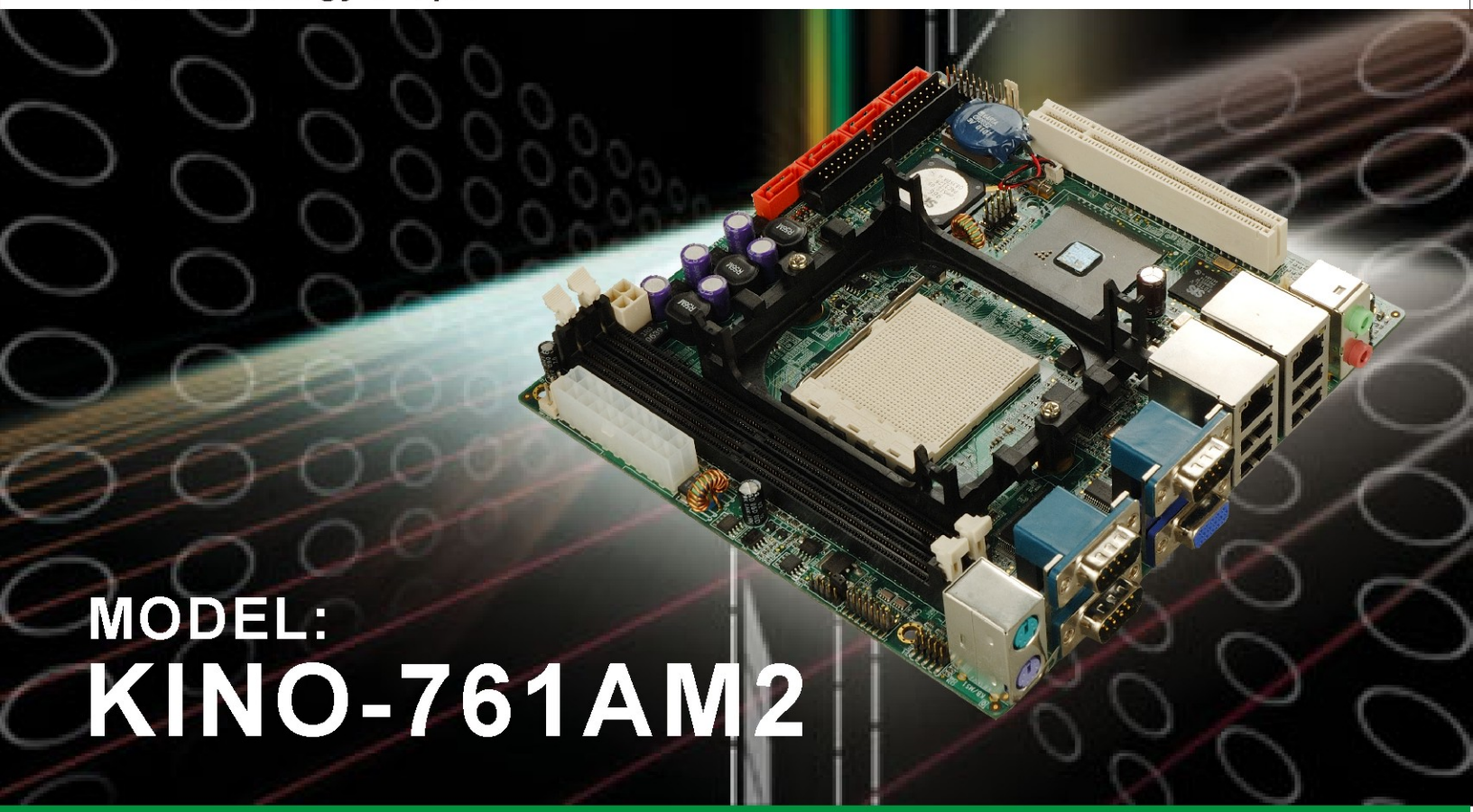
IEI Technology Corp.



MODEL:

# KINO-761AM2

**Mini-ITX AMD Socket AM2 supports AMD Athlon™ 64, AMD Athlon™ 64 X2 Dual-Core and AMD Sempron™ CPU with VGA, Dual PCIe GbE, USB 2.0, SATAII and Audio**

# User Manual

Rev. 1.00 OCTOBER 2007

RoHS Lead Free

# Revision

| Date | Version | Changes |
|---|---|---|
| 1 October, 2007 | v1.00 | Initial Release |

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# Manual Conventions

**WARNING!**

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously. Warnings are easy to recognize. The word “warning” is written as “**WARNING**,” both capitalized and bold and is followed by text. The text is the warning message. A warning message is shown below:

**WARNING:**

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the KINO-761AM2 or personal injury to the user. Please take warning messages seriously.

**CAUTION!**

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the KINO-761AM2. Cautions are easy to recognize. The word “caution” is written as “**CAUTION**,” both capitalized and bold and is followed. The italicized text is the cautionary message. A caution message is shown below:

**CAUTION:**

This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the KINO-761AM2. Please take caution messages seriously.

**NOTE:**

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes. Notes are easy to recognize. The word “note” is written as “**NOTE**,” both capitalized and bold and is followed by text. The text is the cautionary message. A note message is shown below:

**NOTE:**

This is an example of a note message. Notes should always be read. Notes contain critical information about the KINO-761AM2. Please take note messages seriously.

# Packing List

**NOTE:**

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the KINO-761AM2 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the KINO-761AM2 package.

- 1 x KINO-761AM2 Single Board Computer
- 1 x Mini Jumper Pack
- 1 x ATA66/100 Flat Cable
- 2 x SATA cable
- 1 x SATA Power cable
- 1 x I/O Shielding
- 1 x Utility CD
- 1 x QIG

Images of the above items are shown in **Chapter 3**.

# Table of Contents

# List of Figures

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# List of BIOS Menus

# Glossary

| | |
|---|---|
| AC ’97 | Audio Codec 97 |
| ACPI | Advanced Configuration and Power Interface |
| APM | Advanced Power Management |
| ARMD | ATAPI Removable Media Device |
| ASKIR | Shift Keyed Infrared |
| ATA | Advanced Technology Attachments |
| BIOS | Basic Input/Output System |
| CFII | Compact Flash Type 2 |
| CMOS | Complementary Metal Oxide Semiconductor |
| CPU | Central Processing Unit |
| Codec | Compressor/Decompressor |
| COM | Serial Port |
| DAC | Digital to Analog Converter |
| DDR | Double Data Rate |
| DIMM | Dual Inline Memory Module |
| DIO | Digital Input/Output |
| DMA | Direct Memory Access |
| EIDE | Enhanced IDE |
| EIST | Enhanced Intel SpeedStep Technology |
| FDD | Floppy Disk Drive |
| FDC | Floppy Disk Connector |
| FFIO | Flexible File Input/Output |
| FIFO | First In/First Out |
| FSB | Front Side Bus |
| IrDA | Infrared Data Association |
| HDD | Hard Disk Drive |
| IDE | Integrated Data Electronics |
| I/O | Input/Output |
| ICH7R | I/O Controller Hub 7 |
| L1 Cache | Level 1 Cache |
| L2 Cache | Level 2 Cache |
| LCD | Liquid Crystal Display |
| LPT | Parallel Port Connector |
| LVDS | Low Voltage Differential Signaling |
| MAC | Media Access Controller |
| OS | Operating System |
| PCI | Peripheral Connect Interface |
| PIO | Programmed Input Output |
| PnP | Plug and Play |
| POST | Power On Self Test |
| RAM | Random Access Memory |
| SATA | Serial ATA |
| S.M.A.R.T | Self Monitoring Analysis and Reporting Technology |
| SPD | Serial Presence Detect |
| S/PDI | Sony/Philips Digital Interface |
| SDRAM | Synchronous Dynamic Random Access Memory |
| SIR | Serial Infrared |
| UART | Universal Asynchronous Receiver-transmitter |
| USB | Universal Serial Bus |
| VGA | Video Graphics Adapter |

Chapter

1

# Introduction

## 1.1 Overview

**Figure 1-1: KINO-761AM2 Mini-ITX CPU Card**

The KINO-761AM2 Mini-ITX motherboard (**Figure 1-1**) is an AMD Socket AM2 Athlon™ 64, AMD Athlon™ 64 X2 Dual-Core or AMD Sempron™ CPU platform. This high performance platform features flexible dual display options, RAID protection, and a 144-bit memory controller that supports two 2.0GB DDR2 SDRAM DIMM with clock speeds of up to 667MHz.

One PCI slot and support for six USB 2.0 devices provide increased system expansion and flexibility. Storage flexibility with support for four serial ATA (SATA) drives and two IDE drives is also provided. Dual PCI Express (PCIe) Gigabit Ethernet (GbE) controllers provide network capabilities to the KINO-761AM2.

## 1.2 KINO-761AM2 Overview

### 1.2.1 KINO-761AM2 Overview Photo

The KINO-761AM2 has a wide variety of peripheral interface connectors. **Figure 1-2** is a labeled photo of the peripheral interface connectors on the KINO-761AM2.

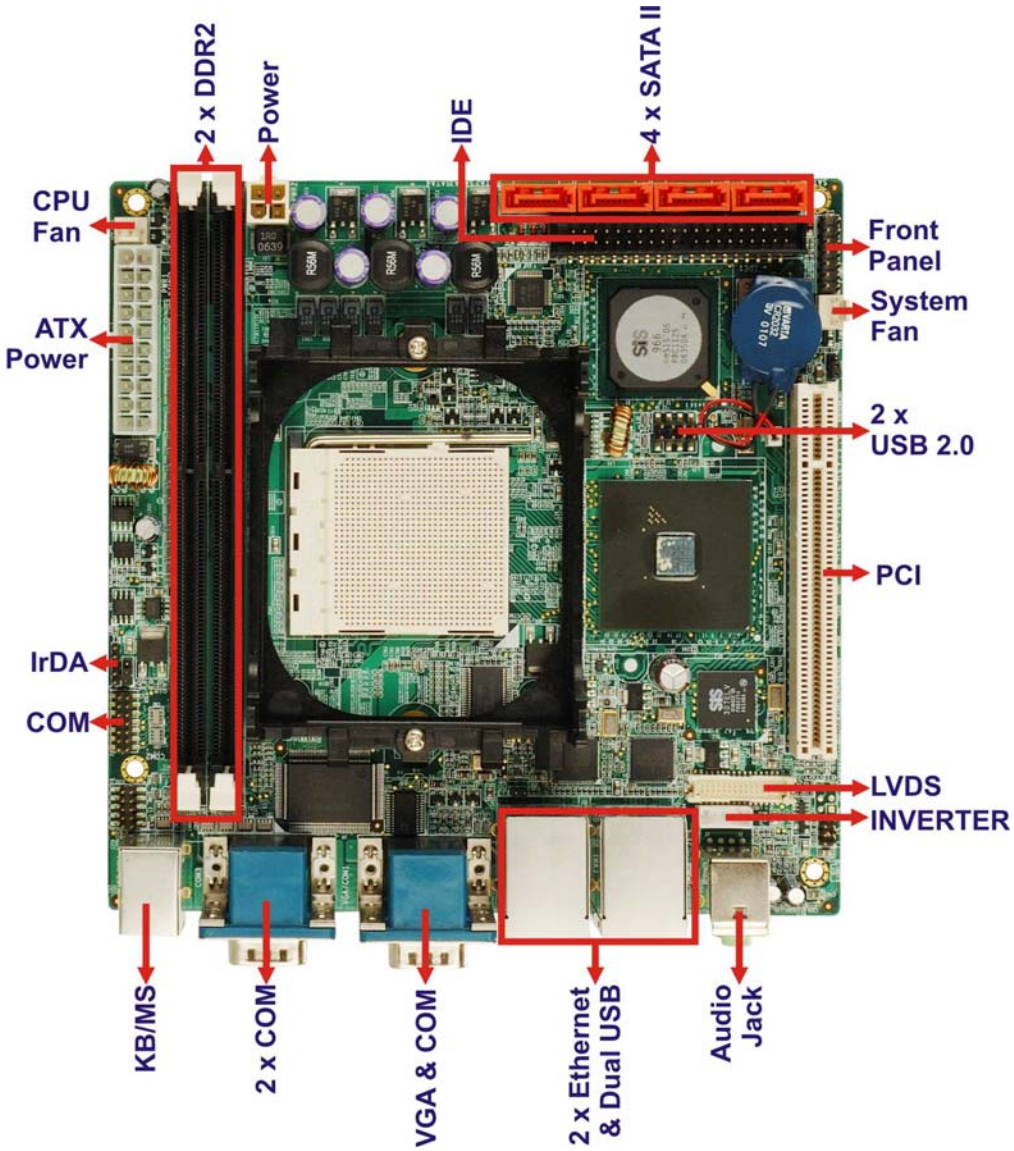


**Figure 1-2: KINO-761AM2 Overview [Front View]**

### 1.2.2 KINO-761AM2 Peripheral Connectors and Jumpers

The KINO-761AM2 has the following connectors on-board:

- 1 x 20-pin ATX power connector
- 1 x 4-pin ATX power connector
- 1 x Backlight inverter connector
- 2 x Fan connectors
- 1 x Front panel connector
- 1 x General purpose input/output (GPIO) connector
- 1 x IDE disk drive connector
- 1 x Infrared interface (IrDA) connector
- 1 x LVDS connector
- 1 x PCI slot
- 4 x Serial ATA II (SATA II) drive connectors
- 1 x RS-232/422/485 Serial port connector
- 1 x TV Out connector
- 1 x USB 2.0 connectors (supports two USB 2.0 devices)

The KINO-761AM2 has the following external peripheral interface connectors on the board rear panel.

- 2 x Audio Jacks
- 2 x Ethernet connectors
- 2 x PS/2 connectors
- 3 x Serial port connectors
- 4 x USB connectors
- 1 x VGA connector

The KINO-761AM2 has the following on-board jumpers:

- Clear CMOS
- LCD voltage setup
- RS-232/422/485 COM4 setup

### 1.2.3 Technical Specifications

KINO-761AM2 technical specifications are listed in **Table 1-1**. See **Chapter 2** for details.

| Specification | KINO-761AM2 |
|---|---|
| **Form Factor** | Mini-ITX |
| **System CPU** | Sockect AM2 AMD Athlon™ 64<br>Sockect AM2 AMD Athlon™ 64 X2 Dual-Core<br>Socket AM2 AMD Sempron™ |
| **HyperTransport™** | 2,000MHz supported |
| **System Chipset** | **Northbridge**: SIS 761CX<br>**Southbridge**: SIS966 |
| **Memory** | Two 240-pin DDR2 DIMM sockets support two dual-channel 2.0GB DIMM with clock speeds of 400MHz, 533MHz, 667MHz or 800MHz |
| **Super I/O** | Winbond W83697HG |
| **Display** | • Analog VGA integrated on the SiS 761CX and interfaced through an external DB-15 connector<br>• Composite output for NTSC/PAL TV out function<br>• Component output for up to 1080i HDTV out function<br>• 24-bit dual-channel LVDS by SiS 307LV on (KINO-761AM2-LVDS only) |
| **BIOS** | AMI BIOS label<br>SPI EEPROM<br>8.0 MB |
| **Audio** | AC'97 codec with Realtek ALC655 |

| | |
|---|---|
| **LAN** | Two Broadcom BCM BCM5787M PCIe GbE controllers |
| **COM** | Three RS-232 serial ports through external DB-9 connectors<br>One RS-232/422/485 serial port through 14-pin pin header |
| **USB2.0** | Six USB 2.0 devices supported:<br>■ Two by onboard pin-headers<br>■ Four by external connectors |
| **Hard Drives** | One 40-pin IDE connector connects to two Ultra ATA33/66/100/133 devices |
| **SATA** | Four 3.0Gbps SATA II drives supported |
| **SATA RAID Levels** | RAID 0, RAID 1, RAID 10 and JBOD |
| **Keyboard/mouse** | Two external PS/2 connectors |
| **Expansion** | One PCI expansion slot |
| **Digital I/O** | One16-bit digital input/output connector; 8-bit input/8-bit output through the Winbond W83697HG super I/O |
| **Watchdog Timer** | Software programmable 1-255 sec. through the Winbond W83697HG super I/O |
| **Infrared** | One IrDA connector through the Winbond W83697HG super I/O. Supports:<br>■ Serial Infrared (SIR)<br>■ Amplitude Shift Keyed IR (ASKIR) |
| **Power Supply** | **Onboard:** 4-pin 12V ATX power connector<br>**Backplane:** 20-pin ATX power on PICMG 1.3 backplane |
| **Fan Connector** | Two three pin fans |
| **Power Consumption** | 5V@6.38A, +12V@8.98A and 5VSB@0.23A<br>(AMD Athlon™ 64x2 5000+ 2.6GHz/1000MHz CPU with 1GB DDR2 667MHz) |

| | |
|---|---|
| **Temperature** | 0ºC – 60ºC (32ºF - 140ºF) |
| **Humidity (operating)** | 5%~95% non-condensing |
| **Dimensions (LxW)** | 170mm x 170mm |
| **Weight (GW/NW)** | 1,100g/420g |

**Table 1-1: Technical Specifications**

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Chapter

2

# Detailed Specifications

## 2.1 Dimensions

### 2.1.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**: 170mm
- **Width**: 170mm

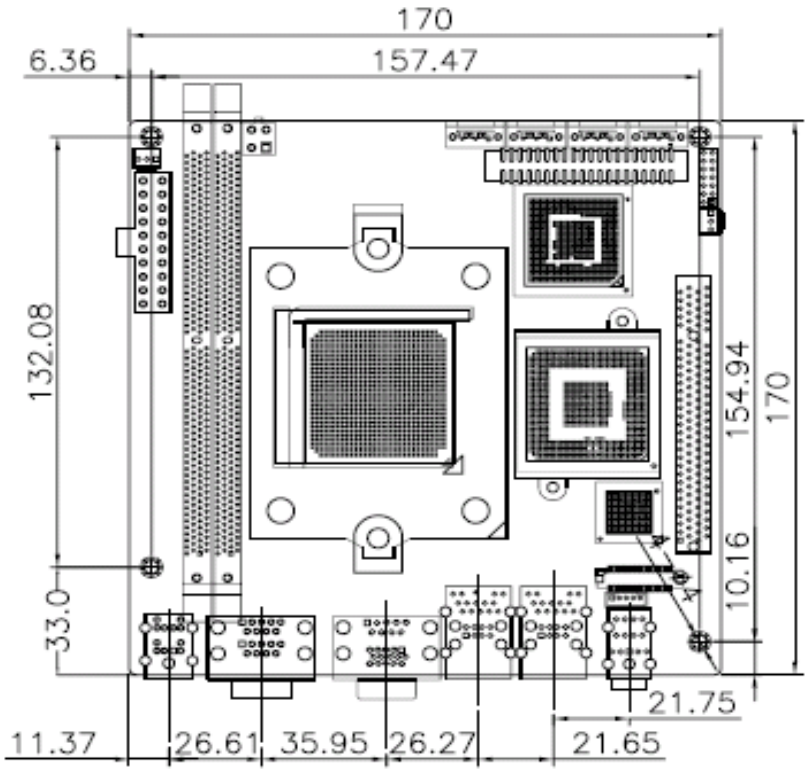


**Figure 2-1: KINO-761AM2 Dimensions (mm)**

### 2.1.2 External Interface Panel Dimensions

External peripheral interface connector panel dimensions are shown in **Figure 2-2**.

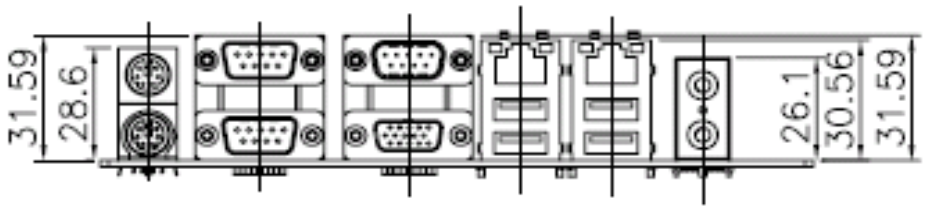


**Figure 2-2: External Interface Panel Dimensions (mm)**

## 2.2 Data Flow

**Figure 2-3** shows the data flow between the two on-board chipsets and other components installed on the motherboard and described in the following sections of this chapter.

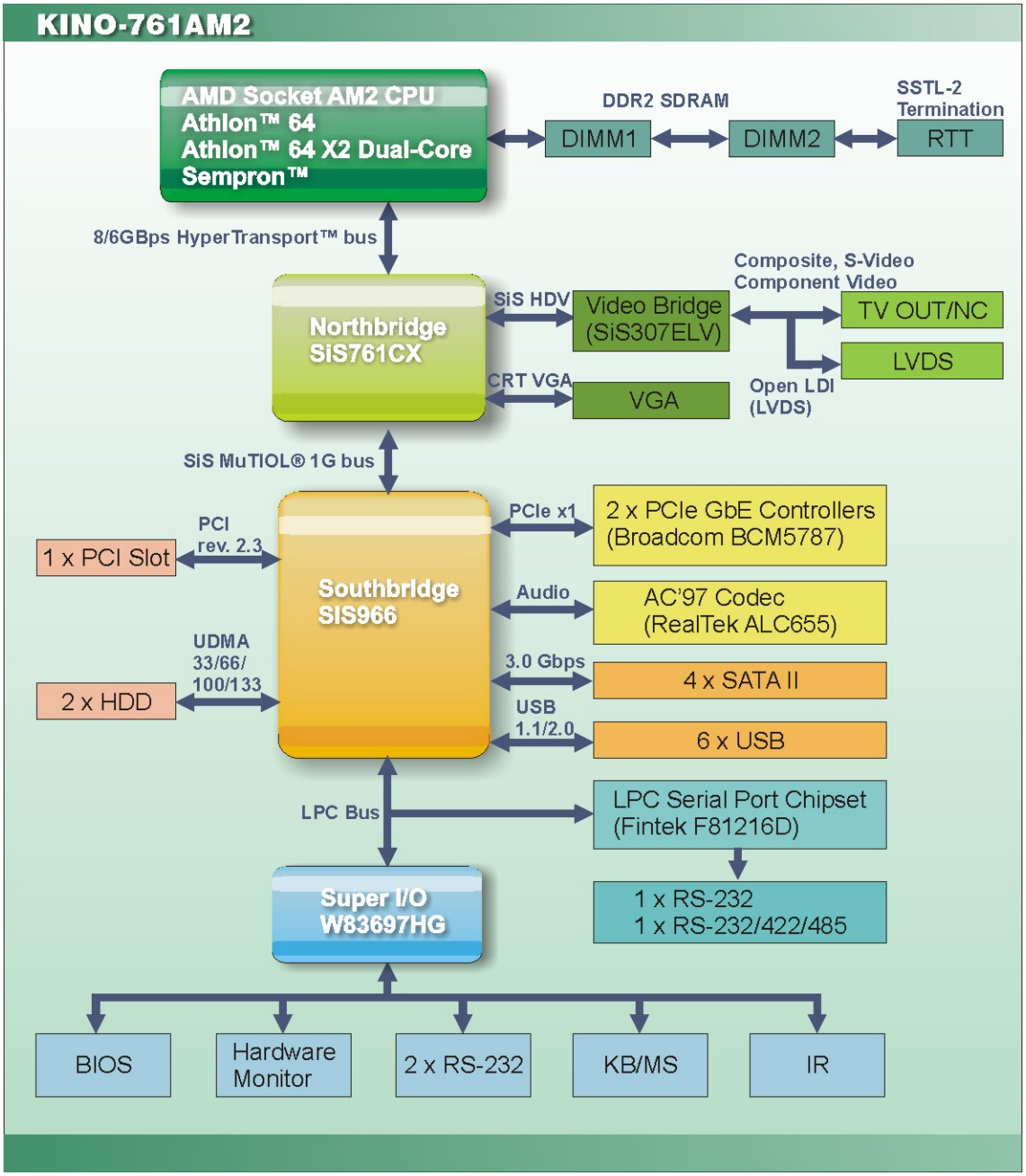


**Figure 2-3: Data Flow Block Diagram**

## 2.3 Compatible Processors

### 2.3.1 Supported Processors

The KINO-761AM2 supports the following AMD Socket AM2 processors

- AMD Athlon™ 64 X2 Dual-Core
- Athlon™ 64
- AMD Sempron™

The AM2 socket is shown is show below:

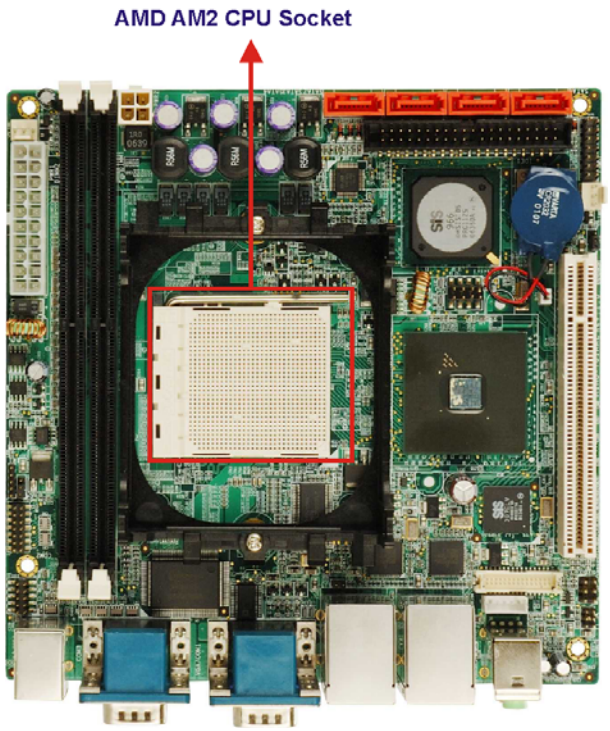


**Figure 2-4: DIMM Sockets**

Some of the features of these processors are described below.

