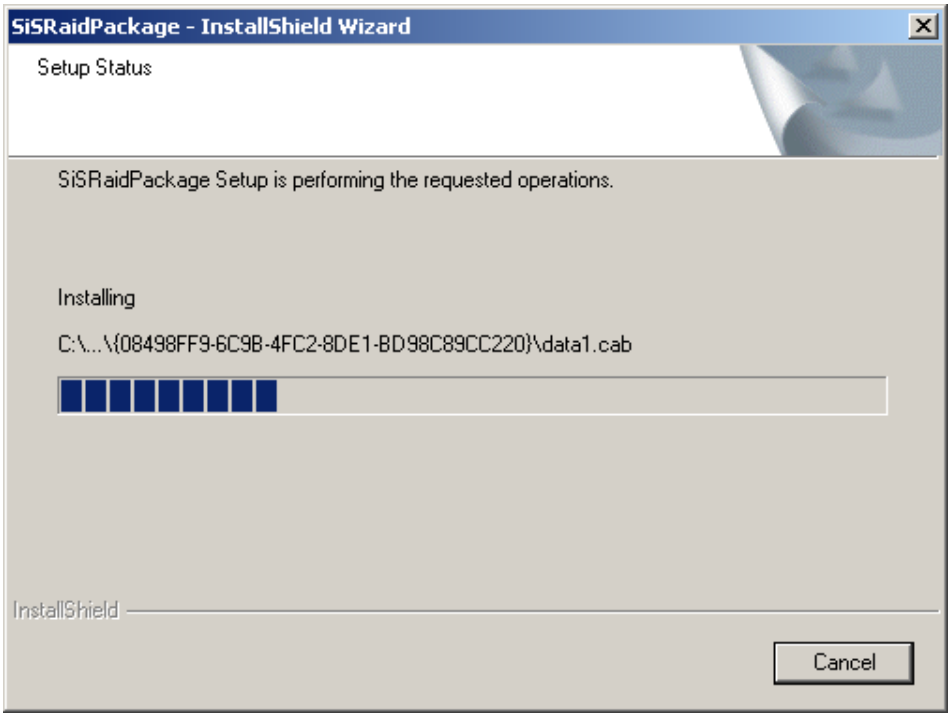

Figure 6-35: Setup Status

Step 14: After the driver installation process is complete, a confirmation screen appears (**Figure 6-36**).