### 2.3.2 Supported DIMM Specifications (DDR2 Controller)

All processors supported by the KINO-761AM2 CPU card have their own DDR2 memory controller. The DDR2 controllers on the processors have the following features:

- Low-latency, high-bandwidth
- DRAM latency reduction

The DDR2 controllers support DDR2 DIMM with the following specifications:

- Maximum capacity of 2GB per DIMM, 4.0 GB total
- Data Transfer Speeds:
  - 800 MHz (PC2-6400) (only AMD Athlon™ 64 X2 Dual-Core)
  - 667 MHz (PC2-5300)
  - 533 MHz (PC-4200)
  - 400 MHz (PC-3200)
- Un-buffered
- 128-bit interface
- Memory bandwidth
  - 12.8 GBps (only AMD Athlon™ 64 X2 Dual-Core)
  - 10.6 GBps

The DDR2 controller on the processor is interfaced to two 240-pin DDR2 DIMM sockets on the KINO-761AM2.

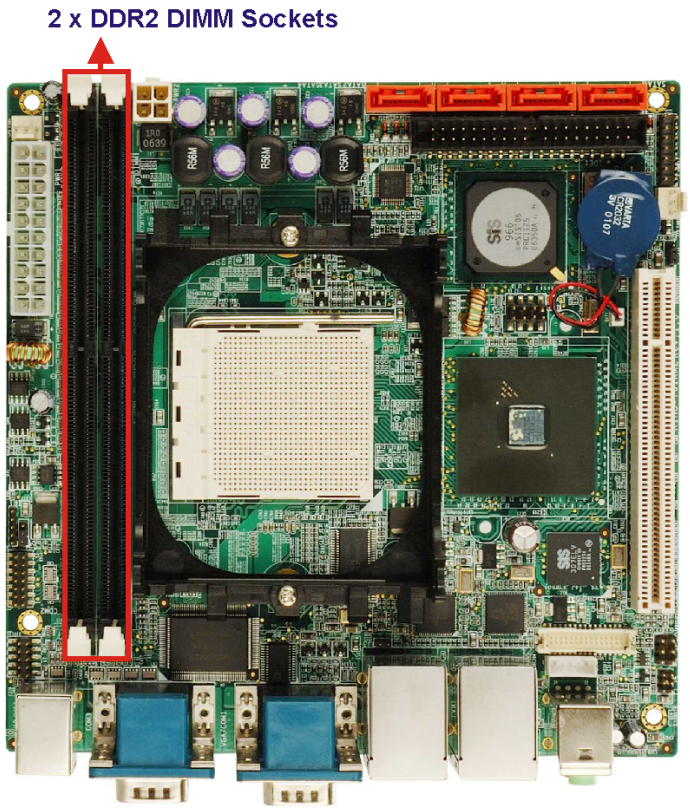


**Figure 2-5: DDR2 DIMM Sockets**

### 2.3.3 Processor Cache

The specifications for the L1 Cache and L2 Cache on the three supported processors are shown in **Table 2-1**.

| | Athlon™ 64 X2 Dual-Core | AMD Athlon™ 64 | Sempron™ |
|---|---|---|---|
| L1 instruction cache (KB) | 64KB (per core) | 64 | 64 |
| L1 data cache (KB) | 64KB (per core) | 64 | 64 |
| L2 cache (KB) | 512 or 1024 (per core) | 512 | 128 or 256 |
| Total effective cache (KB) | 640 or 1152 (per core) | 640 | 256 or 358 |
| Effective cache (KB) | 1280 or 2304 (per CPU) | N/A | N/A |

**Table 2-1: CPU Cache Specifications**

### 2.3.4 AMD64

AMD64 enables simultaneous 32-bit and 64-bit computing with no degradation in performance. AMD64 Direct Connect Architecture connects everything directly to the CPU thereby eliminating system architecture bottlenecks. Some of the features of AMD64 are listed below:

- Supports 32-bit and 64-bit computing
- Additional internal 64-bit registers enhance performance
- Addressable beyond 4GB
- Enhanced Virus protection (only on some AMD Sempron™)

### 2.3.5 HyperTransport™ Bus

The AMD processor on the KINO-761AM2 is interfaced to the SiS M761CX Northbridge with the HyperTransport™ bus, which uses HyperTransport™ technology. HyperTransport™ technology provides a high-speed, low latency, point-to-point link between the CPU and the SiS 761CX Northbridge. The HyperTransport™ bus is shown in **Figure 2-6** below.

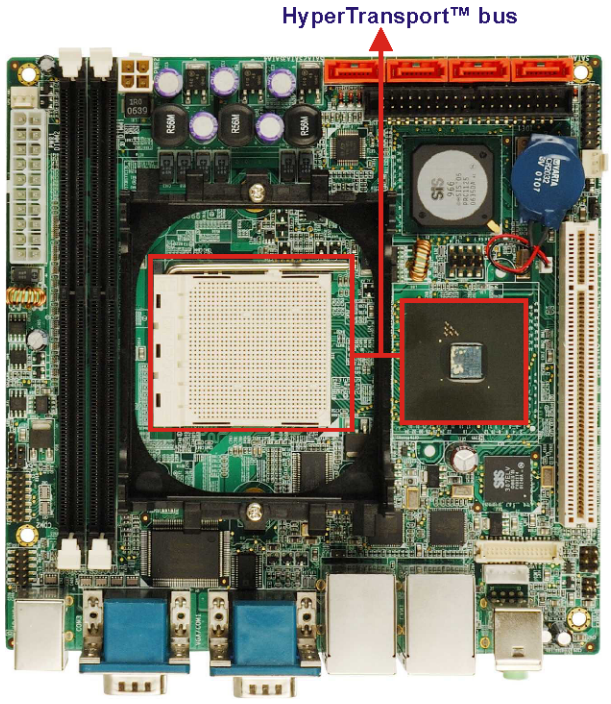


**Figure 2-6: HyperTransport™ Bus**

The transfer speeds of the HyperTransport™ bus are listed below:

- ***Athlon™ 64 X2 Dual-Core***: Up to 8.0 GBps system bandwidth
- ***AMD Athlon™ 64***: Up to 8.0 GBps system bandwidth
- ***AMD Sempron™***: Up to 6.4 GBps system bandwidth

## 2.4 SiS 761CX Northbridge Chipset

### 2.4.1 SiS 761CX Overview

The SiS 761CX Northbridge chipset supports AMD Athlon™ 64 X2 Dual-Core, AMD Athlon™ 64 FX, AMD Athlon™ 64, AMD Opetron™ and AMD Sempron™ Socket AM2 processors. The CPU is interfaced to the SiS761CX through a HyperTransport™ bus. The SiS761CX has a compliant bus driver with auto compensation capability.

The SiS761CX is interfaced to an external female DB-15, for VGA connectivity, and to an SiS307LV video bridge through a proprietary SiS High-definition Digital Visual (HDV) video interface.

### 2.4.2 Integrated Graphics Engine

The integrated Mirage™ 1 graphic engine features a 3D and a 2D Graphics engine, a video accelerator, an MPEG I/II motion compensation decoder, and a High Definition Video. The graphics engine is integrated to the external DB-15 VGA connector that is connected to standard CRT screens.

### 2.4.3 SiS307LV Video Bridge

#### 2.4.3.1 SiS307LV Video Bridge

The SiS307LV video bridge is interfaced to the SiS 761CX through the SiS HDV video interface. The SiS307LV video bridge provides connectivity to both TV signals and LVDS signals. The HDV Video Interface bus is shown in **Figure 2-7**.

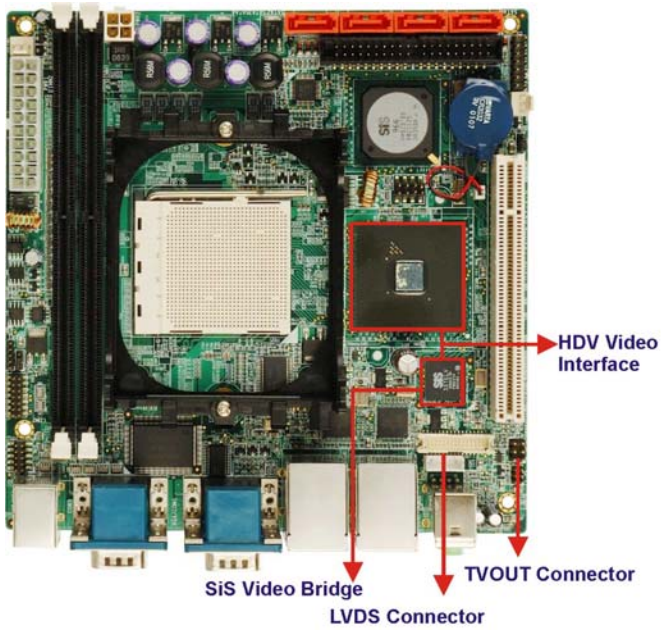


**Figure 2-7: HDV Video Interface Bus**

#### 2.4.3.2 High-definition Digital Visual (HDV) Video Interface

The HDV video interface is a SiS proprietary high-bandwidth video interface that interfaces the SIS 761CX an SiS IGU (integrated graphics unit) chip and an SiS Video Bridge chip. Some of the features of the HDV are listed below:

- Supports dual-channel structure, channel A and channel B
- Provides maximum 200MP/s pixel rate each channel
- Provides maximum total 400MP/s pixel rate at dual-channel configuration
- Provides variant pixel rates appropriate for the display resolutions for the power saving purpose.

#### 2.4.3.3 SiS307LV Video Bridge TV Display Features

Some of the TV display features supported by the SiS307LV are listed below.

- Supports PAL and NTSC encoding TV Systems.
- Supports Multiplexed Composite, S-Video, and Component YPbPr / RGB(SCART) Output Interfaces
- Macrovision Copy Protection Process Rev. 7.1.L1 support
- Supports HDTV 480i/480p/720p/1080i YPbPr Output Signals.
- Supports Macrovision Copy Protection Waveforms for 480p Progressive Scan Output
- Provides Adaptive 8-Line Anti-Flicker Filtering.
- Provides Hardware Interpolation for Programmable Under-Scan/Over-Scan Adjustment.
- Auto-Sense of TV Connection

#### 2.4.3.4 SiS307LV Video Bridge LVDS Display Features

Some of the LVDS display features supported by the SiS307LV are listed below.

- Supports LVDS Transmitter Function.
- Supports dual-link LVDS up to 2048x1536 display resolution.
- Compatible with TIA/EIA-644 LVDS standard.
- Provides sophisticated scaling function to scale VGA Low Resolution Mode to

up to 1600x1200 for LCD Display.

- Support s 2D dither for 18-bit panel display.
- Compliant with VESA DDC2B
- Compliant with VESA Plug & Display, Hot Plugging Function.
- Provides Independent Gamma Correction at dual-display mode.
- Integrates panel power sequencing as defined in SPWG.
- Integrated PWM interface for LCD backlight inverter control.
- Supports spread spectrum clocking (SSC)

### 2.4.4 SiS MuTIOL® 1G Northbridge-to-Southbridge Bus

The proprietary SiS MuTIOL® 1G bus is 1.0 GBps link between the SiS 761CX Northbridge and the SiS966 Southbridge. The SiS MuTIOL® 1G bus is a bi-directional 16-bit data bus with an operating frequency of 533MHz Operating Frequency.

## 2.5 SIS966 Southbridge Chipset

### 2.5.1 SIS966 Southbridge Overview

The SiS MuTIOL® 1G bus interfaces the SiS761CX Northbridge to an SiS966 Southbridge. The SiS966 integrates SiS MuTIOL® 1G technology and a PCI to LPC bridge with the following:

- Audio Controller with an AC 97 interface
- IDE Master controller
- IDE Slave controller
- LPC bus
- PCIe x1 ports
- PCI masters
- USB 2.0 host controllers
- USB1.1 host controller

- SATA host controllers

### 2.5.2 SiS966 Audio Codec ’97 Controller

The integrated AC'97 v2.3 compliant audio controller is interfaced to a RealTek ALC655 audio codec. The RealTek ALC655 is in turn connected to two external audio jacks.

#### 2.5.2.1 RealTek ALC655 AC’97 Audio Codec

RealTek ALC655 AC’97 audio codec is a 16-bit, full-duplex AC’97 Rev. 2.3 compatible six-channel audio codec and is interfaced to two external audio jacks. The codec and the audio connectors are shown in **Figure 2-8**.

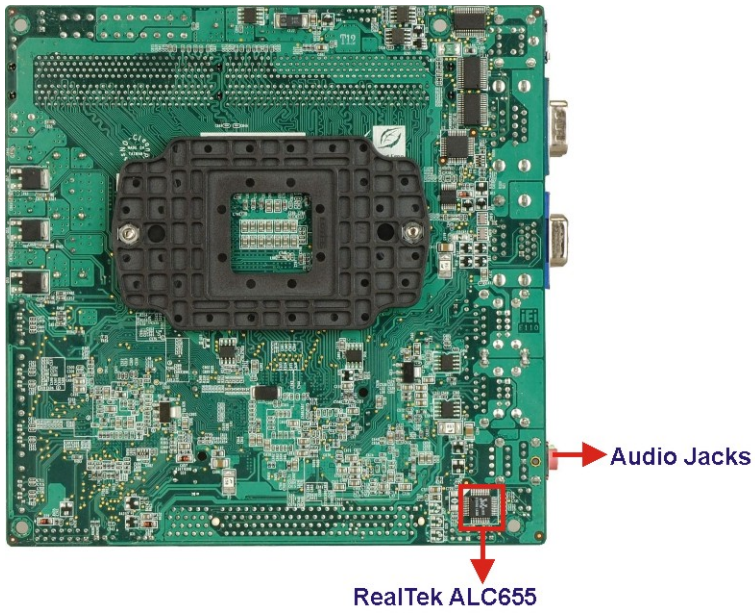


**Figure 2-8: Audio Codec and Connectors**

Some of the features of the RealTek ALC655 are listed below:

- Meets performance requirements for audio on PC99/2001 systems
- Meets Microsoft WHQL/WLP 2.0 audio requirements
- 16-bit Stereo full-duplex CODEC with 48KHz sampling rate
- Compliant with AC'97 Rev 2.3 specifications
  - Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing
  - 14.318MHz -> 24.576MHz PLL to eliminate crystal

- 12.288MHz BITCLK input
- Integrated PCBEEP generator to save buzzer
- Interrupt capability

- Three analog line-level stereo inputs with 5-bit volume control, LINE_IN, CD, AUX
- High-quality differential CD input
- Two analog line-level mono inputs: PCBEEP, PHONE-IN
- Two software selectable MIC inputs
- Dedicated Front-MIC input for front panel applications (software selectable)
- Boost preamplifier for MIC input
- LINE input shared with surround output; MIC input shared with Center and LFE output
- Built-in 50mW/20ohm amplifier for both Front-out and Surround-Out
- External Amplifier Power Down (EAPD) capability
- Power management and enhanced power saving features
- Supports Power-Off CD function
- Adjustable VREFOUT control
- Supports 48KHz S/PDIF output, complying with AC'97 Rev 2.3 specifications
- Supports 32K/44.1K/48KHz S/PDIF input
- Power support: Digital: 3.3V; Analog: 3.3V/5V
- Standard 48-pin LQFP package
- EAX™ 1.0 & 2.0 compatible
- Direct Sound 3D™ compatible
- A3D™ compatible
- I3DL2 compatible
- HRTF 3D positional audio
- 10-band software equalizer SIS966 PCIe x1 Bus

### 2.5.3 SiS966 IDE Controllers

A 40-pin IDE connector on the KINO-761AM2 is connects to two IDE devices and is directly interfaced to an IDE Master and IDE Slave controller on the SiS966 Southbridge chipset. The controllers support PIO mode 0, 1, 2, 3, 4 and hard drives with the following specifications.

- **Ultra ATA/133**, with data transfer rates up to 133MB/s
- **Ultra ATA/100**, with data transfer rates up to 100MB/s
- **Ultra ATA/66**, with data transfer rates up to 66MB/s
- **Ultra ATA/33**, with data transfer rates up to 33MB/s

The IDE connector is shown in Figure 2-9 below.

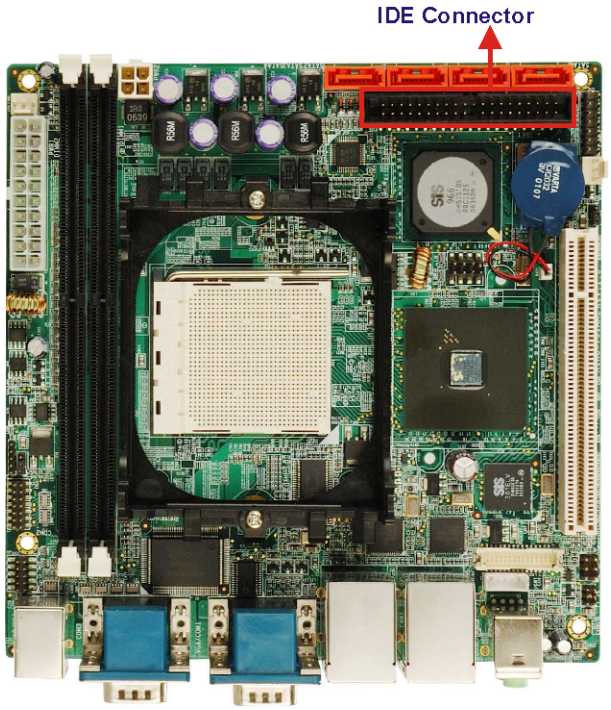


**Figure 2-9: IDE Connector**

### 2.5.4 SiS966 LPC host bus controller

The SIS966 Southbridge LPC interface complies with the LPC 1.1 and LPC 1.2 specifications. The LPC bus from the Southbridge is connected to the following components:

- BIOS chipset
- Super I/O chipset
- LPC Serial Port Chipset

### 2.5.5 SiS966 PCI Host Bus Controller

The PCI interface on the SIS966 Southbridge is compliant with the PCI Revision 2.3 implementation. Some of the features of the PCI interface are listed below.

- PCI rev. 2.3 specifications
- PCI bus at 33 MHz
- Up to 6 master devices
- 40-bit addressing
- Interrupt steering for plug-n-play devices
- Concurrent PCI operations
- Hiding of PCI devices by BIOS/hardware
- Spread spectrum

The PCI bus is interfaced to a PCI expansion slot on the KINO-761AM2 (see **Figure 2-10**).

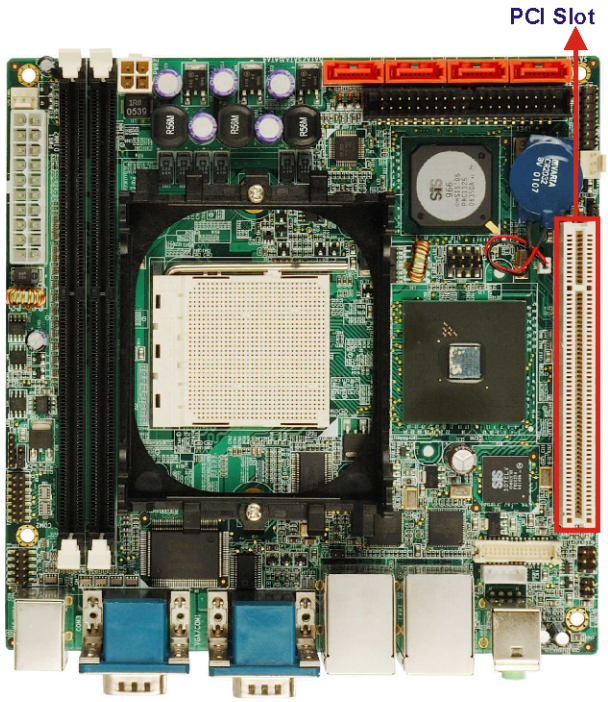


**Figure 2-10: PCI Expansion Slot**

### 2.5.6 SIS966 PCIe x1 Bus

### 2.5.6.1 SIS966 PCIe x1 Overview

The two PCIe x1 ports on the SIS966 comply with Revision 1.0a. Both PCIe x1 ports are interfaced to two Broadcom BCM5787 GbE controllers. These controllers are then interfaced to two, external RJ-45 connectors through which the KINO-761AM2 can be connected to an external LAN. The LAN interfaces are shown in **Figure 2-11**.

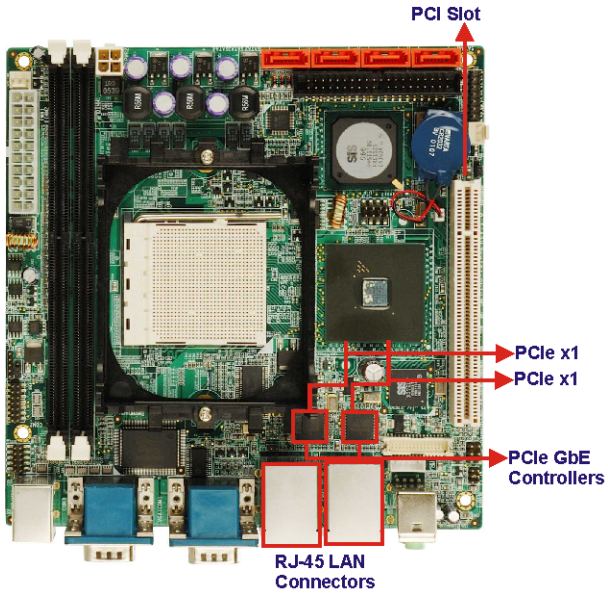


**Figure 2-11: LAN Connectors**

### 2.5.6.2 Broadcom BCM5787M PCI Express GbE interface

The Broadcom BCM5787M PCI Express (PCIe) GbE controller is a 10/100/1000BASE-T Ethernet LAN controller. The BCM5787M combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, a PCIe bus interface, and an on-chip buffer memory. Some of the BCM5787 controller features are listed below:

- Integrated 10/100/1000BASE-T transceiver
- Automatic MDI crossover function
- PCIe v1.0a
- 10/100/1000BASE-T full/half-duplex MAC
- Wake on LAN support meeting the ACPI requirements

- Statistics for SNMP MIB II, Ethernet-like MIB, and Ethernet MIB (802.3z, clause 30)
- Serial EEPROM or serial flash support
- JTAG support

### 2.5.7 SIS966 SATA Controllers

Four SATA ports on the KINO-761AM2 are interfaced an integrated SATA Host controller on the SiS966. The SATA Host controller complies with SATA 1.0 specifications and has data transmission rates of up to 1.5Gbps. The SATA Host Controller also complies with AHCI 1.0 specification with software providing transparent switching between the legacy interface and the AHCI interface. The two AHCI compatible ports features include Native Hot Plug, Aggressive Command Queuing, Interlock Switch, Native Power Management, Staggered Spin-up, PME, and Port Multiplier. The SATA connectors are shown in **Figure 2-12**.

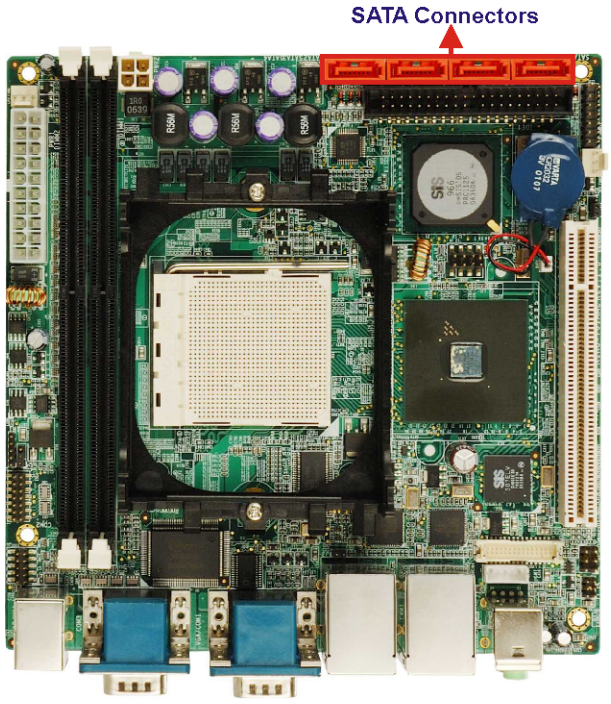

**Figure 2-12: SATA Connectors**

### 2.5.8 SIS966 USB Controllers

The SiS966 integrates one Enhanced Host Controller Interface (EHCI) USB controller for USB 2.0 devices. The EHCI controller supports data transfer speeds of up to 480 Mbps. The SiS966 also integrates two Universal Host Controller Interface (UHCI) USB controller for USB 1.1 devices.

The USB controllers are connected to four external USB connectors and two on-board pin header connectors. Each on-board pin header connects to two USB devices.

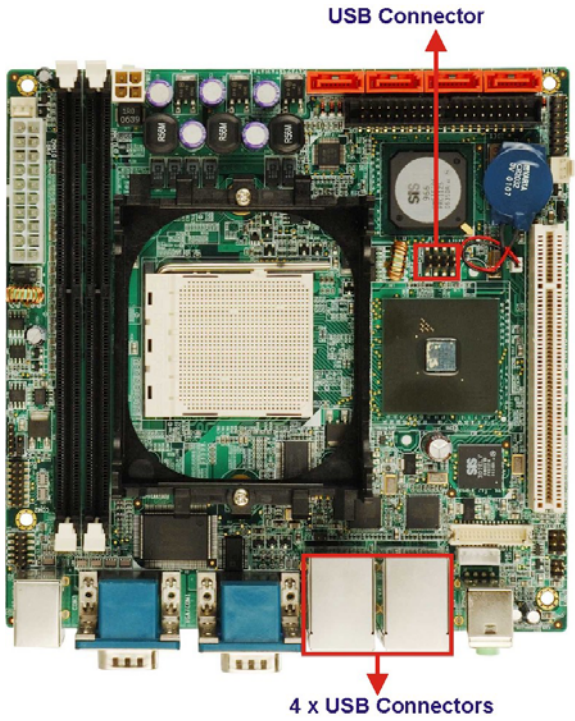


**Figure 2-13: USB Connectors**

## 2.6 LPC Bus Components

### 2.6.1 LPC Bus Overview

The SiS966 LPC bus is connected to components listed below:

- BIOS chipset
- Super I/O chipset
- LPC Serial Port Chipset

### 2.6.2 BIOS Chipset

The BIOS chipset has a licensed copy of AMI BIOS installed on the chipset. Some of the BIOS features are listed below:

- AMI Flash BIOS
- SMIBIOS (DMI) compliant
- Console redirection function support
- PXE (Pre-boot Execution Environment) support
- USB booting support

The BIOS chipset is shown in **Figure 2-14** below.

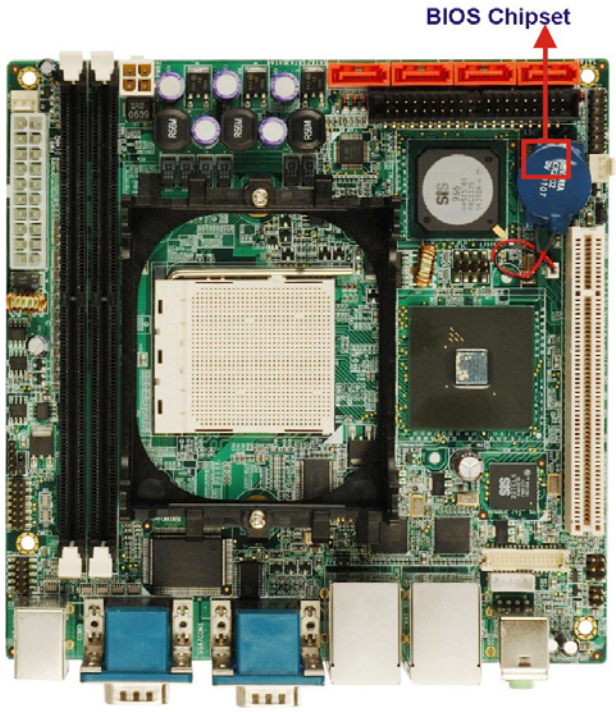


**Figure 2-14: BIOS Chipset**

### 2.6.3 Winbond W83697HG Super I/O chipset

The Winbond W83697HG Super I/O chipset is connected to the ICH4 southbridge through the LPC bus.

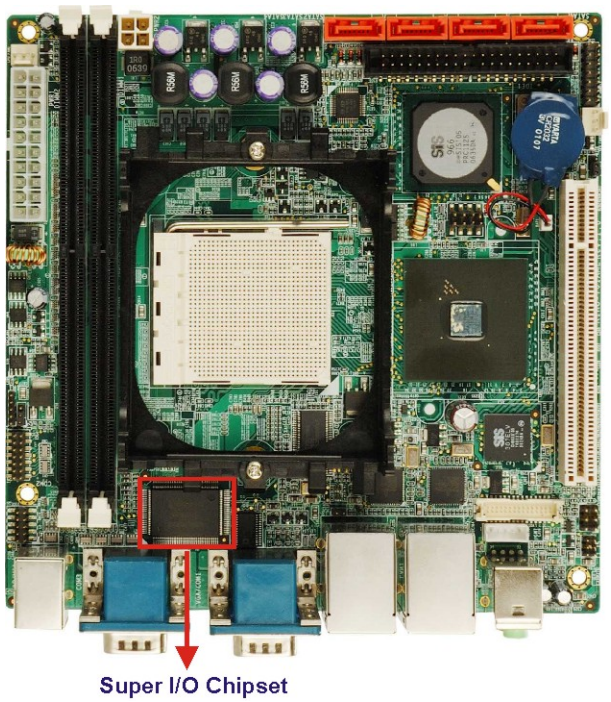


**Figure 2-15: Super I/O Chipset**

The Winbond W83697HG is an LPC interface-based Super I/O device that comes with Environment Controller integration, floppy disk controller, UART controller and IR controller. Some of the features of the Winbond W83697HG chipset are listed below:

- LPC Spec. 1.01 compliant
- LDRQ# (LPC DMA) and SERIRQ (serial IRQ) supported
- Hardware monitor functions integrated
- Microsoft PC98/PC99 Hardware Design Guide compliant
- ACPI DPM (Device Power Management) supported

Some of the Super I/O features are described in more detail below:

### 2.6.3.1 Super I/O LPC Interface

The LPC interface on the Super I/O complies with the Intel® Low Pin Count Specification Rev. 1.01. The LPC interface supports both LDRQ# and SERIRQ protocols as well as PCI PME# interfaces.

### 2.6.3.2 Super I/O Infrared

The onboard Super I/O supports the following infrared specifications:

- IrDA version 1.0 SIR protocol with a maximum baud rate up to 115.2Kbps
- Supports SHARP ASK-IR protocol with maximum baud rate of 57,600bps

The IR controller on the super I/O is interfaced through the board-to-board connectors on the KINO-761AM2 to an IrDA pin-header on a backplane.

### 2.6.3.3 Super I/O Hardware Monitor Functions

The Super I/O Hardware Monitor monitors internal voltages, system temperature and the cooling fan speed. All the monitored environmental parameters can be read from the BIOS Hardware Health Configuration menu.

### 2.6.3.4 Super I/O Keyboard and Mouse Controller

The Super I/O keyboard and mouse controller is compatible with the following specifications.

- 8042 compatible
- Asynchronous access to two data registers and one status register
- Compatible with 8042 software
- PS/2 mouse supported
- Port 92 supported
- Interrupt and polling modes supported
- Fast Gate A20 and Hardware Keyboard Reset
- 8-bit timer/counter

The keyboard and mouse controller controller is interfaced to a keyboard and mouse connected to the backplane through the board-to-board connectors.

#### 2.6.3.5 Super I/O GPIO Ports

The Super I/O has programmable GPIO ports interfaced to a DIO connector on the KINO-761AM2.

#### 2.6.3.6 Super I/O Fan Speed and Fan Control

The super I/O can both monitor and control the fan speed. The super I/O is interfaced to the fan on the backplane through the board-to-board connectors.

#### 2.6.3.7 Super I/O UART

Two 16550 UART controllers on the super I/O are interfaced to two external RS-232 serial port connectors. Some of the features of the UART are listed below:

- 16-byte send/receive FIFO
- MIDI compatible
- Fully programmable serial interface characteristics
  - 5, 6, 7 or 8 bit characters
  - Even, odd or no parity bit generation detection
  - 1, 1.5 or 2 bits stop generation
- Internal diagnostic capabilities
- Maximum baud rate up to 921 kbps for 14.769 MHz and 1.5 Mbps for 24 MHz

### 2.6.4 Fintek F81216D LPC Serial Port Chipset

The KINO-761AM2 has a Fintek F81216D chipset onboard enables the addition of two additional UART serial ports (COM3 and COM4). UART includes 16-byte send/receive FIFO. The Fintek serial port chipset is interfaced to the southbridge chipset through the LPC bus. Some of the features of the Fintek chipset are listed below:

- Supports LPC interface
- Totally provides 4 UART (16550 asynchronous) ports
  - 1 x Pure UART

- 1 x UART+IR

- One Watch dog timer with WDTOUT# signal
- One Frequency input 24/48MHz
- Powered by 3Vcc

The Fintek is interfaced to one RS-232/422/485 onboard pin-header and one RS-232 external serial port connector.

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Chapter

3

# Unpacking

## 3.1 Anti-static Precautions

**WARNING!**

Failure to take ESD precautions during the installation of the KINO-761AM2 may result in permanent damage to the KINO-761AM2 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the KINO-761AM2. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the KINO-761AM2, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the KINO-761AM2, place it on an antic-static pad. This reduces the possibility of ESD damaging the KINO-761AM2.
- ***Only handle the edges of the PCB***:- When handling the PCB, hold the PCB by the edges.

## 3.2 Unpacking

### 3.2.1 Unpacking Precautions

When the KINO-761AM2 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 3.1**.
- Make sure the packing box is facing upwards so the KINO-761AM2 does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

## 3.3 Unpacking Checklist

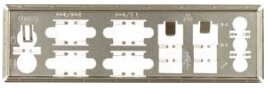
**NOTE:**

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the KINO-761AM2 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

### 3.3.1 Package Contents

The KINO-761AM2 is shipped with the following components:

| Quantity | Item and Part Number | Image |
|---|---|---|
| 1 | KINO-761AM2 |  |
| 1 | ATA 66/100 Flat Cable<br>(**P/N**: 32200-008800-RS) |  |
| 2 | SATA cable<br>(**P/N**: 32000-062800-RS) |  |
| 1 | SATA power cable<br>(**P/N**: 32100-088600-RS) |  |

| | | |
|---|---|---|
| 1 | I/O Shielding<br><br>(**P/N**: 41003-0186C0-00-RS) |  |
| 1 | Utility CD |  |

### 3.3.2 Optional Items

The KINO-761AM2 is shipped with the following components:

| **Item and Part Number** | **Image** |
|---|---|
| HDTV output cable<br><br>(**P/N**: 32000-083701-RS) |  |
| CPU cooler<br><br>(**P/N**: CF-AM2-RS) |  |
| CPU cooler<br><br>(**P/N**: CF-519-RS) |  |
| Dual RS-232 cable<br><br>(**P/N**:32200-026500-RS) |  |

Chapter

4

# Connectors

## 4.1 Peripheral Interface Connectors

**Section 4.2** shows peripheral interface connector locations. **Section 4.2** lists all the peripheral interface connectors seen in **Section 4.2**.

### 4.1.1 KINO-761AM2 Layout

**Figure 4-1** shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.

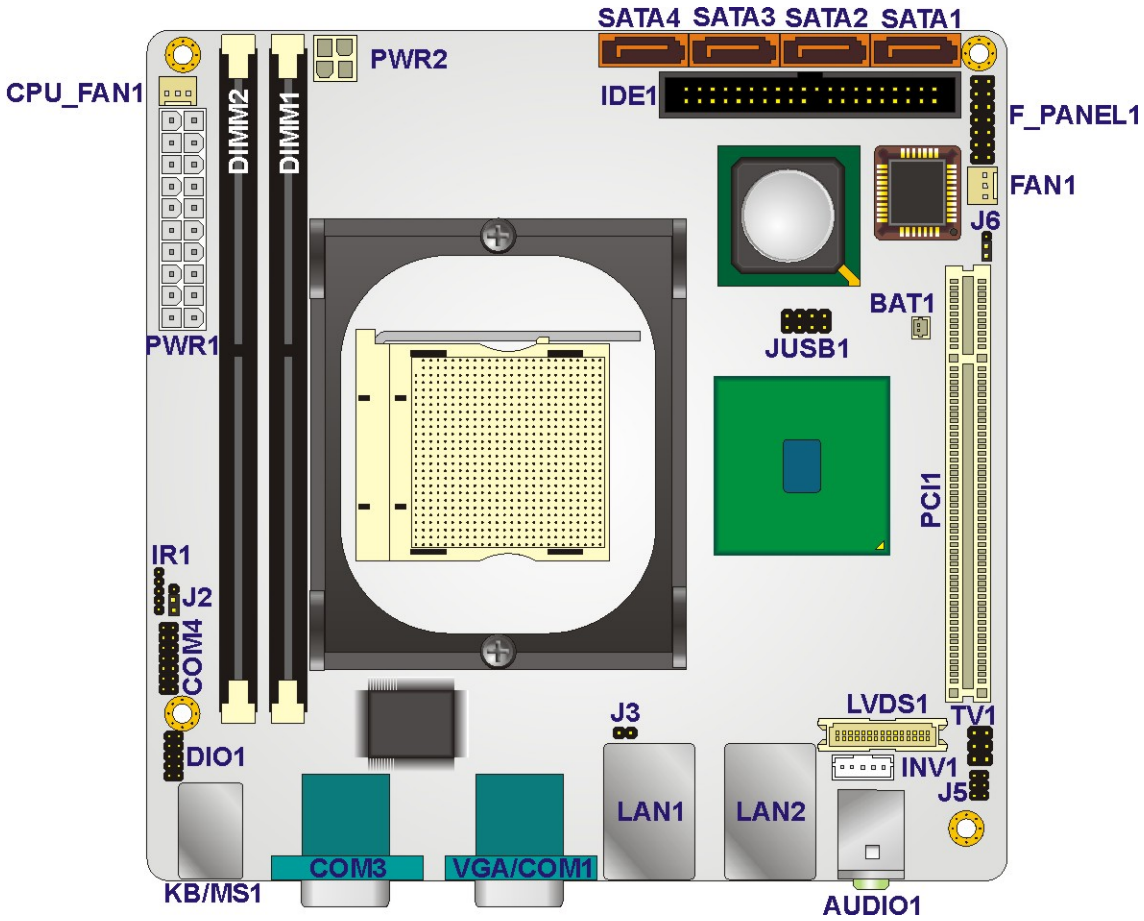



**Figure 4-1: Connector and Jumper Locations**

## 4.2 Peripheral Interface Connectors

**Table 4-1** shows a list of the peripheral interface connectors on the KINO-761AM2. Detailed descriptions of these connectors can be found below.

| Connector | Type | Label |
|---|---|---|
| ATX power connector (20-pin) | 20-pin ATX connector | PWR1 |
| ATX power connector (4-pin) | 4-pin ATX connector | PWR2 |
| Backlight inverter connector | 5-pin wafer | INV1 |
| GPIO connector | 10-pin header | DIO1 |
| IDE Interface connector | 40-pin header | IDE1 |
| Infrared connector | 5-pin header | IR1 |
| Fan connector, CPU | 3-pin wafer | CPU_FAN1 |
| Fan connector, system | 3-pin wafer | SYS_FAN1 |
| Front panel connector | 14-pin header | F_PANEL1 |
| LVDS connector | 30-pin crimp | LVDS1 |
| PCI slot | 128-pin slot | PCI1 |
| Serial ATA (SATA) connector | 7-pin SATA connector | SATA1 |
| Serial ATA (SATA) connector | 7-pin SATA connector | SATA2 |
| Serial ATA (SATA) connector | 7-pin SATA connector | SATA3 |
| Serial ATA (SATA) connector | 7-pin SATA connector | SATA4 |
| Serial port connector (RS-232/422/485) | 14-pin header | COM4 |
| TV out connector | 6-pin header | TV1 |
| USB connector | 8-pin header | JUSB1 |

**Table 4-1: Peripheral Interface Connectors**

### 4.2.1 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the WAFER-LX. Detailed descriptions of these connectors can be found in **Section 4.4** on **page 59**.

| Connector | Type | Label |
|---|---|---|
| Audio connector | Dual audio jacks | AUDIO1 |
| Ethernet connector | RJ-45 | LAN1 |
| Ethernet connector | RJ-45 | LAN2 |
| Keyboard/mouse | Dual PS/2 | KB/MS1 |
| RS-232 serial port connector | Male DB-9 | COM1 |
| RS-232 serial port connector | Male DB-9 | COM2 |
| RS-232 serial port connector | Male DB-9 | COM3 |
| USB port | USB port | USB1 |
| USB port | USB port | USB2 |
| USB port | USB port | USB3 |
| USB port | USB port | USB4 |
| VGA port connector | 15-pin female | VGA |

**Table 4-2: Rear Panel Connectors**

## 4.3 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the KINO-761AM2.

### 4.3.1 ATX Power Connector (20-pin)

**CN Label:** PWR1

**CN Type:** 20-pin ATX (2x10)

**CN Location:** See **Figure 4-2**

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

The ATX connector is connected to an external ATX power supply. Power is provided to the system, from the power supply through this connector.

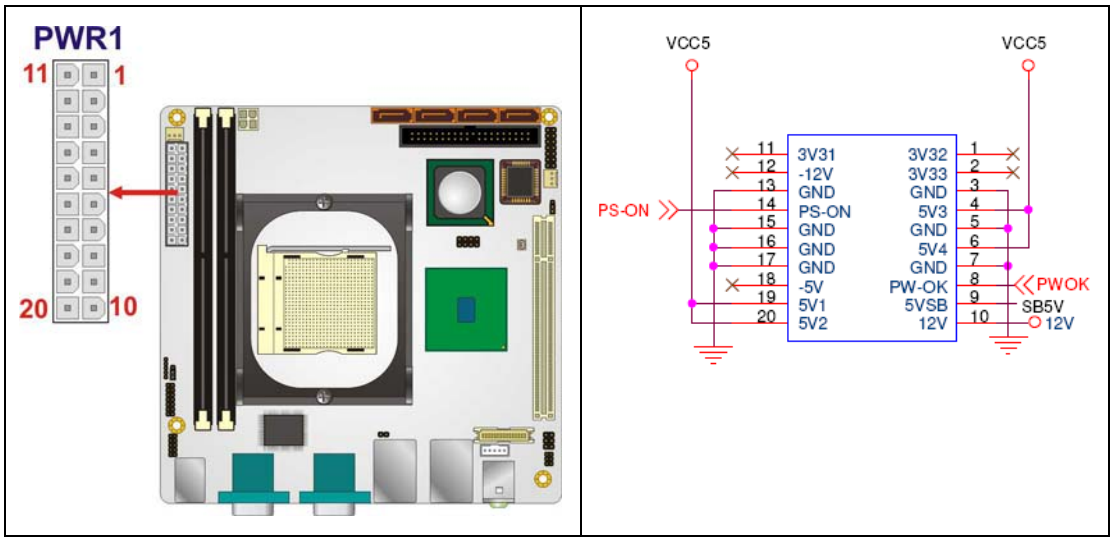



**Figure 4-2: ATX Power Connector (20-pin) Pinout Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | VCC3 / NC | 11 | VCC3 / NC |
| 2 | VCC3 / NC | 12 | N / C |
| 3 | GND | 13 | GND |
| 4 | VCC5 | 14 | PSON- |
| 5 | GND | 15 | GND |
| 6 | VCC5 | 16 | GND |
| 7 | GND | 17 | GND |
| 8 | PWOK | 18 | N / C |
| 9 | SB5V | 19 | VCC5 |
| 10 | +12V | 20 | VCC5 |

**Table 4-3: ATX Power Connector (20-pin) Pinouts**

### 4.3.2 ATX Power Connector (4-pin)

**CN Label:** **PWR2**

**CN Type:** 4-pin ATX power connector (2x2)

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

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

The 4-pin ATX power connector is connected to an ATX power supply.

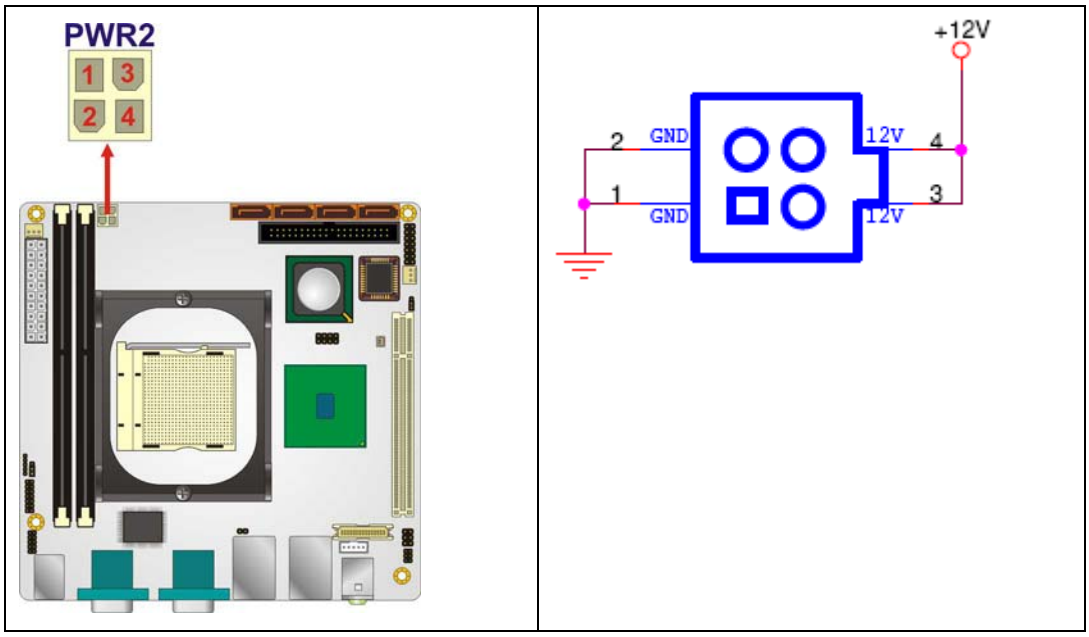



**Figure 4-3: ATX Power Connector (4-pin) Location**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | +5V |
| 2 | GND |
| 3 | GND |
| 4 | +12V |

**Table 4-4: ATX (4-pin) Power Connector Pinouts**

### 4.3.3 Backlight Inverter Connector

| | |
|---|---|
| **CN Label:** | **INV1** |
| **CN Type:** | 5-pin wafer (1x5) |
| **CN Location:** | See **Figure 4-4** |
| **CN Pinouts:** | See **Table 4-5** |

The backlight inverter connector provides the backlight on the LCD display connected to the KINO-761AM2 with +12V of power.