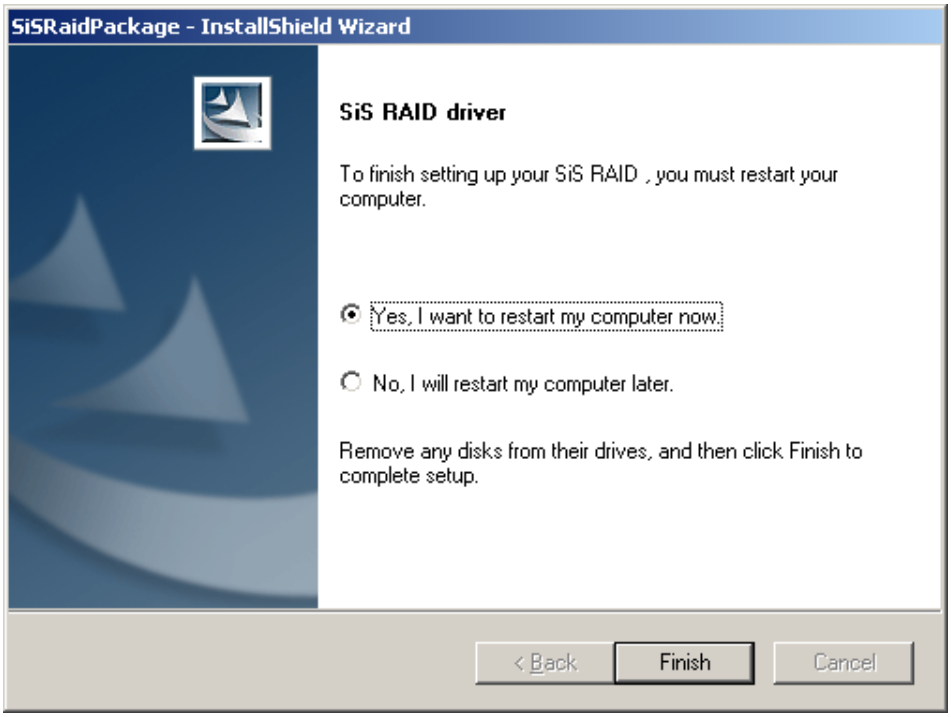

Figure 6-36: Restart the Computer

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

Chapter

7

Troubleshooting and Maintenance

WARNING:

Take Anti-Static precautions whenever maintenance is being carried out on the system components. Failure to take anti-static precautions can cause permanent system damage. For more details on anti-static precautions, please refer to **Section 4.1**.

7.1 ECK-3699GH System Maintenance Overview

NOTE:

When doing maintenance operations on the system, please follow the instructions in this chapter. Failure to follow these instructions may lead to personal injury and system damage.

To preserve the working integrity of the ECK-3699GH embedded system, the system must be properly maintained. If embedded system components need replacement, the proper maintenance procedures must be followed to ensure the system can continue to operate normally.

7.2 System Troubleshooting

This section provides some simple troubleshooting suggestions.

7.2.1 The System Doesn't Turn On

If after turning the system on, there is no power (indicated by the power LED on the front panel not turning on) please do the following:

Step 1: Check that the power cable connector is properly connected to the power socket on the system rear panel.

Step 2: Check that the power cable connector is properly plugged into the power source.

Step 3: Make sure the power button is turned on.

Step 4: Plug the system into a monitor and check to see if anything appears on the screen. If the boot-up screen appears it means the power LED has become disconnected. To fix this problem, open the top cover and reconnect the power LED to the motherboard.

If the above steps have been completed and the system still doesn't turn on, please do the following.

Step 1: Open the top cover (**Section 4.2.3.1**.)

Step 2: Check the power socket power cable connector is properly connected to the power module.

Step 3: Check that the power switch cable connector is properly connected to the motherboard.

Step 4: Make sure the cable connecting to the power socket are properly attached and have not become separated.

Step 5: Make sure the cable connecting the power switch to the motherboard is still properly attached to the power switch and has not been separated.

7.2.2 The System Doesn't Boot Up

If the system doesn't boot up please do the following:

Step 1: Check the power is turned on. See **Section 7.2.1** above.

Step 2: Make sure the DIMM module is properly installed.

Step 3: Reset the system using the reset CMOS jumper.

7.2.3 More Troubleshooting

Some other problems that may occur are listed below:

- ***The fan is not working***: Open the system and make sure the fan cable connector is properly connected to the motherboard.
- ***Nothing appears on the monitor after booting up the system***: Make sure

the monitor is properly connected to the system and the monitor is connected to a power supply and turned on.

7.3 Component Replacement Procedure

WARNING:

Take Anti-Static precautions whenever maintenance is being carried out on the system components. Failure to take anti-static precautions can cause permanent system damage. For more details on anti-static precautions, please refer to **Section 4.1**.

The embedded system components listed below can all be replaced if they fail:

- KINO motherboard
- CPU cooling fan
- CPU
- Power module
- Cooling fans
- DIMM module

7.3.1 DIMM Module Replacement

The installation procedure for the DIMM modules have already been fully described in **Chapter 4**. Please refer to **Section 4.3.4** to see how to install/replace the DIMM module.

7.3.2 Motherboard Replacement

KINO motherboard replacement includes the following two procedures:

Step 1: Removing the malfunction motherboard

Step 2: Installing the replacement motherboard

7.3.2.1 Motherboard Removal

To remove the KINO motherboard, please follow the steps below.

Step 1: Power down the system.

Step 2: Disconnect all rear panel peripheral device connectors.

Step 3: Remove the top cover. See **Section 4.2.3.1**.

Step 4: Remove the four HDD bracket retention screws inside the chassis (**Figure 7-1**).

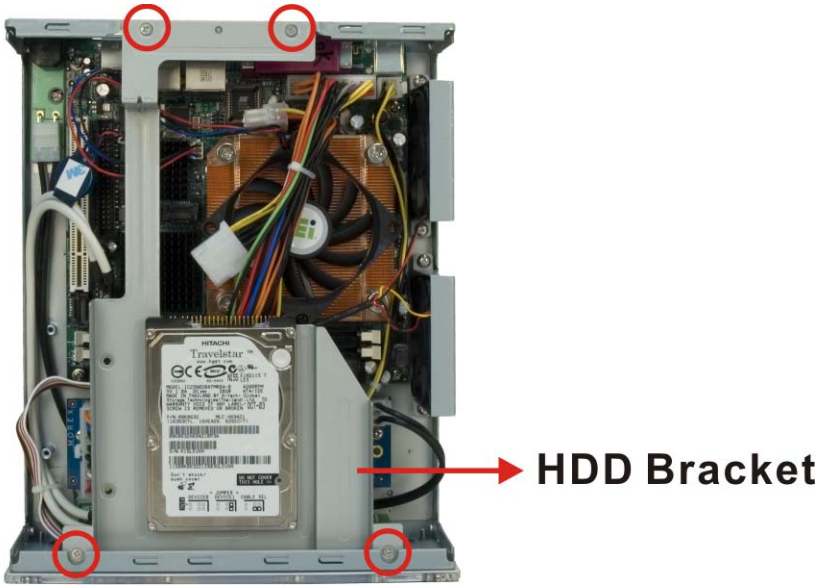

Figure 7-1: HDD Bracket Retention Screws

Step 5: Remove the following connector cables (See **Figure 7-2**):

- Power connectors
- Front panel connector
- USB connector
- Fan connectors
- SATA/IDE connector (if connected)

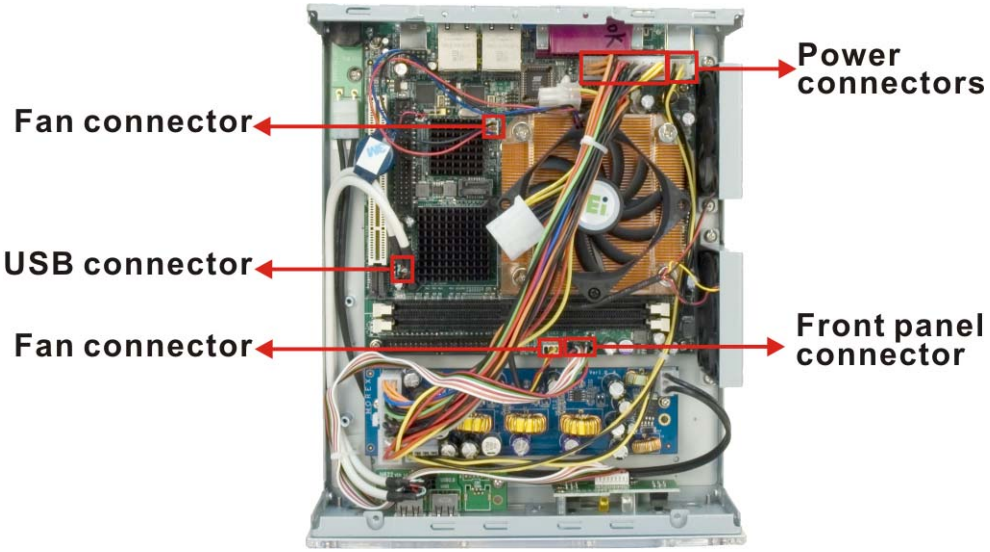

Figure 7-2: Motherboard Connectors

Step 6: Remove the four retention screws that secure the KINO motherboard to the embedded system (**Figure 7-3**).

Figure 7-3: Motherboard Retention Screws

Step 7: Remove the KINO motherboard.