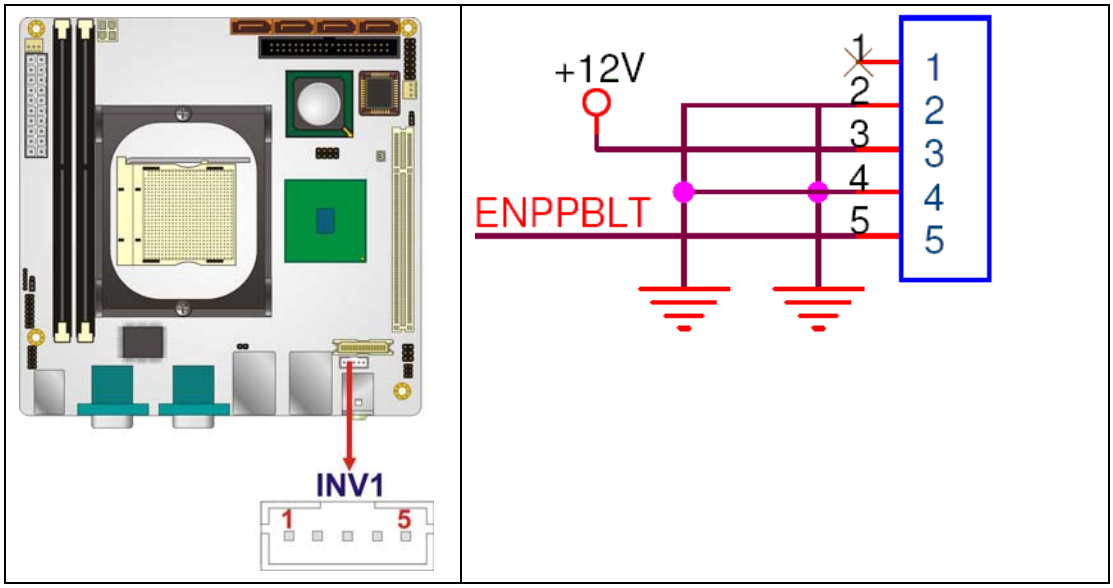



**Figure 4-4: Panel Backlight Connector Pinout Locations**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | N/C |
| 2 | GROUND |
| 3 | +12V |
| 4 | GROUND |
| 5 | BACKLIGHT ENABLE |

**Table 4-5: Panel Backlight Connector Pinouts**

### 4.3.4 Fan Connectors (+12V, 3-pin)

**CN Label:** **CPU_FAN1**, **FAN1**

**CN Type:** 3-pin header

**CN Location:** See **Figure 4-5**

**CN Pinouts:** See **Table 4-6**

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

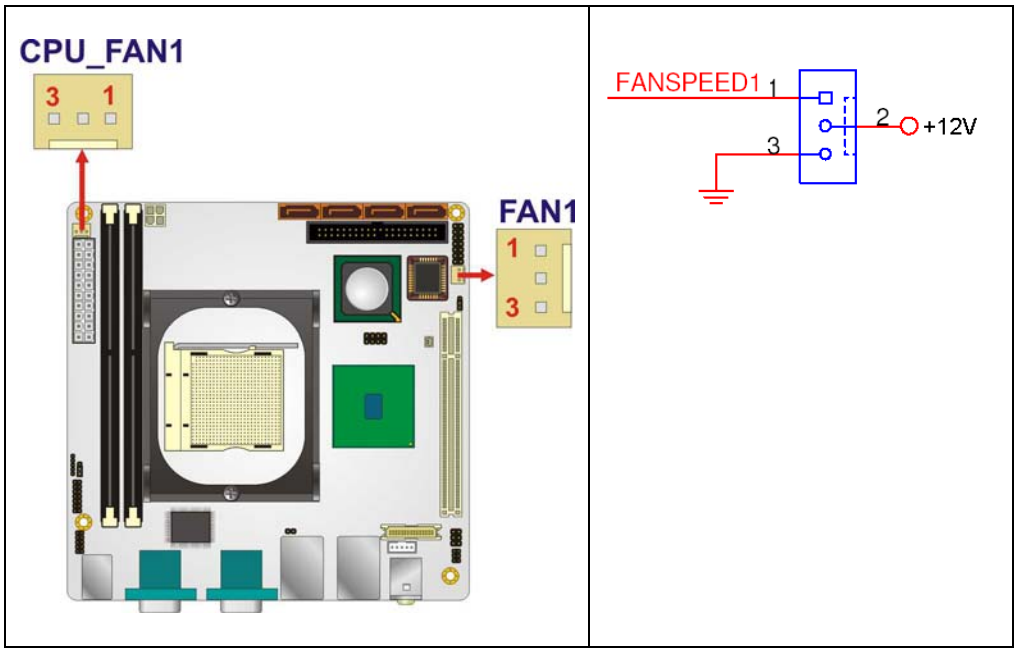



**Figure 4-5: +12V Fan Connector Location**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | Fan Speed Detect |
| 2 | +12V |
| 3 | GND |

**Table 4-6: +12V Fan Connector Pinouts**

### 4.3.5 Front Panel Connector (14-pin)

**CN Label:** F_PANEL1

**CN Type:** 14-pin header (2x6)

**CN Location:** See **Figure 4-6**

**CN Pinouts:** See **Table 4-7**

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

- Power button

- Reset button
- Power LED
- HDD LED

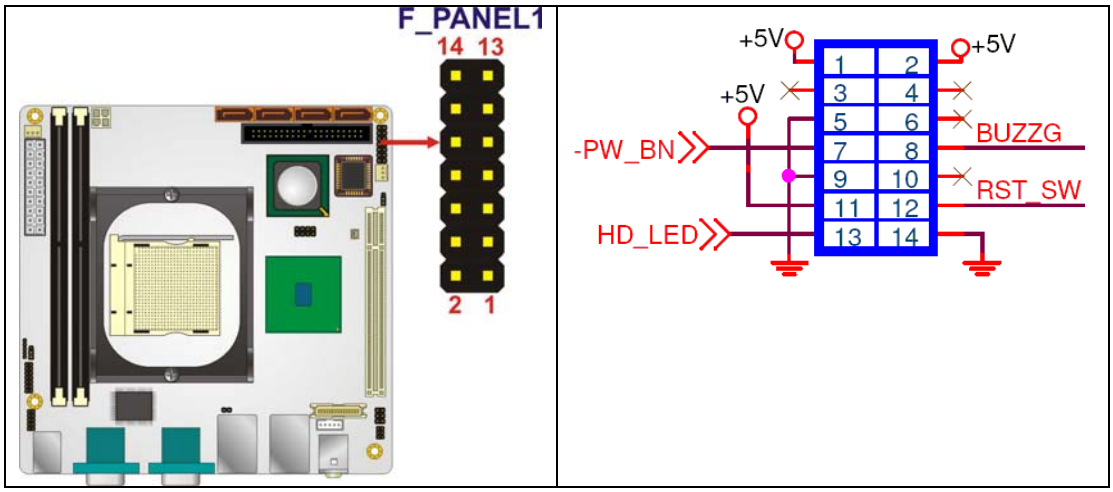



**Figure 4-6: Front Panel Connector Pinout Locations**

| FUNCTION | PIN | DESCRIPTION | FUNCTION | PIN | DESCRIPTION |
|---|---|---|---|---|---|
| Power LED | 1 | +5V | Speaker | 2 | +5V |
| | 3 | N/C | | 4 | N/C |
| | 5 | Ground | | 6 | N/C |
| Power Button | 7 | PWRBTN- | | 8 | Speaker |
| | 9 | GND | Reset | 10 | N/C |
| HDD LED | 11 | +5V | | 12 | Reset- |
| | 13 | HDD LED- | | 14 | GND |

**Table 4-7: Front Panel Connector Pinouts**

### 4.3.6 Digital Input/Output (DIO) Connector

**CN Label:** **GPIO1**

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

**CN Location:** See **Figure 4-7**

**CN Pinouts:** See **Table 4-8**

The digital input/output connector is managed through a Super I/O chip. The DIO connector pins are user programmable.

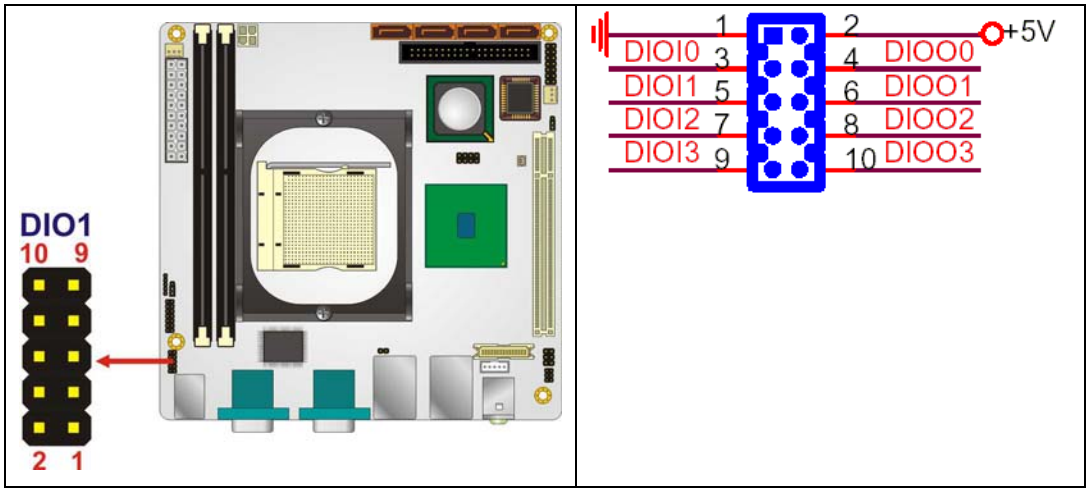



**Figure 4-7: DIO Connector Connector Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | GND | 2 | 5V |
| 3 | DGPI0 | 4 | DGPI1 |
| 5 | DGPI2 | 6 | DGPI3 |
| 7 | DOUT0 | 8 | DOUT1 |
| 9 | DOUT2 | 10 | DOUT3 |

**Table 4-8: DIO Connector Connector Pinouts**

### 4.3.7 IDE Connector (40-pin)

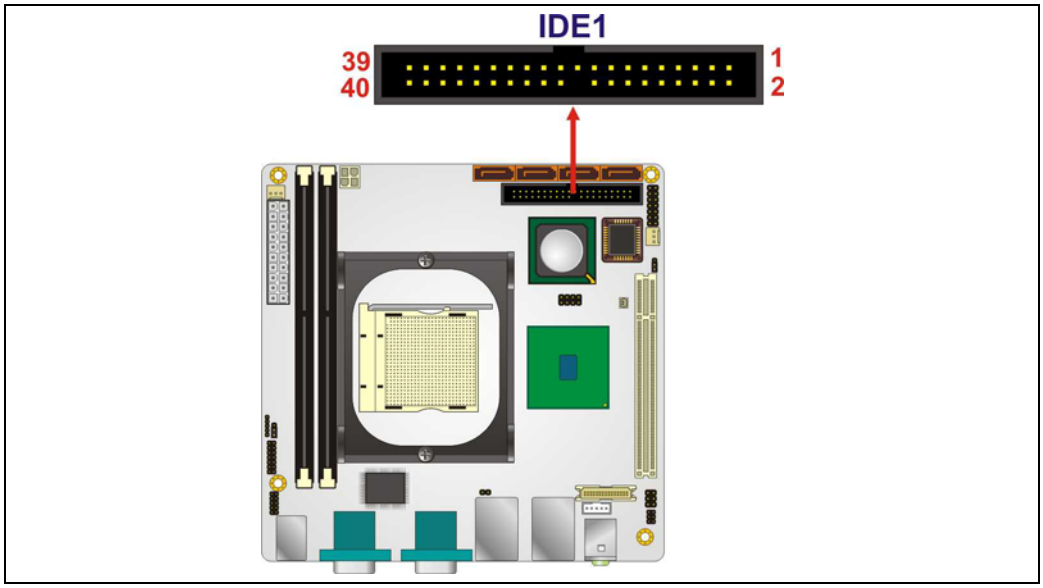
**CN Label:** CN5

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

**CN Location:** See **Figure 4-8**

**CN Pinouts:** See **Table 4-9**

One 40-pin IDE device connector on the KINO-761AM2 supports connectivity to two hard disk drives.



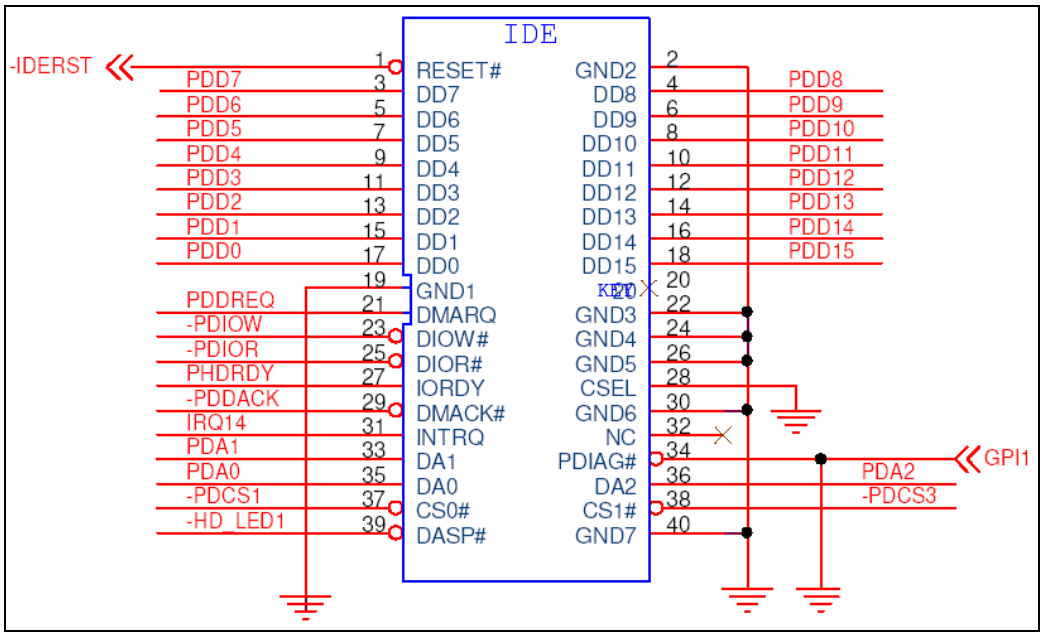



**Figure 4-8: IDE Device Connector Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | RESET# | 2 | GROUND |
| 3 | DATA 7 | 4 | DATA 8 |
| 5 | DATA 6 | 6 | DATA 9 |
| 7 | DATA 5 | 8 | DATA 10 |
| 9 | DATA 4 | 10 | DATA 11 |
| 11 | DATA 3 | 12 | DATA 12 |
| 13 | DATA 2 | 14 | DATA 13 |
| 15 | DATA 1 | 16 | DATA 14 |
| 17 | DATA 0 | 18 | DATA 15 |
| 19 | GROUND | 20 | N/C |
| 21 | IDE DRQ | 22 | GROUND |
| 23 | IOW# | 24 | GROUND |
| 25 | IOR# | 26 | GROUND |
| 27 | IDE CHRDY | 28 | GROUND |
| 29 | IDE DACK | 30 | GROUND-DEFAULT |
| 31 | INTERRUPT | 32 | N/C |
| 33 | SA1 | 34 | N/C |

| | | | |
|---|---|---|---|
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0# | 38 | HDC CS1# |
| 39 | HDD ACTIVE# | 40 | GROUND |

**Table 4-9: IDE Connector Pinouts**

### 4.3.8 Infrared Interface Connector (5-pin)

**CN Label:** **IR1**

**CN Type:** 5-pin header (1x5)

**CN Location:** See **Figure 4-9**

**CN Pinouts:** See **Table 4-10**

The infrared interface connector supports both Serial Infrared (SIR) and Amplitude Shift Key Infrared (ASKIR) interfaces.

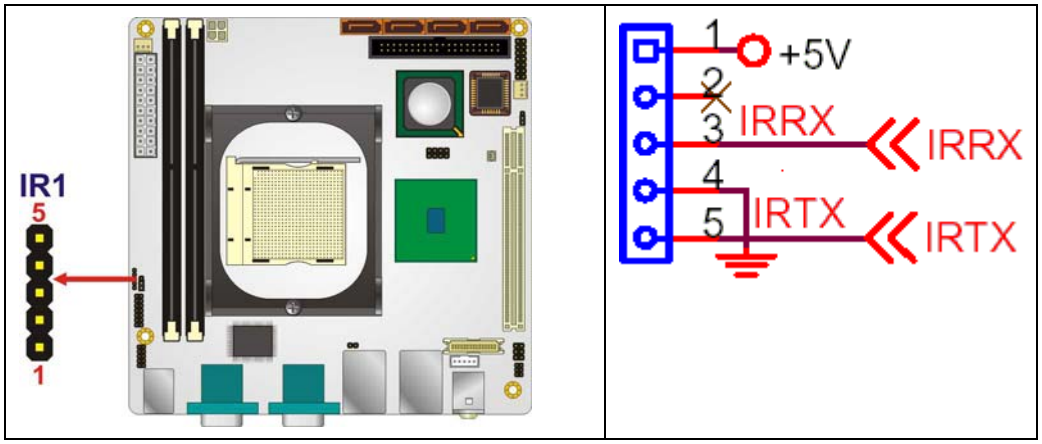



**Figure 4-9: Infrared Connector Pinout Locations**

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | VCC |
| 2 | NC |
| 3 | IR-RX |
| 4 | GND |
| 5 | IR-TX |

**Table 4-10: Infrared Connector Pinouts**

### 4.3.9 LVDS LCD Connector

**CN Label:** **LVDS1**

**CN Type:** 30-pin crimp (2x10)

**CN Location:** See **Figure 4-10**

**CN Pinouts:** See **Table 4-11**

The 30-pin LVDS LCD connector can be connected to single channel or dual channel, 18-bit or 36-bit LVDS panel.

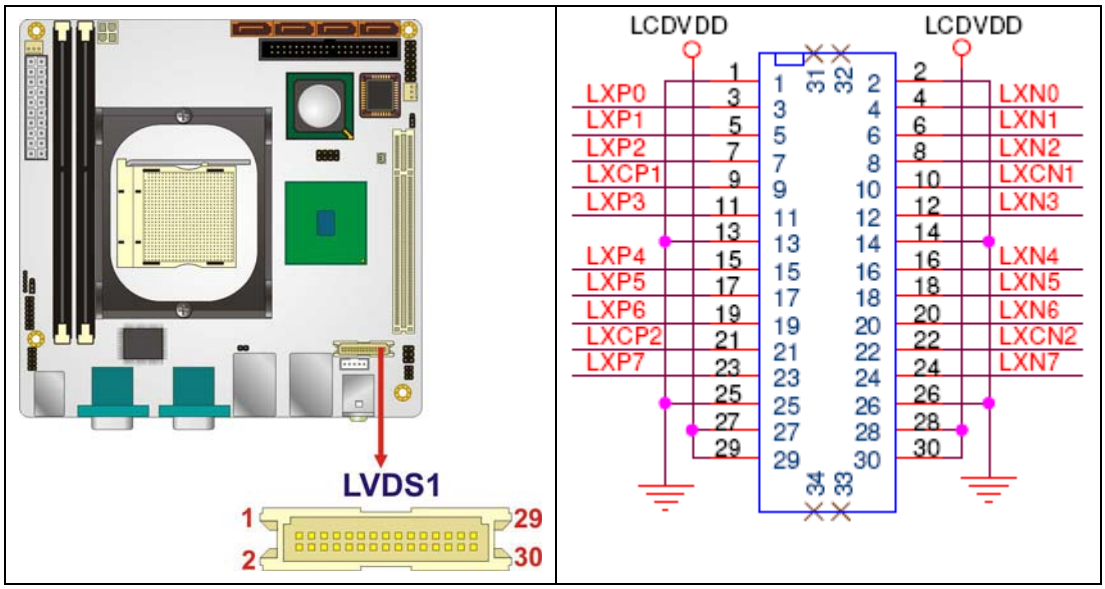



**Figure 4-10: LVDS LCD Connector Pinout Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | GND | 2 | GND |
| 3 | A0P | 4 | A0M |
| 5 | A1P | 6 | A1M |
| 7 | A2P | 8 | A2M |
| 9 | CLK1P | 10 | CLK1M |
| 11 | A3P | 12 | A3M |
| 13 | GND | 14 | GND |
| 15 | A4P | 16 | A4M |
| 17 | A5P | 18 | A5M |
| 19 | A6P | 20 | A6M |
| 21 | CLK2P | 22 | CLK2M |
| 23 | A7P | 24 | A7M |
| 25 | GND | 26 | GND |
| 27 | LCD_VDD | 28 | LCD_VDD |
| 29 | LCD_VDD | 30 | LCD_VDD |

**Table 4-11: LVDS LCD Port Connector Pinouts**

### 4.3.10 PCI Slot

**CN Label:** **PCI1**

**CN Type:** PCI Slot

**CN Location:** See **Figure 4-11**

**CN Pinouts:** See **Table 4-12**

The PCI slot enables a PCI expansion module to be connected to the board.

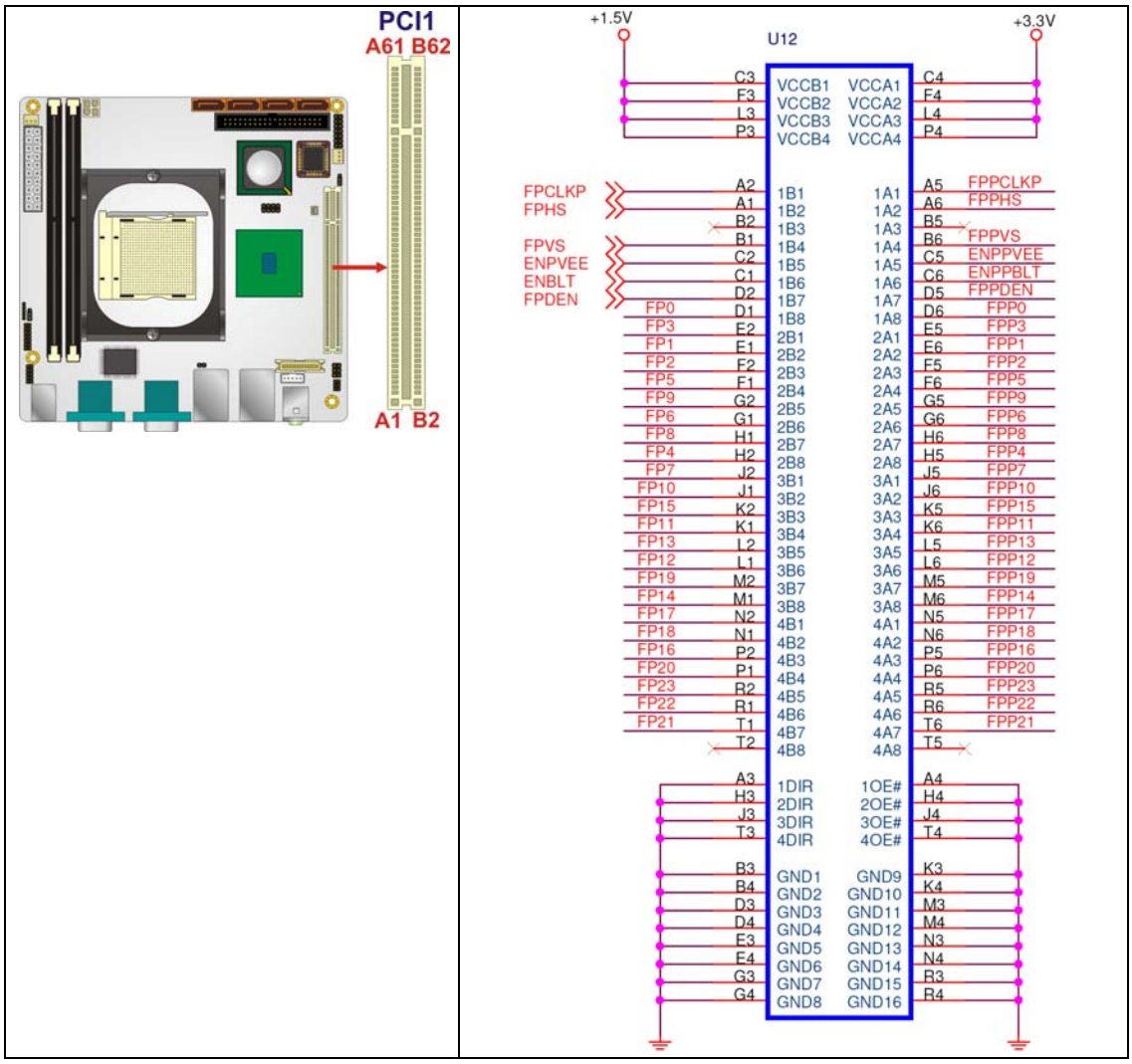



**Figure 4-11: PCI Slot Location**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| A1 | TRST | B1 | -12V |
| A2 | +12V | B2 | TCK |
| A3 | TMS | B3 | GND |
| A4 | TDI | B4 | TDO |
| A5 | +5V | B5 | +5V |
| A6 | INTA | B6 | +5V |
| A7 | INTC | B7 | INTB |
| A8 | +5V | B8 | INTD |

| | | | |
|---|---|---|---|
| A9 | RESERVED3 | B9 | PRSNT1 |
| A10 | +5V | B10 | RESERVED1 |
| A11 | RESERVED4 | B11 | PRSNT2 |
| A12 | GND | B12 | GND |
| A13 | GND | B13 | GND |
| A14 | 3.3V_AUX | B14 | RESERVED2 |
| A15 | RST | B15 | GND |
| A16 | +5V | B16 | CLK |
| A17 | GNT | B17 | GND |
| A18 | GND | B18 | REQ |
| A19 | PME | B19 | +5V |
| A20 | AD30 | B20 | AD31 |
| A21 | +3.3V | B21 | AD29 |
| A22 | AD28 | B22 | GND |
| A23 | AD26 | B23 | AD27 |
| A24 | GND | B24 | AD25 |
| A25 | AD24 | B25 | +3.3V |
| A26 | IDSEL | B26 | C/BE3 |
| A27 | +3.3V | B27 | AD23 |
| A28 | AD22 | B28 | GND |
| A29 | AD20 | B29 | AD21 |
| A30 | GND | B30 | AD19 |
| A31 | AD18 | B31 | +3.3V |
| A32 | AD16 | B32 | AD17 |
| A33 | +3.3V | B33 | C/BE2 |
| A34 | FRAME | B34 | GND |
| A35 | GND | B35 | IRDY |
| A36 | TRDY | B36 | +3.3V |
| A37 | GND | B37 | DEVSEL |
| A38 | STOP | B38 | GND |
| A39 | +3.3V | B39 | LOCK |
| A40 | SDONE | B40 | PERR |

| | | | |
|---|---|---|---|
| A41 | SBO | B41 | +3.3V |
| A42 | GND | B42 | SERR |
| A43 | PAR | B43 | +3.3V |
| A44 | AD15 | B44 | C/BE1 |
| A45 | +3.3V | B45 | AD14 |
| A46 | AD13 | B46 | GND |
| A47 | AD11 | B47 | AD12 |
| A48 | GND | B48 | AD10 |
| A49 | AD9 | B49 | GND |
| A52 | C/BE0 | B52 | AD8 |
| A53 | +3.3V | B53 | AD7 |
| A54 | AD6 | B54 | +3.3V |
| A55 | AD4 | B55 | AD5 |
| A56 | GND | B56 | AD3 |
| A57 | AD2 | B57 | GND |
| A68 | AD0 | B68 | AD1 |
| A59 | +5V | B59 | +5V |
| A60 | REQ64 | B60 | ACK64 |
| A61 | +5V | B61 | +5V |
| A62 | +5V | B62 | +5V |

**Table 4-12: PCI Slot**

### 4.3.11 SATA Drive Connectors

**CN Label:** **SATA1**, **SATA2**, **SATA3** and **SATA4**

**CN Type:** 7-pin SATA drive connectors

**CN Location:** See **Figure 4-12**

**CN Pinouts:** See **Table 4-13**

The four SATA drive connectors are each connected to a first generation SATA drive. First generation SATA drives transfer data at speeds as high as 150Mb/s. The SATA drives can be configured in a RAID configuration.

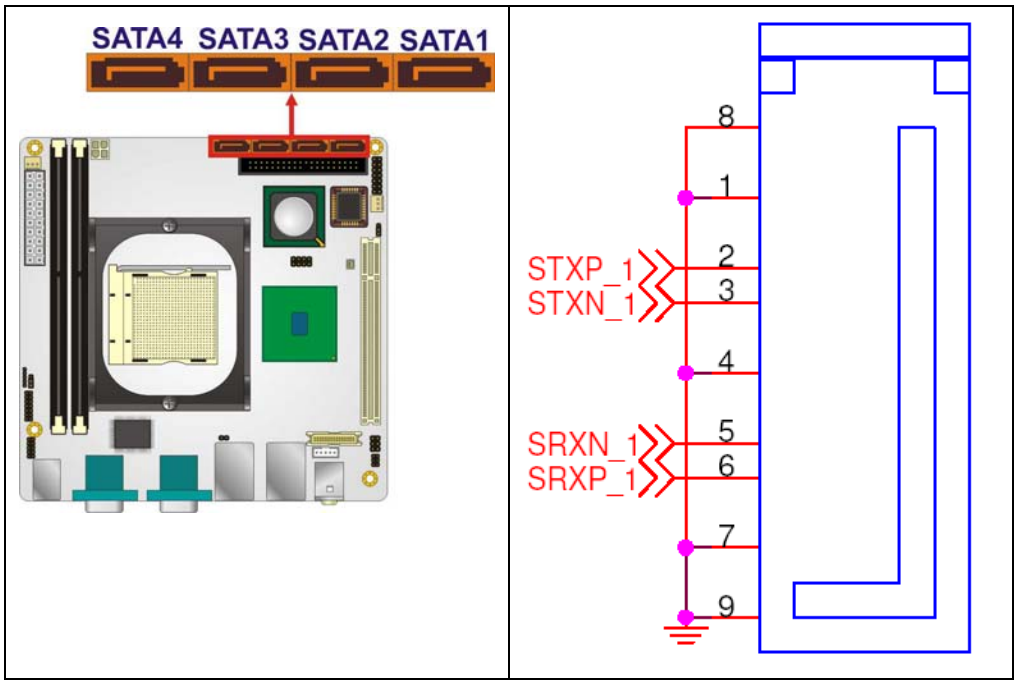



**Figure 4-12: SATA Drive Connector Locations**

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

**Table 4-13: SATA Drive Connector Pinouts**

### 4.3.12 Serial Port Connector (COM 4)(RS-232, RS-422 or RS-485)

**CN Label:** COM4

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

**CN Location:** See Figure 4-13

**CN Pinouts:** See Table 4-14

The 14-pin serial port connector connects to the COM4 serial communications channels. COM4 is a multi function channel. In default mode COM4 is an RS-232 serial communication channel but, with the COM4 function select jumper, can be configured as either an RS-422 or RS-485 serial communications channel.

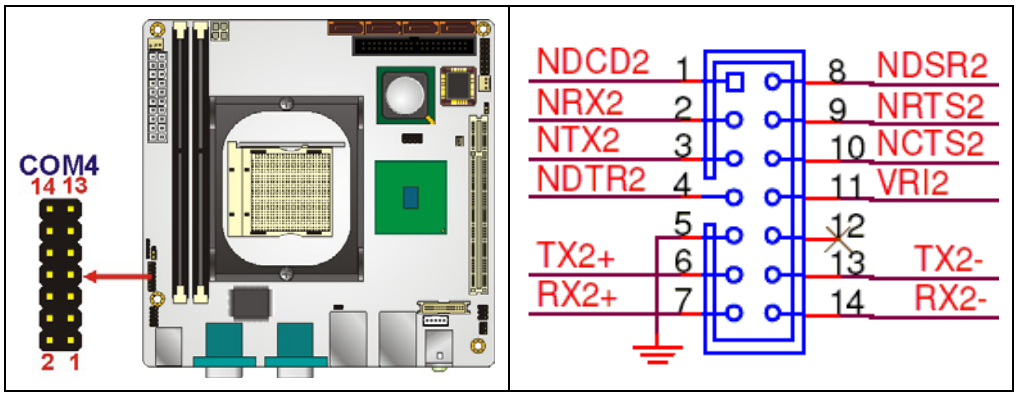



**Figure 4-13: RS-232/422/485 Serial Port Connector Location**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | NDCD | 8 | NDSR |
| 2 | NRX | 9 | NRTS |
| 3 | NTX | 10 | NCTS2 |
| 4 | NDTR | 11 | NRI |
| 5 | GND | 12 | GND |
| 6 | TX+ | 13 | TX- |
| 7 | RX+ | 14 | RX- |

**Table 4-14: RS-232/RS-485 Serial Port Connector Pinouts**

### 4.3.13 TV Out Connector

**CN Label:** TV1

**CN Type:** 6-pin header (2x3)

**CN Location:** See Figure 4-14

**CN Pinouts:** See Table 4-15

The 2x3 pin TV out connector connects to a TV output by using an S-Video or RCA connector. The TV out connector makes displaying media data on a television easier.

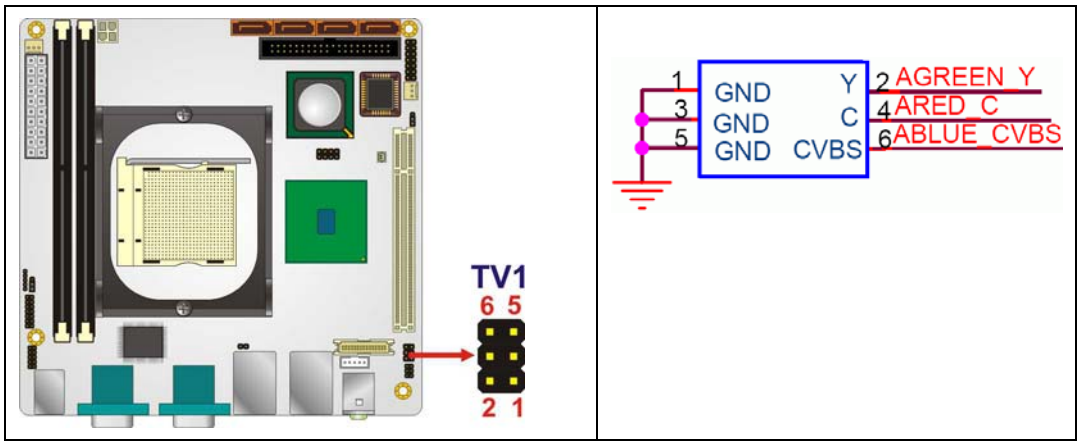



**Figure 4-14: TV Connector Pinout Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | GND | 2 | IOY |
| 3 | GND | 4 | IOC |
| 5 | GND | 6 | IOCOMP |

**Table 4-15: TV Port Connector Pinouts**

### 4.3.14 USB Connectors (Internal)

**CN Label:** **JUSB1**

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

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

**CN Pinouts:** See **Table 4-16**

The 2x4 USB pin connectors each provide connectivity to two USB 1.1 or two USB 2.0 ports. Each USB connector can support two USB devices.. Additional external USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.

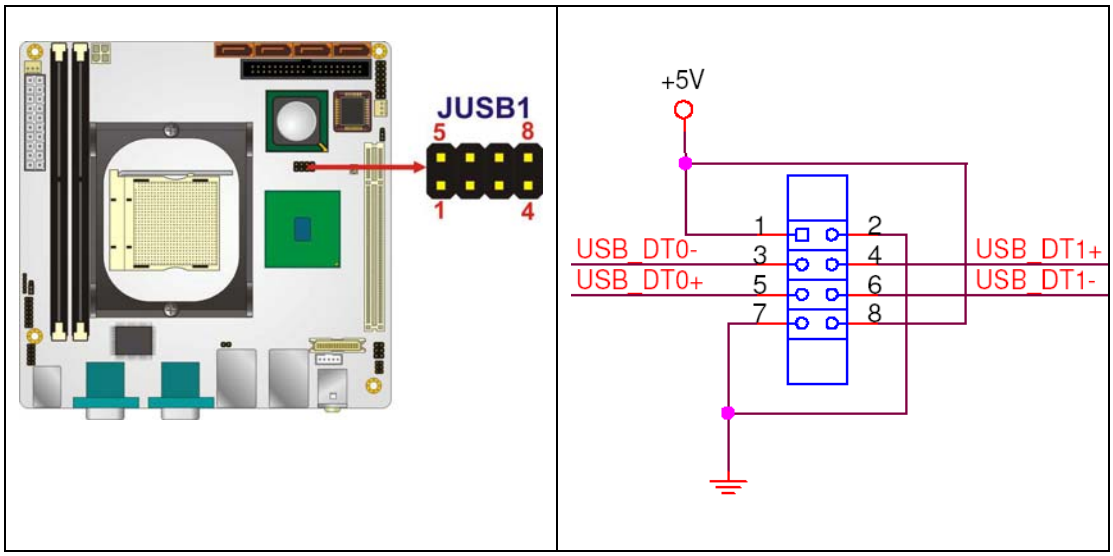



**Figure 4-15: USB Connector Pinout Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | VCC | 2 | GND |
| 3 | DATAN- | 4 | DATA1M- |
| 5 | DATAN+ | 6 | DATAM+ |
| 7 | GND | 8 | VCC |

**Table 4-16: USB Port Connector Pinouts**

## 4.4 External Peripheral Interface Connector Panel

**Figure 4-16** shows the KINO-761AM2 external peripheral interface connector (EPIC) panel. The KINO-761AM2 EPIC panel consists of the following:

- 2 x Audio jack connectors
- 2 x RJ-45 LAN connectors
- 2 x PS/2 connectors
- 3 x Serial port connectors
- 4 x USB connectors
- 1 x VGA connector

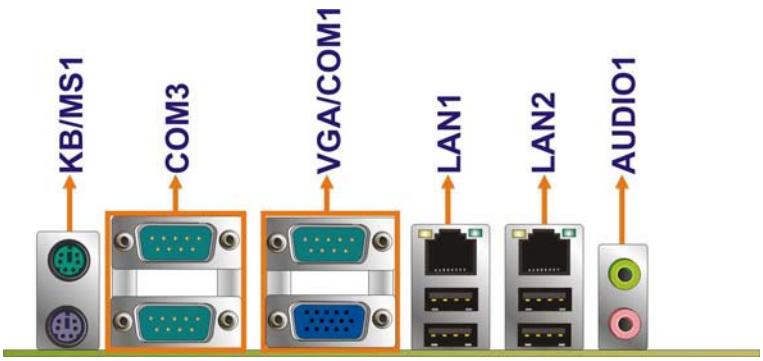



**Figure 4-16: KINO-761AM2 External Peripheral Interface Connector**

### 4.4.1 Audio Connector

**CN Label:** AUDIO1

**CN Type:** 2 x audio jacks

**CN Location:** See Figure 4-16

The three audio jacks on the external audio connector enable the KINO-761AM2 to be connected to external audio devices as specified below.

- **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 4-17: Audio Connector**

### 4.4.2 Keyboard/Mouse Connector

| | |
|---|---|
| **CN Label:** | KB/MS1 |
| **CN Type:** | Dual PS/2 |
| **CN Location:** | See Figure 4-16 |
| **CN Pinouts:** | See Figure 4-18 and Table 4-17 |

The KINO-761AM2 keyboard and mouse connectors are standard PS/2 connectors.

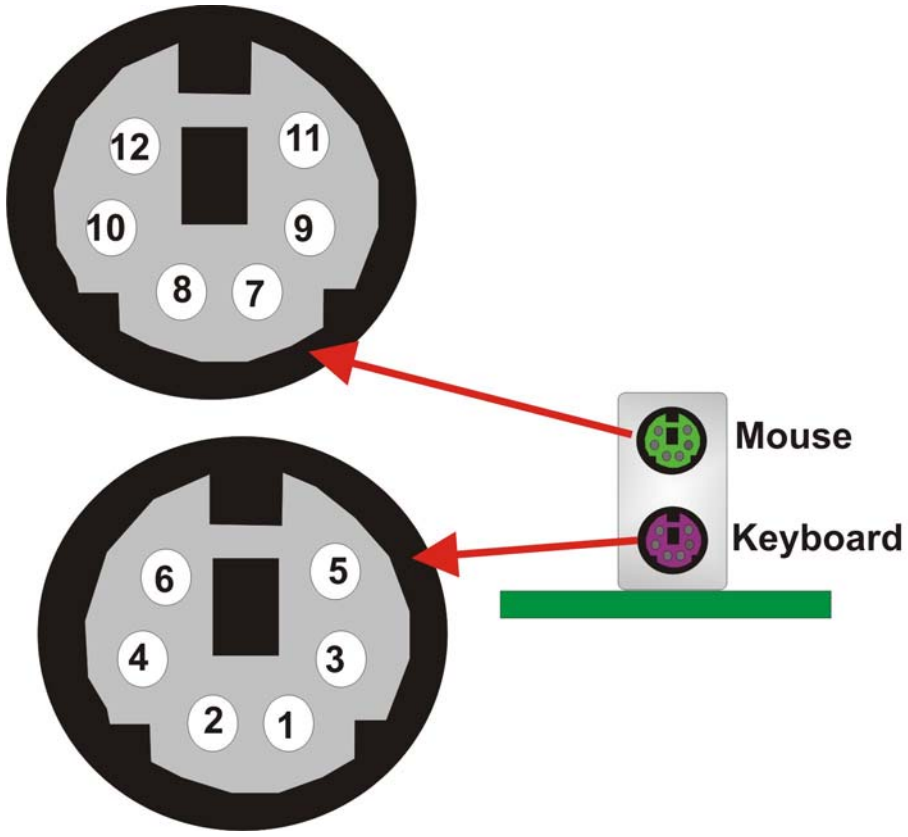



**Figure 4-18: PS/2 Pinouts**

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | L_KDAT | 7 | L_MDAT |
| 2 | NC | 8 | NC |
| 3 | GND | 9 | GND |
| 4 | 5V | 10 | 5V |
| 5 | L_KCLK | 11 | L_MCLK |
| 6 | NC | 12 | NC |

**Table 4-17: PS/2 Connector Pinouts**

### 4.4.3 LAN Connectors

**CN Label:** LAN1A and LAN2A

**CN Type:** RJ-45

**CN Location:** See **Figure 4-16**

**CN Pinouts:** See **Table 4-18**

The KINO-761AM2 is equipped with two built-in RJ-45 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 | TXA+ | 5 | TXC- |
| 2 | TXA- | 6 | TXB- |
| 3 | TXB+ | 7 | TXD+ |
| 4 | TXC+ | 8 | TXD- |

**Table 4-18: LAN Pinouts**

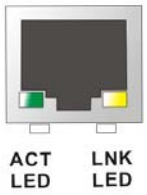



**Figure 4-19: RJ-45 Ethernet Connector**

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 4-19**.

| STATUS | DESCRIPTION | STATUS | DESCRIPTION |
|---|---|---|---|
| GREEN | Activity | YELLOW | Linked |

**Table 4-19: RJ-45 Ethernet Connector LEDs**

### 4.4.4 Serial Port Connectors (COM1, COM2 and COM3)

**CN Label:** COM1, COM2 and COM3

**CN Type:** DB-9 connectors

**CN Location:** See Figure 4-16 (see 2)

**CN Pinouts:** See Table 4-20 and Figure 4-20

The 9-pin DB-9 serial port connectors are connected to RS-232 serial communications devices.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | DCD | 6 | DSR |
| 2 | RX | 7 | RTS |
| 3 | TX | 8 | CTS |
| 4 | DTR | 9 | RI |
| 5 | GND | | |

**Table 4-20: RS-232 Serial Port (COM 1) Pinouts**

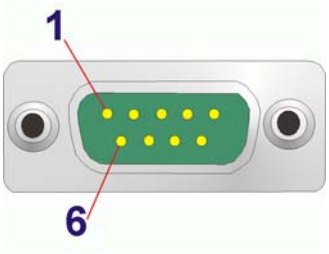



**Figure 4-20: COM1 Pinout Locations**

### 4.4.5 USB Connector

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

**CN Type:** USB port

**CN Location:** See Figure 4-16

**CN Pinouts:** See Table 4-21

The KINO-761AM2 has four external USB 2.0 ports. The ports connect to both USB 2.0 and USB 1.1 devices.

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | USBV3L 5V | 2 | GND |
| 3 | USBP4N | 4 | USBP5P |
| 5 | USBP4P | 6 | USBP5N |
| 7 | GND | 8 | USBV3L 5V |

**Table 4-21: USB Port Pinouts**

### 4.4.6 VGA Connector

**CN Label:** VGA1

**CN Type:** 15-pin Female

**CN Location:** See Figure 4-16

**CN Pinouts:** See Figure 4-21 and Table 4-22

The KINO-761AM2 has a single 15-pin female connector for connectivity to standard display devices.

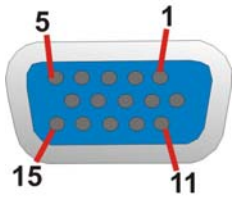



**Figure 4-21: VGA Connector**

| PIN | DESCRIPTION | PIN | DESCRIPTION |
|---|---|---|---|
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | NC |
| 5 | GND | 6 | GND |
| 7 | GND | 8 | GND |
| 9 | VCC / NC | 10 | GND |
| 11 | NC | 12 | DDC DAT |
| 13 | HSYNC | 14 | VSYNC |
| 15 | DDCCLK | | |

Table 4-22: VGA Connector Pinouts

Chapter

5

# Installation

## 5.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the installation of the KINO-761AM2 may result in permanent damage to the KINO-761AM2 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the KINO-761AM2. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the KINO-761AM2, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the KINO-761AM2, place it on an antic-static pad. This reduces the possibility of ESD damaging the KINO-761AM2.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

## 5.2 Installation Considerations

**NOTE:**

The following installation notices and installation considerations should be read and understood before the KINO-761AM2 is installed. All installation notices pertaining to the installation of the KINO-761AM2 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the KINO-761AM2 and injury to the person installing the motherboard.

### 5.2.1 Installation Notices

**WARNING:**

The installation instructions described in this manual should be carefully followed in order to prevent damage to the KINO-761AM2, KINO-761AM2 components and injury to the user.

Before and during the installation please **DO** the following:

- **Read the user manual**:
  - The user manual provides a complete description of the KINO-761AM2 installation instructions and configuration options.
- **Wear an electrostatic discharge cuff (ESD)**:
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- **Place the KINO-761AM2 on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power to the KINO-761AM2 off**:

- When working with the KINO-761AM2, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the KINO-761AM2 **DO NOT:**

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

### 5.2.2 Installation Checklist

The following checklist is provided to ensure the KINO-761AM2 is properly installed.

- All the items in the packing list are present
- The CPU is installed
- The CPU cooling kit is properly installed
- A compatible memory module is properly inserted into the slot
- The CF Type I or CF Type II card is properly installed into the CF socket
- The jumpers have been properly configured
- The KINO-761AM2 is inserted into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected
  - Primary and secondary IDE device
  - SATA drives
  - Power supply
  - USB cable
  - Serial port cable
- The following external peripheral devices are properly connected to the chassis:
  - I/O shield
  - VGA screen
  - Keyboard
  - Mouse

- RS-232 serial communications device
- USB devices

## 5.3 Unpacking

When the KINO-761AM2 is unpacked, please check all the unpacking list items listed in Chapter 3 are indeed present. If any of the unpacking list items are not available please contact the KINO-761AM2 vendor reseller/vendor where the KINO-761AM2 was purchased or contact an IEI sales representative.