Step 8: Remove the DIMM

Step 9: Remove the CPU heat sink.

7.3.2.2 Motherboard Installation

To install the new motherboard, please follow the steps below.

Step 1: Install the previously removed CPU heat sink.

Step 2: Install the previously removed DIMM

Step 3: Install the new motherboard into the system. When installing the new motherboard make sure the external peripheral device connectors are properly aligned with the I/O shielding in the system rear panel.

Step 4: Reinsert the four previously removed motherboard retention screws (**Figure 7-3**.)

Step 5: Reconnect the following cable connectors (**Figure 7-2**):

- Power connectors
- Front panel connector
- USB connector
- Fan connectors
- SATA/IDE connector (if connected)

Step 6: Replace the top cover. Once replaced reinsert the three previously removed retention screws.

Step 7: Reconnect the peripheral devices to the peripheral device connectors on the rear panel.

Step 8: Power up the system.

7.3.3 Power Module Replacement

Power module replacement includes the following two procedures:

Step 1: Removing the power module

Step 2: Installing the replacement power module

7.3.3.1 Power Module Removal

To remove the power module, please follow the steps below.

Step 1: Turn off the system.

Step 2: Disconnect the rear panel power cable from the power socket.

Step 3: Remove the top cover. See **Section 4.2.3.1**.

Step 4: Remove the following connector cables (**Figure 7-4**):

- Motherboard ATX power connector
- CPU 12V power connector
- Power socket connector

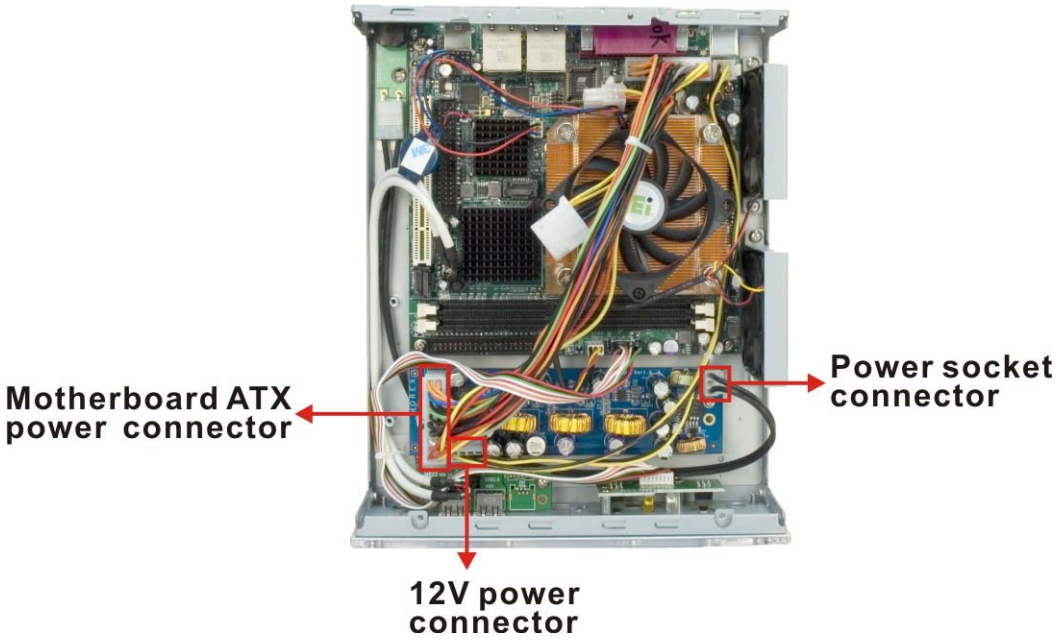

Figure 7-4: Power Module Internal Connectors

Step 5: Remove the two retention screws that secure the power module to the embedded system (**Figure 7-5**).

Figure 7-5: Power Module Retention Screws

Step 6: Remove the power module.

7.3.3.2 Power Module Installation

To install the new power module, please follow the steps below.