## 5.4 CPU, CPU Cooling Kit and DIMM Installation

**WARNING:**

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU, KINO-761AM2 and other electronic components attached to the system may be incurred. Running a CPU without a cooling kit may also result in injury to the user.

The CPU, CPU cooling kit and DIMM are the most critical components of the KINO-761AM2. If one of these component is not installed the KINO-761AM2 cannot run.

### 5.4.1 Socket AM2 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 the correct cooling kit is properly installed.

To install a socket AM2 CPU onto the KINO-761AM2, follow the steps below:

**WARNING:**

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

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

**Step 2:** **Open the CPU socket lever**. Disengage the load lever by moving the lever slightly outward to clear the retention tab. Rotate the load lever to a fully open position. See Error! Reference source not found..

**Step 3:** **Orientate the CPU properly**. Make sure the IHS (Integrated Heat Sink) side is facing upward. See Error! Reference source not found..

**Step 4:** **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket. See Error! Reference source not found..

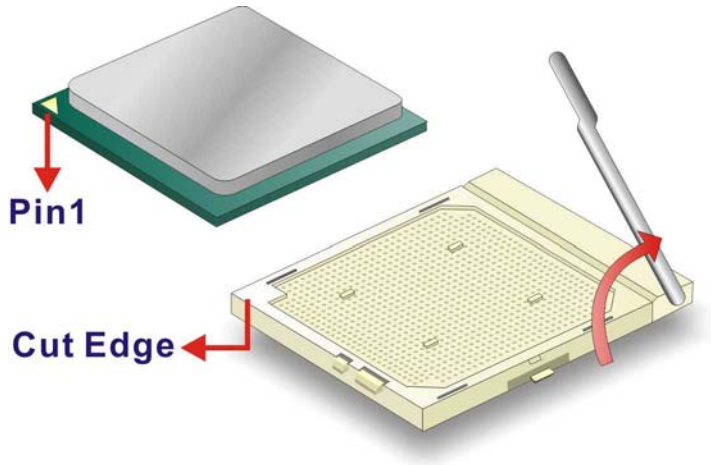


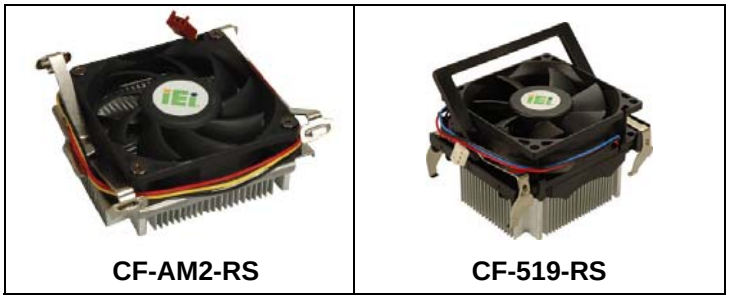

**Figure 5-1: Install the CPU**

**Step 5:** **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

**Step 6:** **Close the CPU socket.** Re-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.

### 5.4.2 Socket AM2 Cooling Kit Installation



CF-AM2-RS | CF-519-RS

**Figure 5-2: IEI Cooling Kit**

An IEI AMD Socket AM2 CPU cooling kit can be purchased separately. The cooling kit comprises a CPU heat sink and a cooling fan. To install the cooling kit, please follow the steps below.

**Step 1:** **Spread a proper amount of thermal paste** onto the bottom of the cooling fan heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

**Step 2:** **Properly orient the cooling kit.** Be sure the cooling kit is properly oriented before installing the cooling kit into the preinstalled cooling kit bracket.

**Step 3:** **Install the cooling kit into the preinstalled cooling kit bracket.** See Error! Reference source not found..

**Step 4:** **Attach the levered mounting clips.** Slip the four levered mounting clips into the clip holes on the cooling kit bracket. See Error! Reference source not found..

**Step 5:** **Secure the cooling kit in place.** Gently push the plastic mounting clip down to lock the cooling kit. See Error! Reference source not found..

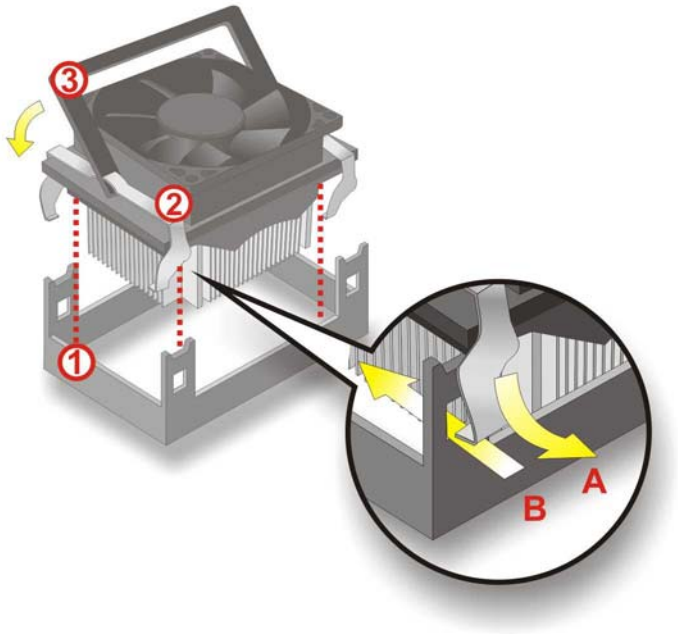



**Figure 5-3: Install the CPU cooler**

**Step 6:** **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the CPU card. Carefully route the cable and avoid heat generating chips and fan blades.

### 5.4.3 DIMM Installation

**WARNING:**

Using incorrectly specified DIMM may cause permanently damage the KINO-761AM2. Please make sure the purchased DIMM complies with the memory specifications of the KINO-761AM2. DIMM specifications compliant with the KINO-761AM2 are listed in **Chapter 2**.

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-4**.

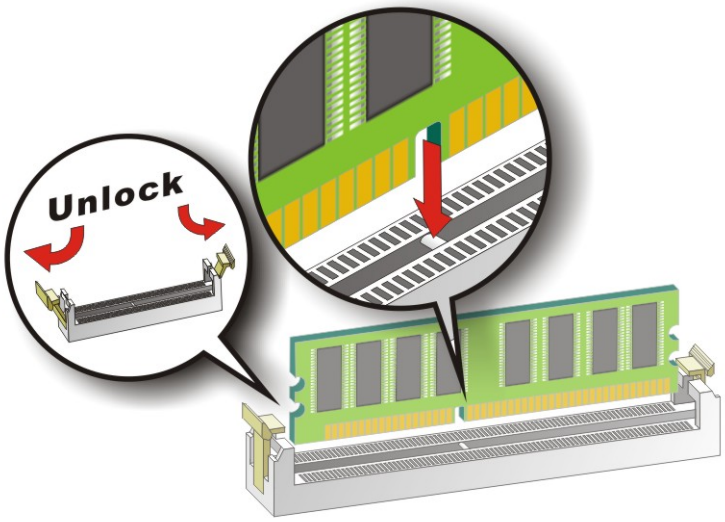



**Figure 5-4: Installing a DIMM**

**Step 1:** **Open the DIMM socket handles**. The DIMM socket has two handles that secure the DIMM into the socket. Before the DIMM can be inserted into the socket, the handles must be opened. See **Figure 5-4**.

**Step 2:** **Align the DIMM with the socket**. The DIMM must be oriented in such a way that the notch in the middle of the DIMM must be aligned with the plastic bridge in the socket. See **Figure 5-4**.

**Step 3:** **Insert the DIMM**. Once properly aligned, the DIMM can be inserted into the socket. As the DIMM is inserted, the white handles on the side of the socket will close automatically and secure the DIMM to the socket. See **Figure 5-4**.

**Step 4:** **Removing a DIMM**. To remove a DIMM, push both handles outward. The memory module is ejected by a mechanism in the socket.

## 5.5 Jumper Settings

**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.

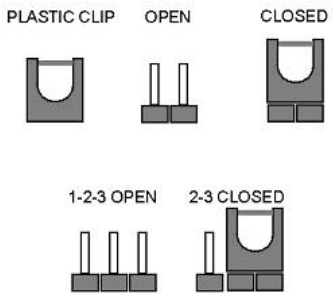



**Figure 5-5: Jumper Locations**

Before the KINO-761AM2 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the KINO-761AM2 are listed in **Table 5-1**.

| Description | Label | Type |
|---|---|---|
| Clear CMOS | J6 | 3-pin header |
| LCD Voltage Select | J5 | 6-pin header |
| RS-232/485 Serial Port Select | J2 | 3-pin header |

**Table 5-1: Jumpers**

### 5.5.1 Clear CMOS Jumper

**Jumper Label:** **J6**

**Jumper Type:** 3-pin header

**Jumper Settings:** See Table 5-2

**Jumper Location:** See **Figure 5-6**

If the KINO-761AM2 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets 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.

The clear CMOS jumper settings are shown in **Table 5-2**.

| AT Power Select | Description | |
|---|---|---|
| Short 1 - 2 | Keep CMOS Setup | Default |
| Short 2 - 3 | Clear CMOS Setup | |

**Table 5-2: Clear CMOS Jumper Settings**

The location of the clear CMOS jumper is shown in **Figure 5-6** below.

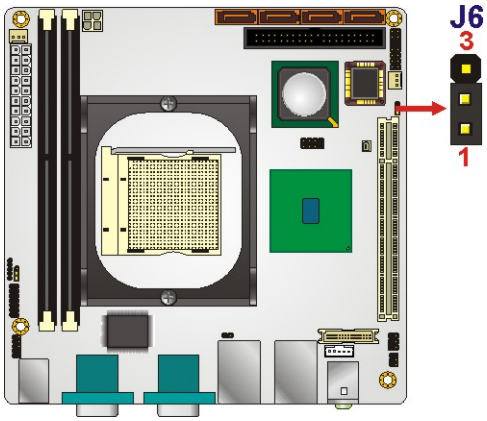



**Figure 5-6: Clear CMOS Jumper**

### 5.5.2 LCD Voltage Selection

**WARNING:**

Permanent damage to the screen and KINO-761AM2 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

| | |
|---|---|
| **Jumper Label:** | **J5** |
| **Jumper Type:** | 6-pin header |
| **Jumper Settings:** | See **Table 5-3** |
| **Jumper Location:** | See **Figure 5-7** |

The **LCD Voltage Selection** jumper allows the LCD screen voltage to be set. The **LCD Voltage Selection** jumper settings are shown in **Table 5-3**.

| AT Power Select | Description | |
|---|---|---|
| Short 1-2 | +3V | Default |
| Short 2-3 | +5V | |
| Short 2-3 | +12V | |

**Table 5-3: LCD Voltage Selection Jumper Settings**

The LCD Voltage Selection jumper location. is shown in **Figure 5-7**.

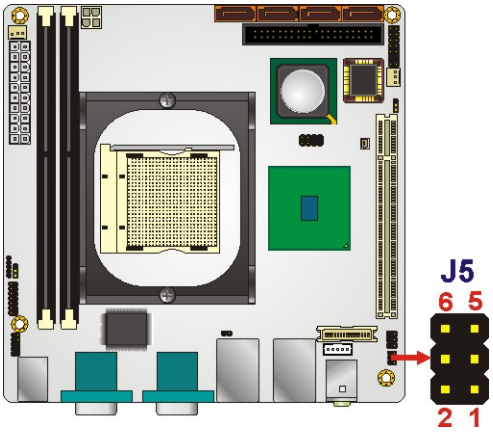



**Figure 5-7: LCD Voltage Selection Jumper Location**

### 5.5.3 RS-232/485 Serial Port Select Jumper

**Jumper Label:** **J2**

**Jumper Type:** 3-pin header

**Jumper Settings:** See **Table 5-4**

**Jumper Location:** See **Figure 5-8**

The RS-232 or RS-422/RS-485 Serial Port Select jumper sets the communication protocol used by the fourth serial communications port (COM4) as RS-232 or RS-422/RS-485. The RS-232 or RS-422/RS-485 Serial Port Select settings are shown in **Table 5-4**.

| RS-232/485 Select | Description | |
|---|---|---|
| Short 1-2 | RS-232 | Default |
| Short 2-3 | RS-422/485 | |

**Table 5-4: RS-232/485 Serial Port Select Jumper Settings**

The RS-232/485 Serial Port Select jumper location is shown in **Figure 5-8**.

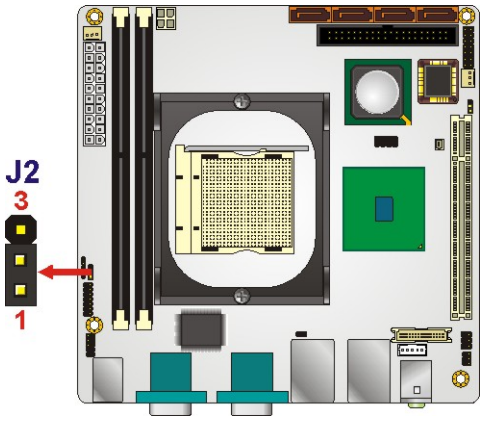



**Figure 5-8: RS-232/485 Serial Port Select Jumper Location**

## 5.6 Chassis Installation

### 5.6.1 Airflow

**WARNING:**

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the KINO-761AM2 must have air vents to allow cool air to move into the system and hot air to move out.

The KINO-761AM2 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

**NOTE:**

IEI has a wide range of backplanes available. Please contact your KINO-761AM2 vendor, reseller or an IEI sales representative at sales@iei.com.tw or visit the IEI website (http://www.ieiworld.com.tw) to find out more about the available chassis.

### 5.6.2 Motherboard Installation

To install the KINO-761AM2 motherboard into the chassis please refer to the reference material that came with the chassis.

## 5.7 Internal Peripheral Device Connections

### 5.7.1 Peripheral Device Cables

The cables listed in **Table 5-5** are shipped with the KINO-761AM2.

| Quantity | Type |
|---|---|
| 1 | ATA 66/100 flat cable |
| 1 | I/O Shield |
| 2 | SATA drive cable |
| 1 | SATA drive power cable |

**Table 5-5: IEI Provided Cables**

### 5.7.2 ATA Flat Cable Connection

The ATA 66/100 flat cable connects to the KINO-761AM2 to one or two IDE devices. To connect an IDE HDD to the KINO-761AM2 please follow the instructions below.

**Step 1:** **Locate the IDE connector**. The location/s of the IDE device connector/s is/are shown in **Chapter 3**.

**Step 2:** **Insert the connector**. Connect the IDE cable connector to the onboard connector. See Figure 5-9. A key on the front of the cable connector ensures it can only be inserted in one direction.

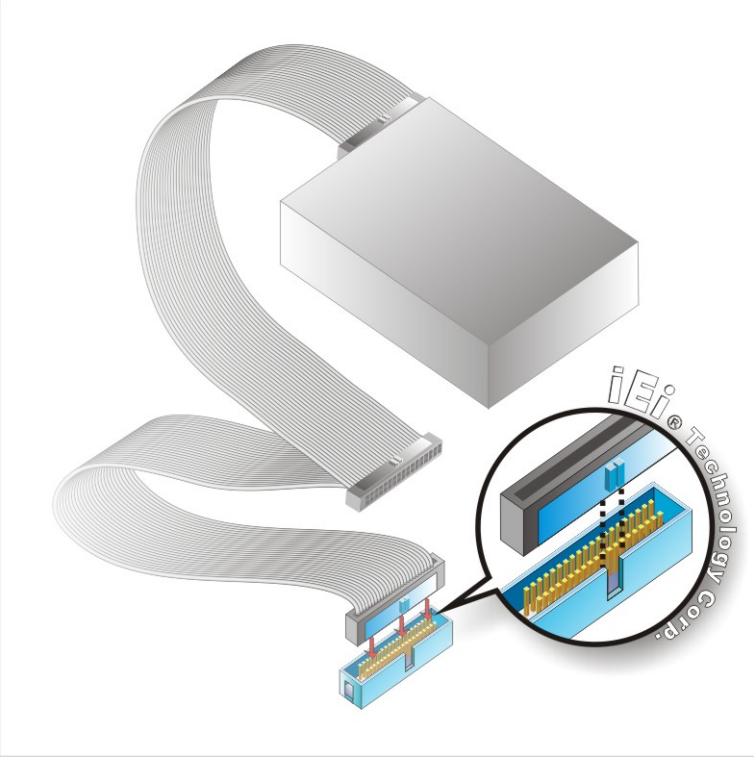


**Figure 5-9: IDE Cable Connection**

**Step 3:** **Connect the cable to an IDE device**. Connect the two connectors on the other side of the cable to one or two IDE devices. Make sure that pin 1 on the cable corresponds to pin 1 on the connector.

### 5.7.3 SATA Drive Connection

The KINO-761AM2 is shipped with two SATA drive cables and one SATA drive power cable. To connect the SATA drives to the connectors, please follow the steps below.

**Step 1:** **Locate the connectors**. The locations of the SATA drive connectors are shown in **Chapter 3**.

**Step 2:** **Insert the cable connector**. Press the clip on the connector at the end of the

SATA cable and insert the cable connector into the onboard SATA drive connector. See **Figure 5-10**.

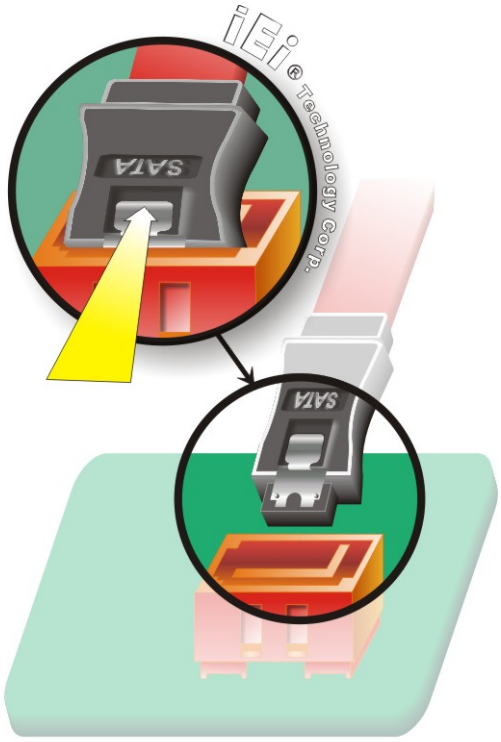



**Figure 5-10: SATA Drive Cable Connection**

**Step 3:** **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 5-11**.

**Step 4:** **Connect the SATA power cable**. Connect the SATA power connector to the back of the SATA drive. See **Figure 5-11**.

**Figure 5-11: SATA Power Drive Connection**

### 5.7.4 TFT LCD Installation

The KINO-761AM2 can be connected to a LVDS LCD screen through the 30-pin crimp connector on the board. To connect a LVDS LCD to the KINO-761AM2, please follow the steps below.

**Step 1:** **Locate the connector**. The location of the LVDS connector is shown in **Chapter 3**.

**Step 2:** **Insert the cable connector**. Insert the connector from the LVDS LCD PCB driving board to the LVDS connector as shown in **Figure 5-12**. When connecting the connectors make sure the pins are properly aligned.

**WARNING:**

The diagram below is merely for illustration. The configuration and connection of the cables from the TFT LCD screen being installed may be different. Please refer to the installation manual that came with the TFT LCD screen.

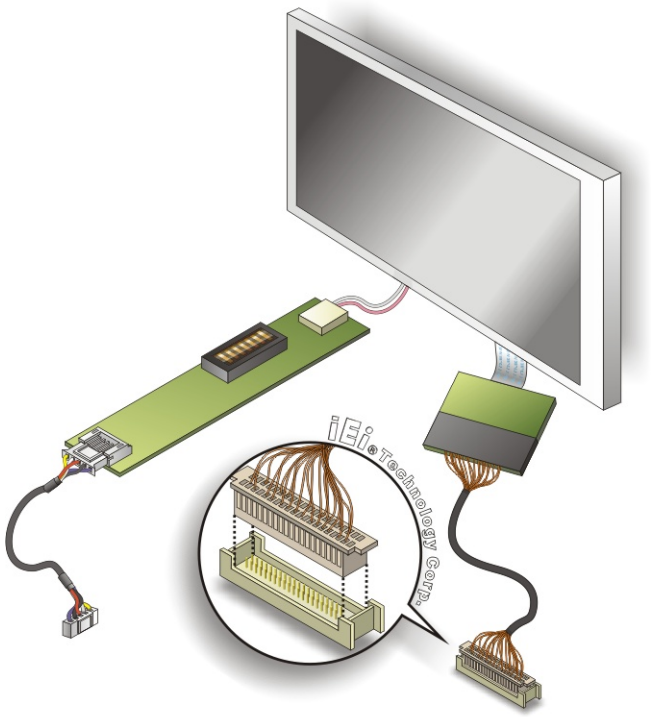


**Figure 5-12: LVDS Connector**

**Step 3:** **Locate the backlight inverter connector.** The location of the backlight inverter connector is shown in **Chapter 3**.

**Step 4:** **Connect backlight connector**. Connect the backlight connector to the driver LVDS LCD PCB as shown in **Figure 5-13**. When inserting the cable connector,

make sure the pins are properly aligned.

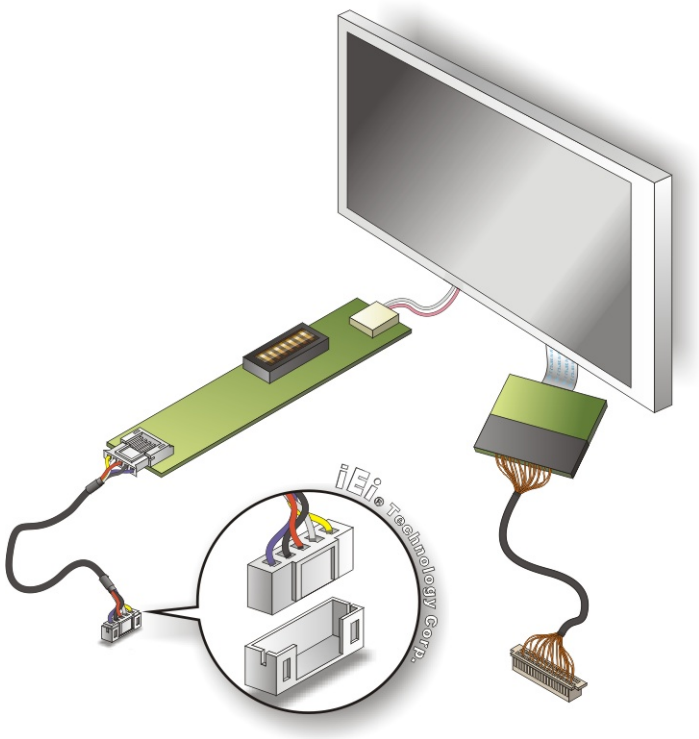


**Figure 5-13: Backlight Inverter Connection**

## 5.8 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- RJ-45 Ethernet cable connectors
- PS/2 devices
- Serial port devices
- USB devices
- VGA monitors

To install these devices, connect the corresponding cable connector from the actual device to the corresponding KINO-761AM2 external peripheral interface connector making sure the pins are properly aligned.

### 5.8.1 Audio Connection

Audio signals are interfaced through three phone jack connections. The red phone jack is for Mic In, blue is for Line In and green is for Speaker Out. Follow the steps below to connect audio devices to the KINO-761AM2.

**Step 1:** **Locate the audio phone jacks**. The location of the audio phone jacks are shown in **Chapter 3**.

**Step 2:** **Insert audio phone jack plugs**. Insert audio phone jack plugs into the audio phone jacks on the external peripheral interface. See Figure 5-14.