Step 1: Install the new power module into the system.

Step 2: Reinsert the two, previously removed power module retention screws.

Step 3: Reconnect the following cable connectors (See **Figure 7-4**):

- Motherboard ATX power connector
- CPU 12V power connector
- Power socket connector

Step 4: Replace the top cover. Once replaced reinsert the three previously removed retention screws. (See **Figure 7-5**)

Step 5: Reconnect the power cable to the +12V socket

Step 6: Power up the system.

7.3.4 Cooling Fan Replacement

To replace a cooling fan, please follow the steps below.

Step 1: Turn off the system.

Step 2: Remove the top cover. See **Section 4.2.3.1**.

Step 3: Remove the fan connector cable from the motherboard (**Figure 7-2**).

Step 4: Remove the four cooling fan retention screws from the system (**Figure 7-6**).

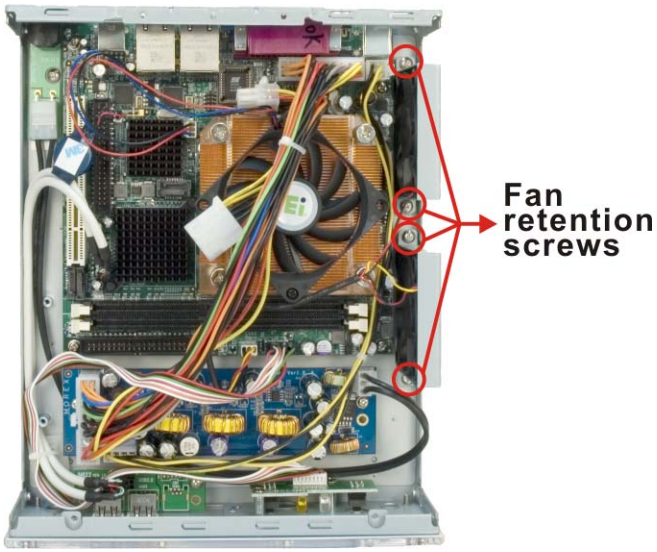

Figure 7-6: Cooling Fan Retention Screws on the System

Step 5: Remove the fan from the fan bracket by removing the four retention screws shown in **Figure 7-7**.

Figure 7-7: Cooling Fan Retention Screws on the Fan Bracket

Step 6: Place the new fan into the fan bracket. Make sure the fan is facing the correct

way. Reinsert the four previously removed cooling fan retention screws.

Step 7: Place the fan bracket with the fan installed on the system. Reinsert the four previously removed cooling fan retention screws

Step 8: Connect the cooling fan cable connector to the motherboard.

Step 9: Replace the top cover. Once replaced reinsert the three previously removed retention screws.

Step 10: Power up the system.

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Appendix

A

IEI Embedded System Series

A.1 IEI Embedded System Series

A.1.1 Overview

IEI embedded industrial PC systems are ideal for manufacturing and automation environments where heavy processing demands exist. These systems are designed to operate effectively within high-stress environments that have diverse operational conditions. This appendix introduces the full range of IEI embedded systems.

A.1.2 IEI Embedded System Series

There are currently four embedded system series. The four series are listed below

- ECW-180A
- ECW-180B
- ECW-181A
- ECW-181B
- ECK-3688G
- ECK-3689G
- ECK-3690GG
- ECK-3699G

A.1.3 IEI Embedded System Series Variations

The differences between the four series are listed below.

	Motherboard	Cooling	CompactFlash	Drive Bays
ECW-180A	WAFER	Two cooling fans	One CF slot	None
ECW-180B	WAFER	Fanless	One CF slot	None
ECW-181A	WAFER	Two cooling fans	One CF slot	Two 2.5” drive bays
ECW-181B	WAFER	Fanless	One CF slot	Two 2.5” drive bays
ECK-3688G	KINO	One cooling fan	None	One 2.5” drive bay
ECK-3690GG	KINO	Fanless	None	One 2.5” drive

				bay (optional)
ECK-3699G	KINO	Two cooling fans	None	One 2.5” drive bay (optional)

Table A-1: Embedded System Series Overview

A.2 Embedded System Solutions

The different IEI Embedded System solutions are listed below. For further information, please contact an IEI distributor, reseller, vendor or IEI sales representative. Please also visit the IEI website (www.ieiworld.com).