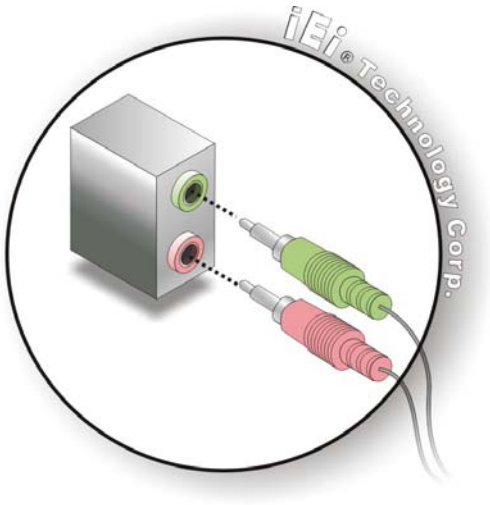


**Figure 5-14: Audio Connectors**

### 5.8.2 LAN Connection (Single Connector)

There are two external RJ-45 LAN connectors. The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

**Step 1:** **Locate the RJ-45 connectors**. The locations of the USB connectors are shown in **Chapter 4**.

**Step 2:** **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the KINO-761AM2. See **Figure 5-15**.

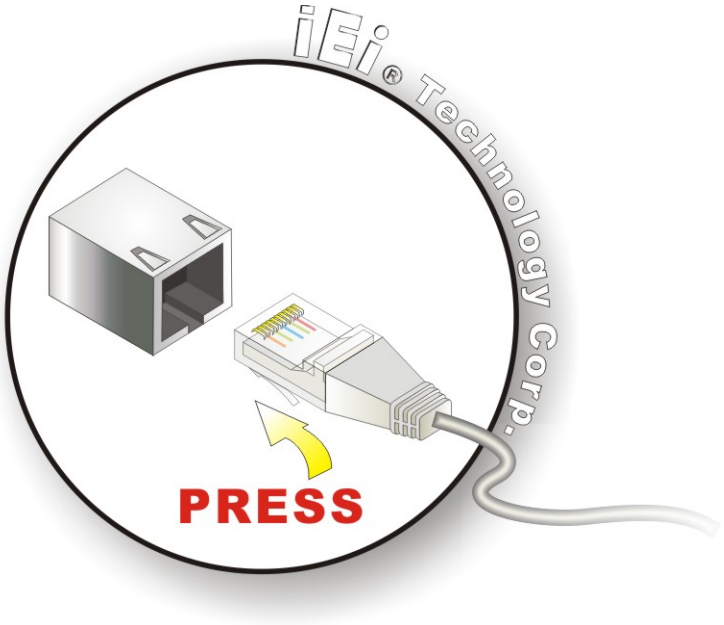



**Figure 5-15: LAN Connection**

**Step 3:** **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 connector.

### 5.8.3 PS/2 Keyboard and Mouse Connection

The KINO-761AM2 has a dual PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is used to connect to a keyboard and mouse to the system. Follow the steps below to connect a keyboard and mouse to the KINO-761AM2.

**Step 1:** **Locate the dual PS/2 connector**. The location of the dual PS/2 connector is shown in **Chapter 3**.

**Step 2:** **Insert the keyboard/mouse connector**. Insert a PS/2 keyboard or mouse connector into the appropriate PS/2 connector on the external peripheral interface connector. See Figure 5-16.

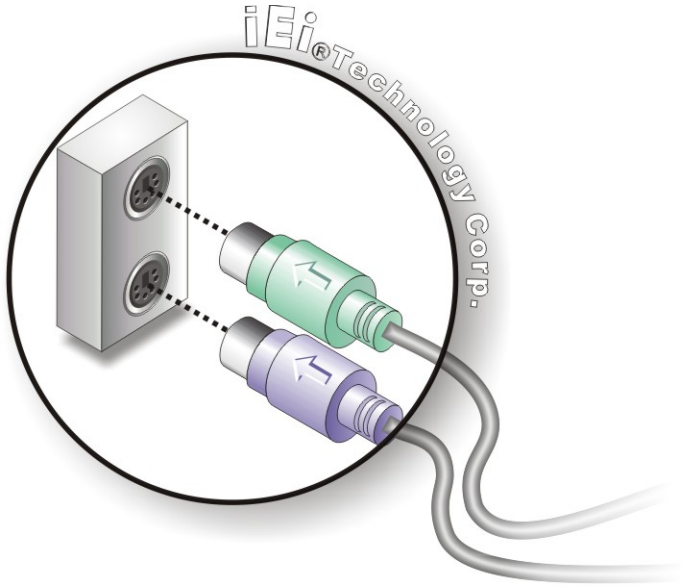


**Figure 5-16: PS/2 Keyboard/Mouse Connector**

### 5.8.4 Serial Device Connection

The KINO-761AM2 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the KINO-761AM2.

**Step 1:** **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Chapter 3**.

**Step 2:** **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See Figure 5-17.

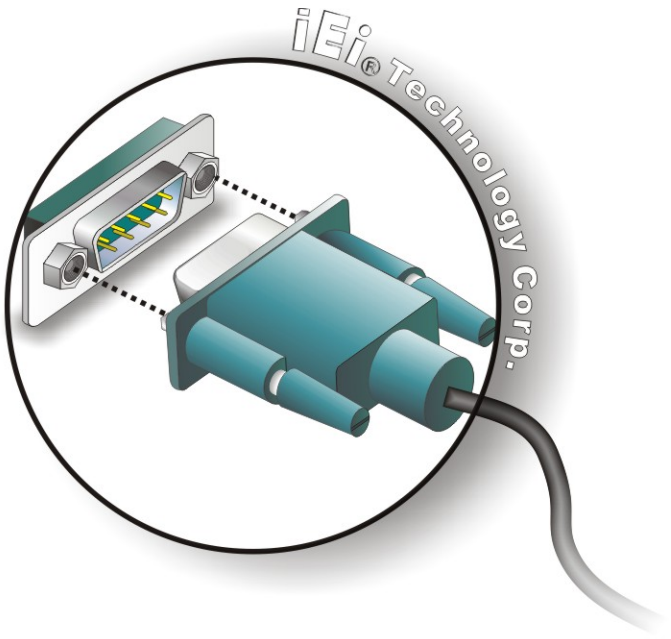


**Figure 5-17: Serial Device Connector**

**Step 3:** **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

### 5.8.5 USB Connection (Dual Connector)

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the KINO-761AM2.

**Step 1:** **Locate the USB Series "A" receptacle connectors**. The location of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

**Step 2:** **Insert a USB Series "A" plug**. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 5-18**.

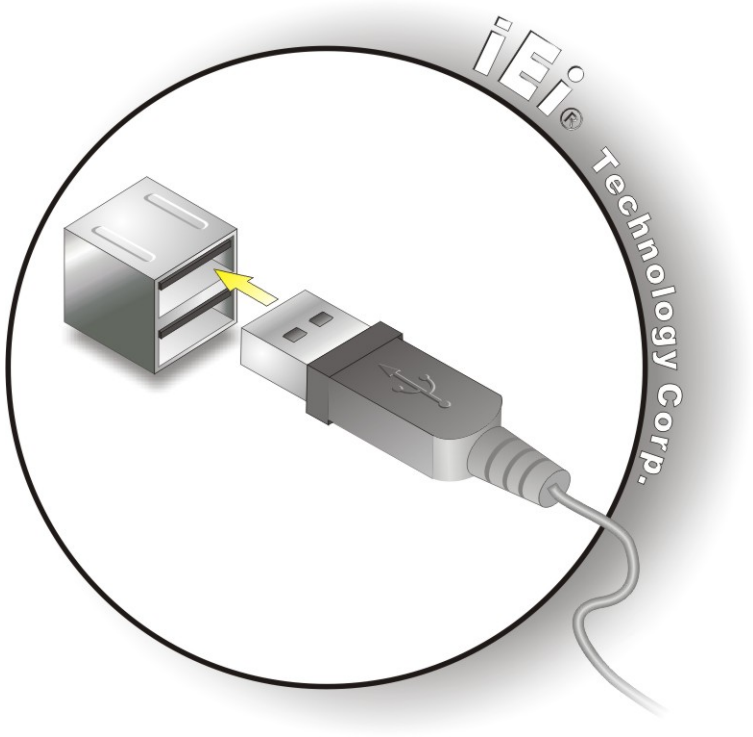


**Figure 5-18: USB Connector**

### 5.8.6 VGA Monitor Connection

The KINO-761AM2 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the KINO-761AM2, please follow the instructions below.

**Step 1:** **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

**Step 2:** **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

**Step 3:** **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the KINO-761AM2. See **Figure 5-19**.

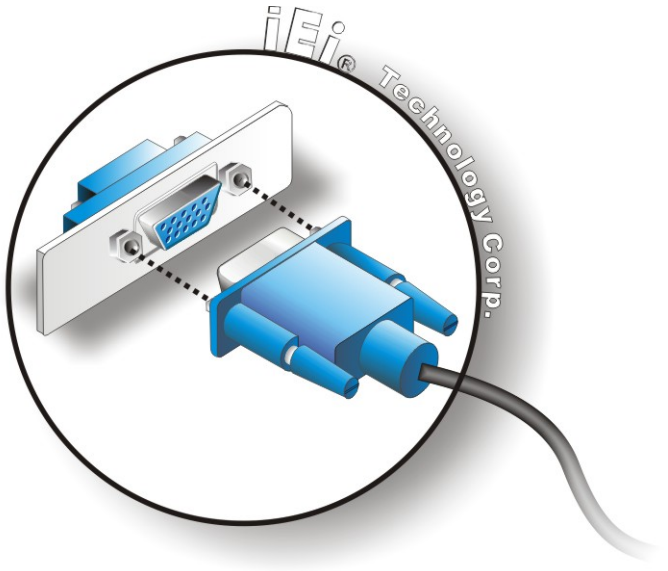


**Figure 5-19: VGA Connector**

**Step 4:** **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

Chapter

6

# BIOS Screens

## 6.1 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.

### 6.1.1 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. 0.

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

### 6.1.2 Using Setup

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

| Key | Function |
|---|---|
| Up arrow | Move to previous item |
| Down arrow | Move to next item |
| Left arrow | Move to the item on the left hand side |
| Right arrow | Move to the item on the right hand side |
| Esc key | Main Menu – Quit and not save changes into CMOS<br>Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu |
| Page Up key | Increase the numeric value or make changes |
| Page Dn key | Decrease the numeric value or make changes |

| | |
|---|---|
| F1 key | General help, only for Status Page Setup Menu and Option Page Setup Menu |
| F2 /F3 key | Change color from total 16 colors. F2 to select color forward. |
| F10 key | Save all the CMOS changes, only for Main Menu |

**Table 6-1: BIOS Navigation Keys**

### 6.1.3 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.

### 6.1.4 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 5**.

### 6.1.5 BIOS Menu Bar

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

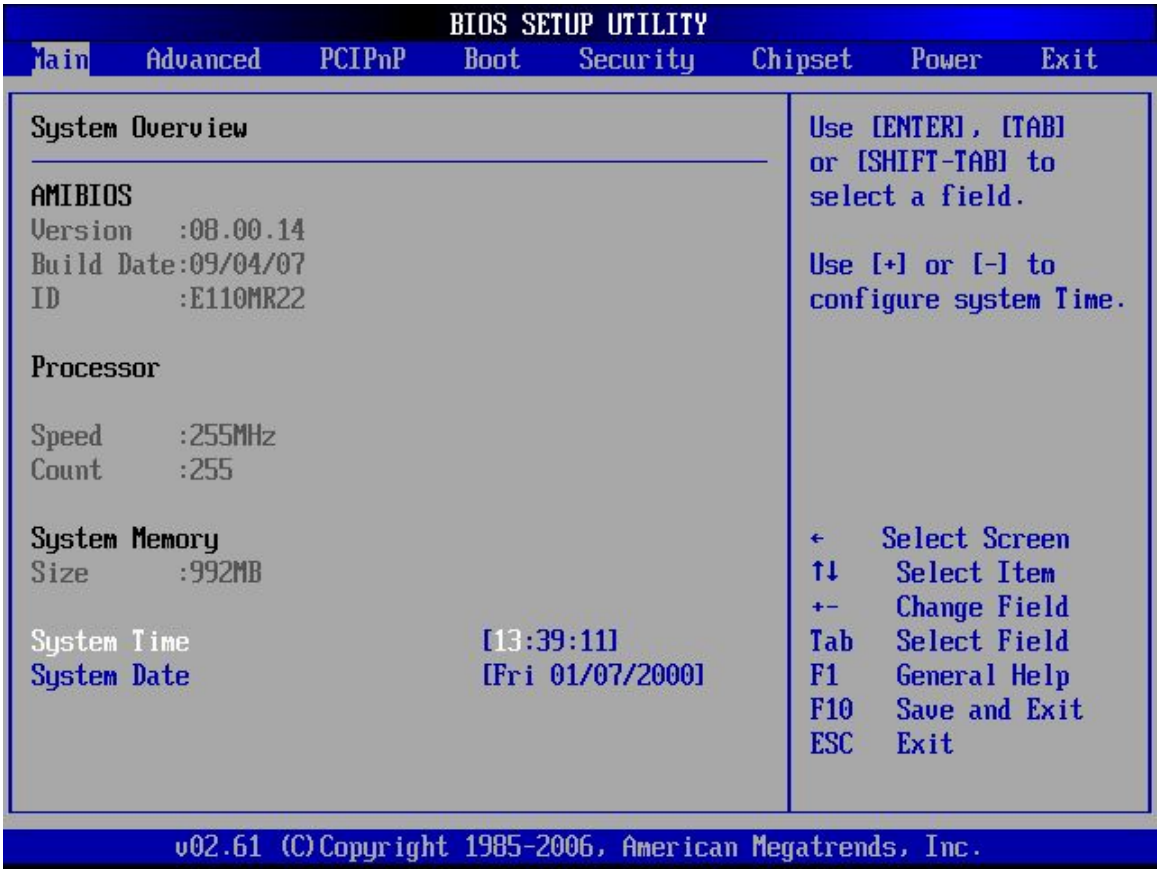
- **Main** Changes the basic system configuration.
- **Advanced** Changes the advanced system settings.
- **PCIPnP** Changes the advanced PCI/PnP Settings
- **Boot** Changes the system boot configuration.
- **Security** Sets User and Supervisor Passwords.
- **Chipset** Changes the chipset settings.
- **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.

## 6.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.




**BIOS Menu 1: Main**

### ➔ System Overview

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

- **AMI BIOS**: Displays auto-detected BIOS information
  - Version: Current BIOS version
  - Build Date: Date the current BIOS version was made
  - ID: Installed BIOS ID

- **Processor**: Displays auto-detected CPU specifications
  - Type: Names the currently installed processor
  - Speed: Lists the processor speed
  - Count: The number of CPUs on the motherboard
- **System Memory**: Displays the auto-detected system memory.
  - Size: Lists memory size

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

➔ **System Time [xx:xx:xx]**

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

➔ **System Date [xx/xx/xx]**

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

## 6.3 Advanced

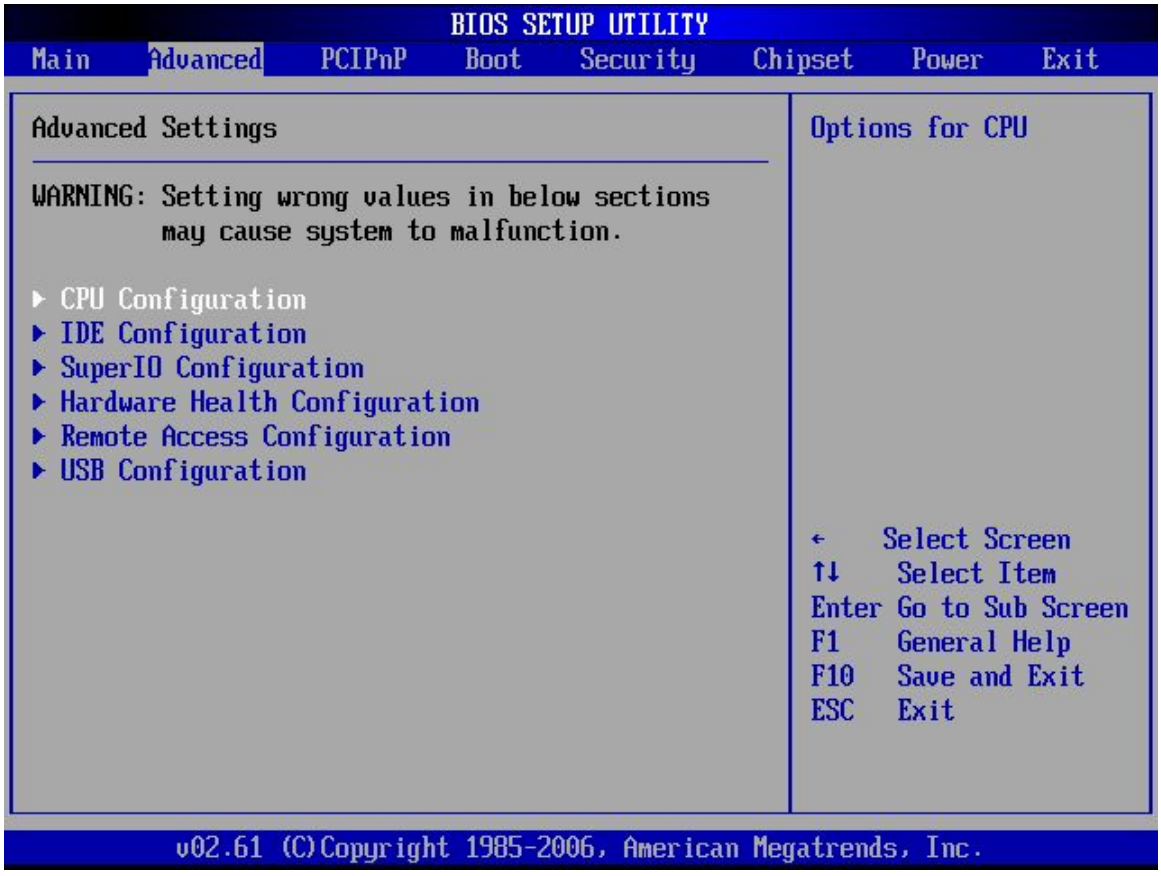
Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

**WARNING:**

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

- CPU Configuration (see Section 6.3.1)
- IDE Configuration (see Section 6.3.2)
- SuperIO Configuration (see Section 6.3.3)
- Hardware Health Configuration (see Section 6.3.4**Error! Reference source not found.**)

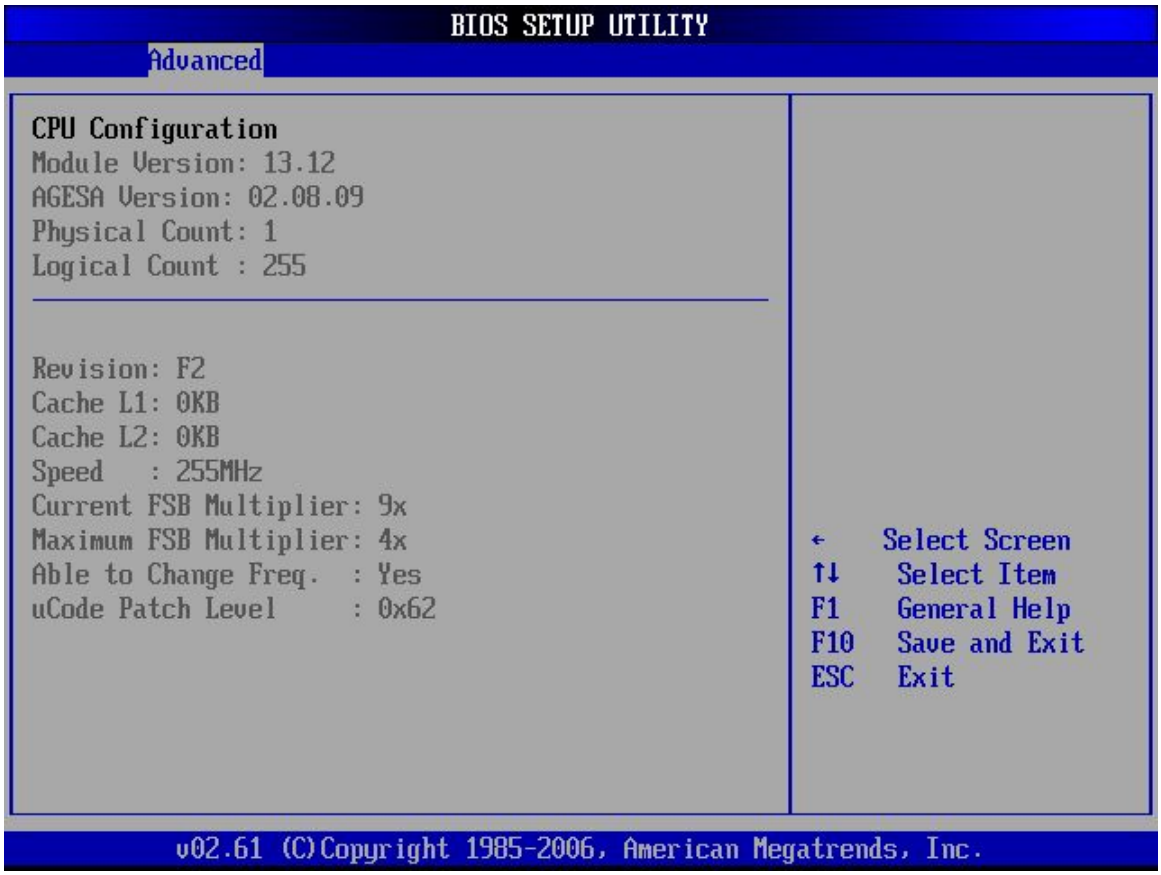
- ACPI
- USB Configuration (see Section 6.3.5)




**BIOS Menu 2: Advanced**

### 6.3.1 CPU Configuration

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



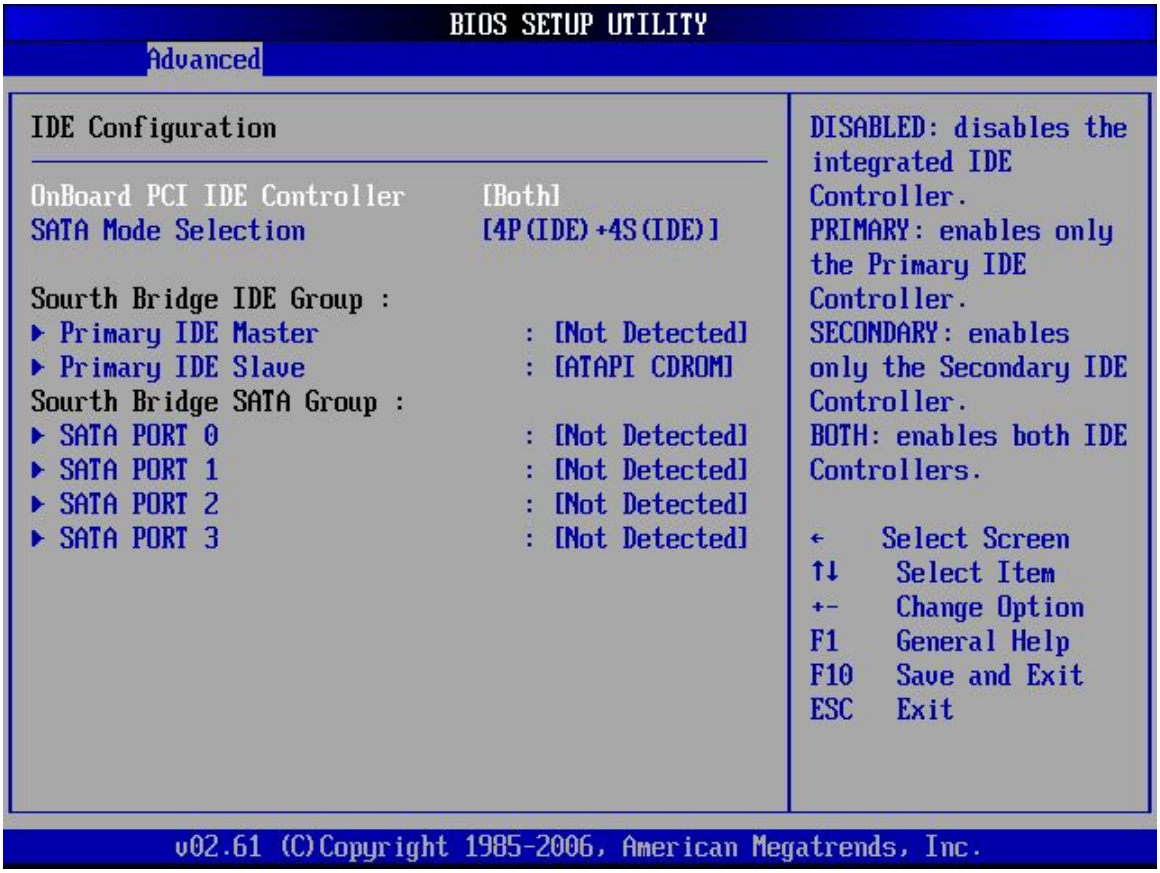

**BIOS Menu 3: CPU Configuration**

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

- **Revision**: Lists the CPU revision number
- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size
- **Speed:** Lists the CPU processing speed
- **Current FSB Multiplier**: Specifies how much the FSB is increased by
- **Maximum FSB Multiplier**: Specifies the maximum the FSB can be increased
- **Able to Change Freq**: Specifies the CPU frequency cannot be changed.
- uCode Patch Level:

### 6.3.2 IDE Configuration

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




**BIOS Menu 4: IDE Configuration**

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

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

| | | |
|---|---|---|
| ➔ | **Disabled** | Disables all IDE controllers |
| ➔ | **Primary** | Only enables the primary IDE controller |
| ➔ | **Secondary** | Only enables the secondary IDE controller |

➔ **Both** Default Enables both the primary and secondary IDE controllers

➔ **SATA Mode Selection**

Use the **SATA Mode Selection** option to specify the SATA drive mode for the SATA drive.