A.2.1 AMD® Geode® LX800 500MHz Solutions

All the models listed in the table below support an AMD® Geode® LX800 500MHz CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECW-180AS1	AMD® CS5536	12V	Two	None
ECW-180AS1WD	AMD® CS5536	9V ~ 36V	Two	None
ECW-180BS1	AMD® CS5536	12V	None	None
ECW-180BS1WD	AMD® CS5536	9V ~ 36V	None	None
ECW-181AS1	AMD® CS5536	12V	Two	Two 2.5” HDD
ECW-181AS1WD	AMD® CS5536	9V ~ 36V	Two	Two 2.5” HDD
ECW-181BS1	AMD® CS5536	12V	None	Two 2.5” HDD
ECW-181BS1WD	AMD® CS5536	9V ~ 36V	None	Two 2.5” HDD
ECK-3688GA	AMD® CS5536	12V	One	One 2.5” HDD

Table A-2: AMD® Geode® LX800 Embedded System Solutions

A.2.2 AMD® Geode® GX466 333MHz Solutions

All the models listed in the table below support an AMD® Geode® GX466 333MHz CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECW-180AS2	AMD® CS5536	12V	Two	None
ECW-180AS2WD	AMD® CS5536	9V ~ 36V	Two	None
ECW-180BS2	AMD® CS5536	12V	None	None
ECW-180BS2WD	AMD® CS5536	9V ~ 36V	None	None
ECW-181AS2	AMD® CS5536	12V	Two	Two 2.5” HDD
ECW-181AS2WD	AMD® CS5536	9V ~ 36V	Two	Two 2.5” HDD
ECW-181BS2	AMD® CS5536	12V	None	Two 2.5” HDD
ECW-181BS2WD	AMD® CS5536	9V ~ 36V	None	Two 2.5” HDD

Table A-3: AMD® Geode® LX800 Embedded System Solutions

A.2.3 VIA® LUKE® 1GHz Solutions

All the models listed in the table below support a VIA® LUKE® 1GHz CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECW-180AS3	VIA® VT8237R+	12V	Two	None
ECW-180AS3WD	VIA® VT8237R+	9V ~ 36V	Two	None
ECW-180BS3	VIA® VT8237R+	12V	None	None
ECW-180BS3WD	VIA® VT8237R+	9V ~ 36V	None	None
ECW-181AS3	VIA® VT8237R+	12V	Two	Two 2.5” HDD
ECW-181AS3WD	VIA® VT8237R+	9V ~ 36V	Two	Two 2.5” HDD
ECW-181BS3	VIA® VT8237R+	12V	None	Two 2.5” HDD
ECW-181BS3WD	VIA® VT8237R+	9V ~ 36V	None	Two 2.5” HDD
ECK-3688GB	VIA® VT8237R+	12V	One	One 2.5” HDD

Table A-4: VIA® LUKE® Embedded System Solutions

A.2.4 VIA® MARK® 800MHz Solutions

All the models listed in the table below support a VIA® MARK® 800MHz CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECW-180AS4	VIA® VT82C686B	12V	Two	None
ECW-180AS4WD	VIA® VT82C686B	9V ~ 36V	Two	None
ECW-180BS4	VIA® VT82C686B	12V	None	None
ECW-180BS4WD	VIA® VT82C686B	9V ~ 36V	None	None
ECW-181AS4	VIA® VT82C686B	12V	Two	Two 2.5” HDD
ECW-181AS4WD	VIA® VT82C686B	9V ~ 36V	Two	Two 2.5” HDD
ECW-181BS4	VIA® VT82C686B	12V	None	Two 2.5” HDD
ECW-181BS4WD	VIA® VT82C686B	9V ~ 36V	None	Two 2.5” HDD
ECK-3688GC	VIA® VT82C686B	12V	One	One 2.5” HDD

Table A-5: VIA® LUKE® Embedded System Solutions

A.2.5 Intel® Celeron® M 1.5GHz Solutions

All the models listed in the table below support an Intel® Celeron® M 1.5GHz CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECW-180AS1	SiS 661CX + SiS 964	12V	Two	None
ECW-180AS1WD	SiS 661CX + SiS 964	9V ~ 36V	Two	None
ECW-181AS5	SiS 661CX + SiS 964	12V	Two	Two 2.5” HDD
ECW-181AS5WD	SiS 661CX + SiS 964	9V ~ 36V	Two	Two 2.5” HDD
ECK-3688GDX	SiS 661CX + SiS 964	12V	One	One 2.5” HDD

Table A-6: VIA® LUKE® Embedded System Solutions

A.2.6 Intel® Socket 479 Pentium®/Celeron® M 2GHz Solutions

All the models listed in the table below support an Intel® Socket 479 Pentium®/Celeron® M 2GHz CPU with a 400/533MHz FSB (front side bus).

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECW-180AS1	SiS 661CX + SiS 964	12V	Two	None
ECW-180AS1WD	SiS 661CX + SiS 964	9V ~ 36V	Two	None
ECW-181AS6	SiS 661CX + SiS 964	12V	Two	Two 2.5” HDD
ECW-181AS6WD	SiS 661CX + SiS 964	9V ~ 36V	Two	Two 2.5” HDD
ECK-3688GDS	SiS 661CX + SiS 964	12V	One	One 2.5” HDD

Table A-7: VIA® LUKE® Embedded System Solutions

A.2.7 LGA 775 Intel® Pentium® 4/ Pentium® D Solutions

All the models listed in the table below support a LGA 775 Intel® Pentium® 4/ Pentium® D CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECK-3699GE	Intel® 945G + ICH7	19V DC	Two	One 2.5” HDD (optional)
ECK-3699GH	SiS 661CX + SiS 966	19V DC	Two	One 2.5” HDD (optional)

Table A-8: LGA 775 Intel® Pentium® 4/ Pentium® D System Solutions

A.2.8 Intel® Socket 479 Core Duo/Solo Solutions

All the models listed in the table below support an Intel® Socket 479 Core Duo/Solo CPU with a 667MHz FSB (front side bus).

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECK-3699GF	Intel® 945GM + ICH7M	19V DC	Two	One 2.5" HDD One slim CD-ROM (optional)

Table A-9: Intel® Socket 479 Core Duo/Solo System Solutions

A.2.9 Intel® Pentium-M Solutions

All the models listed in the table below support an Intel® Pentium-M CPU.

Model Number	System Chipset	DC Input	Fan	Drive Bays
ECK-3690GG	Intel® 855GME	19V DC	Two	One 2.5" HDD (optional)

Table A-10: Intel® Socket 479 Core Duo/Solo System Solutions

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Chapter

B

BIOS Menu Options

B.1 BIOS Configuration Options

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

Appendix

B

Watchdog Timer

NOTE:

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

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

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

INT 15H:

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

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

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

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

NOTE:

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

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

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

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

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Appendix

C

Address Mapping

D.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
2E8-2EF	Serial Port 4 (COM4)
2F8-2FF	Serial Port 2 (COM2)
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BB	Intel 945GM Graphics Controller
3C0-3DF	Intel 945GM Graphics Controller
3E8-3EF	Serial Port 3 (COM3)
3F6-3F6	Primary IDE Channel
3F7-3F7	Standard floppy disk controller
3F8-3FF	Serial Port 1 (COM1)

Table D-1: IO Address Map

D.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 D-2: 1st MB Memory Address Map

D.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	COM 4
IRQ3	COM2	IRQ11	COM 3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Parallel port	IRQ15	Secondary IDE

Table D-3: IRQ Mapping Table

D.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 D-4: DMA Channel Assignments

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