➔ **Disabled**

➔ **RAID Mode**

➔ **IDE Mode** Default

➔ **AHCI Mode**

➔ **IDE Master and IDE Slave**

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

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

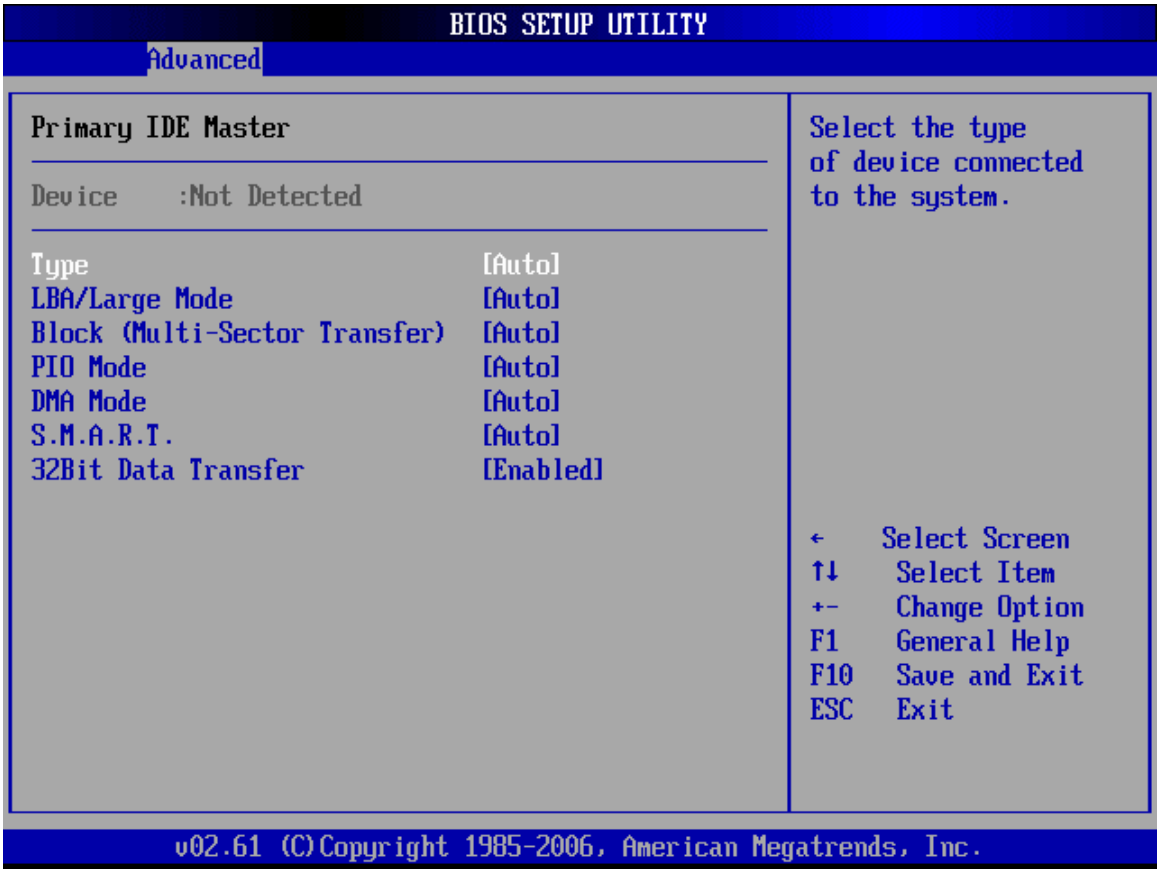
The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 6.3.2.1** appear.

➔ **SATA Port n**

Use the **SATA Port n** option to see if the SATA drives connected to the system have been detected by the system BIOS.

### 6.3.2.1 IDE Master, IDE Slave

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




**BIOS Menu 5: IDE Master and IDE Slave Configuration**

➔ **Auto-Detected Drive Parameters**

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

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **Vendor**: Lists the device manufacturer

- **Size**: List the storage capacity 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.
- **32Bit Data Transfer**: Enables 32-bit data transfer.

➔ **Type [Auto]**

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

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

➔ **ZIP**

➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

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

| | | |
|---|---|---|
| ➔ **Disabled** | | BIOS is prevented from using the LBA mode control on the specified channel. |
| ➔ **Auto** | **DEFAULT** | BIOS auto detects the LBA mode control on the specified channel. |

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

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

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

➔ **PIO Mode [Auto]**

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

- ➔ **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
- ➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- ➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- ➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- ➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- ➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps

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

➔ **DMA Mode [Auto]**

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

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

transfer rate of 4.2MBps

- ➔ **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- ➔ **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps
- ➔ **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps
- ➔ **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps
- ➔ **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps
- ➔ **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- ➔ **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)
- ➔ **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔ **S.M.A.R.T [Auto]**

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

- ➔ **Auto** **DEFAULT** BIOS auto detects HDD SMART support.

➔ **Disabled** Prevents BIOS from using the HDD SMART feature.

➔ **Enabled** Allows BIOS to use the HDD SMART feature

➔ **32Bit Data Transfer [Enabled]**

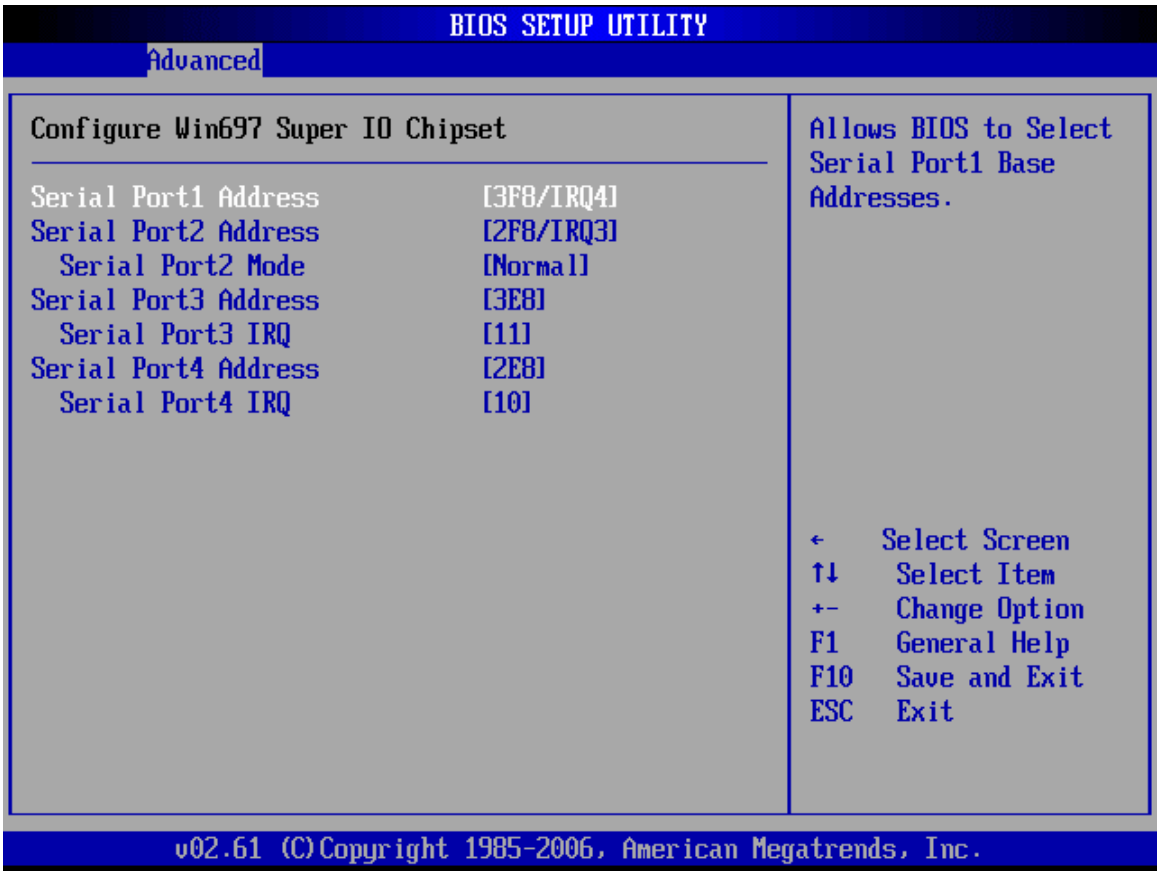
Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

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

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

### 6.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.




**BIOS Menu 6: Super IO Configuration**

➔ **Serial Port1 Address [3F8/IRQ4]**

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

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

➔ **Serial Port2 Address [2F8/IRQ3]**

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

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

➔ **Serial Port2 Mode [Normal]**

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

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

➔ **Serial Port3 Address [3E8]**

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

| | | |
|---|---|---|
| ➔ **Disabled** | | No base address is assigned to serial port 3 |
| ➔ **3E8** | **DEFAULT** | Serial port 3 I/O port address is 3E8 |
| ➔ **2E8** | | Serial port 3 I/O port address is 2E8 |
| ➔ **338** | | Serial port 3 I/O port address is 338 |
| ➔ **238** | | Serial port 3 I/O port address is 238 |

➔ **Serial Port3 IRQ [11]**

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

- ➔ **5** Serial port 3 IRQ address is 5
- ➔ **11** **DEFAULT** Serial port 3 IRQ address is 11

➔ **Serial Port4 Address [2E8]**

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

- ➔ **Disabled** No base address is assigned to serial port 3
- ➔ **3E8** Serial port 4 I/O port address is 3E8
- ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8
- ➔ **338** Serial port 3 I/O port address is 338
- ➔ **238** Serial port 3 I/O port address is 238

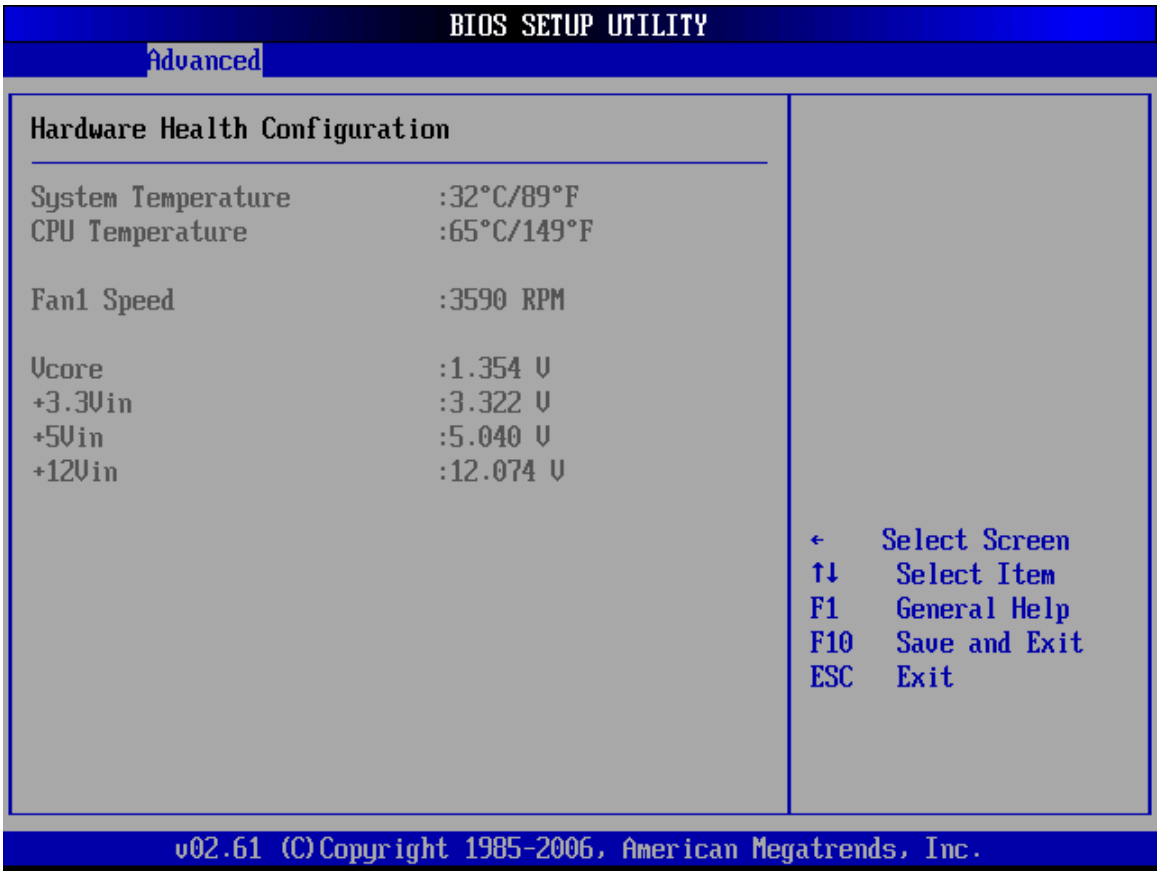
➔ **Serial Port4 IRQ [10]**

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

- ➔ **15** **DEFAULT** Serial port 4 IRQ address is 5
- ➔ **11** Serial port 4 IRQ address is 11

### 6.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 7**) shows the operating temperature, fan speeds and system voltages.




**BIOS Menu 7: Hardware Health Configuration**

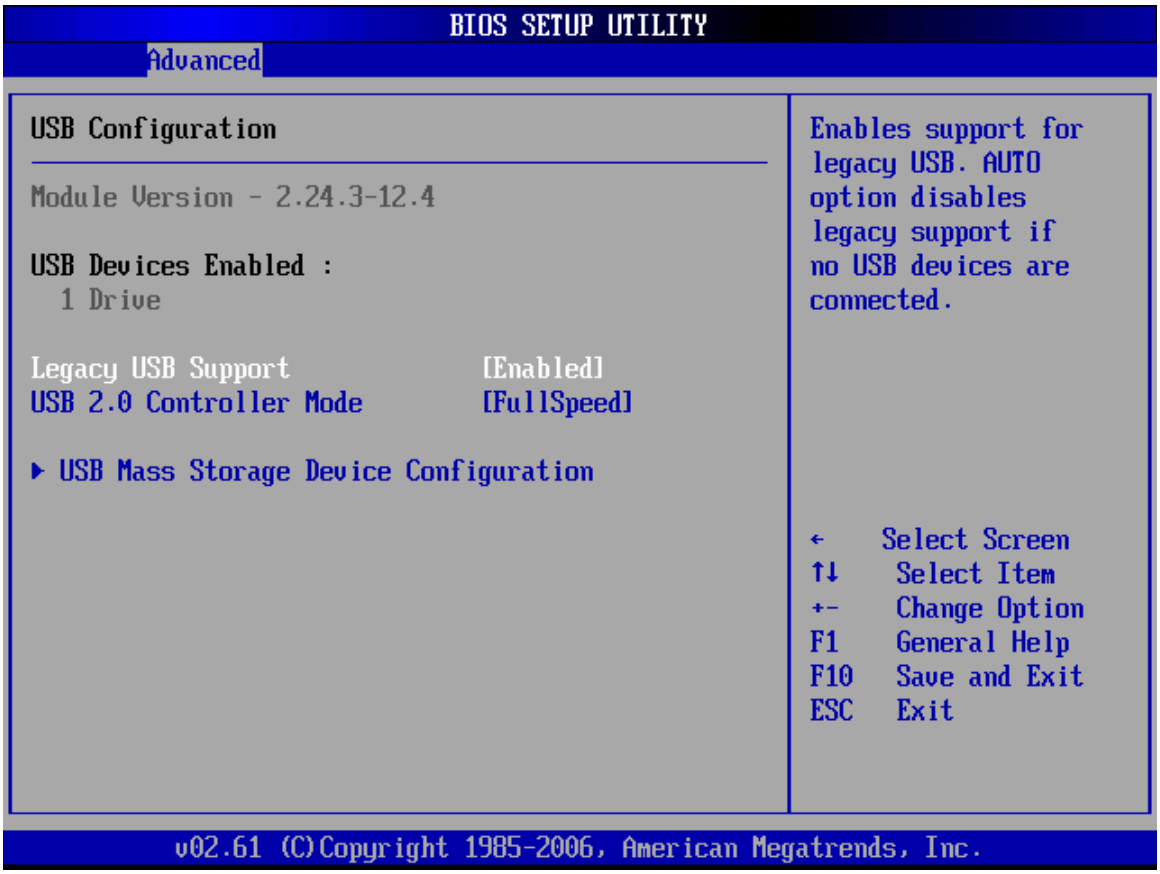
The following system parameters and values are shown. The system parameters that are monitored are:

- **System Temperatures**: The following system temperatures are monitored
  - CPU Temperature
  - System Temperature
- **Fan Speeds**: The CPU cooling fan speed is monitored.
  - CPU Fan Speed
  - System Fan Speed
- **Voltages**: The following system voltages are monitored
  - CPU Core
  - +3.30Vin
  - +5.0Vin

- +12Vin

### 6.3.5 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 8**) to read USB configuration information and configure the USB settings.




**BIOS Menu 8: USB Configuration**

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

The Onboard **SiS USB1.1 DEVICE** BIOS option enables or disables the onboard SiS USB1.1 controller. If disabled, USB1.1 devices cannot be used on the system.

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

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

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

The Onboard **SiS USB2.0 DEVICE** BIOS option enables or disables the onboard SiS USB2.0 controller. If disabled, USB2.0 devices cannot be used on the system.

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

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

➔ **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 [HiSpeed]**

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

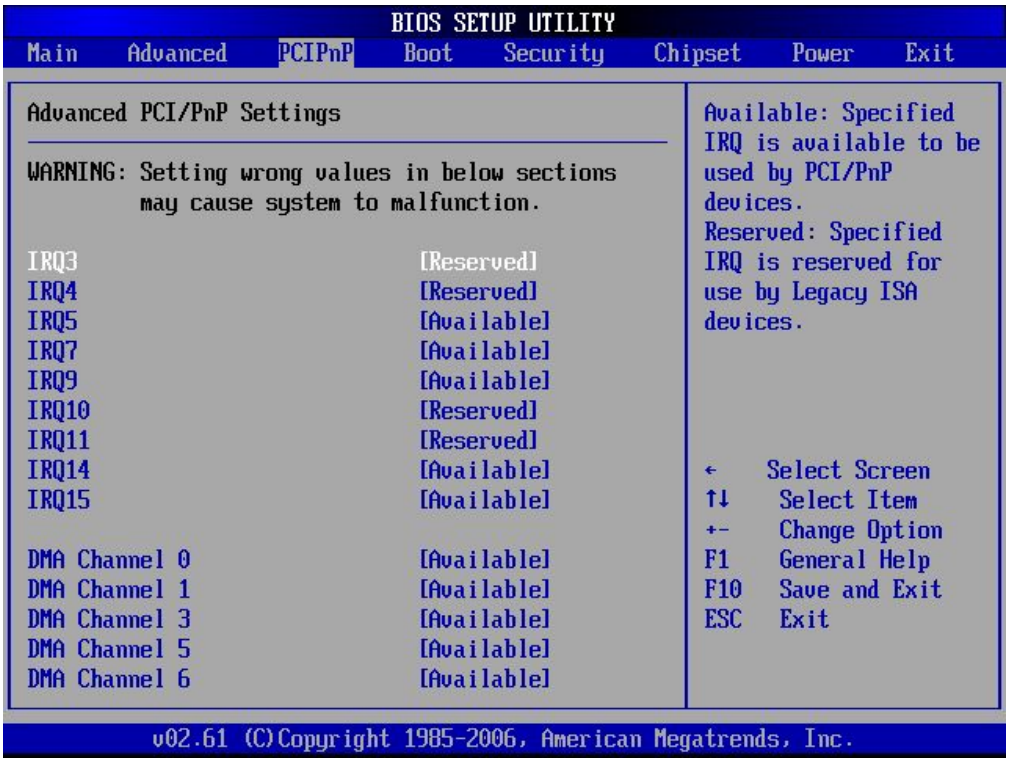
➔ **HiSpeed** The controller is capable of operating at 480Mb/s

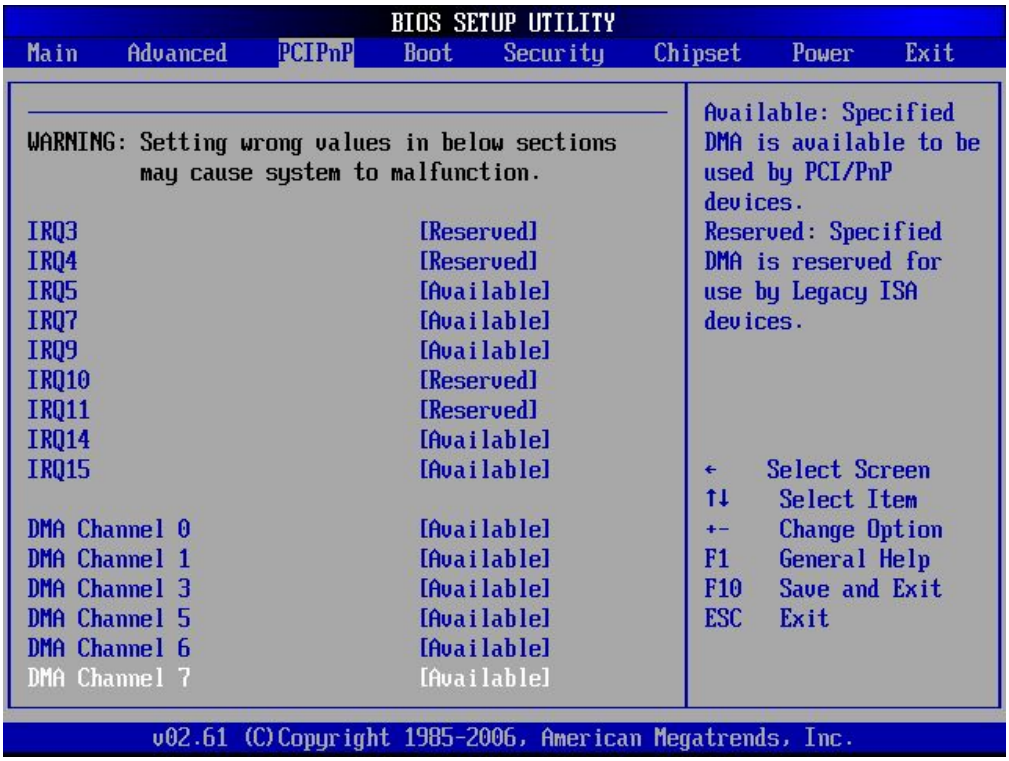
## 6.4 PCI/PnP

Use the PCI/PnP menu (BIOS Menu 9) 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 9: PCI/PnP Configuration**

➔ **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.

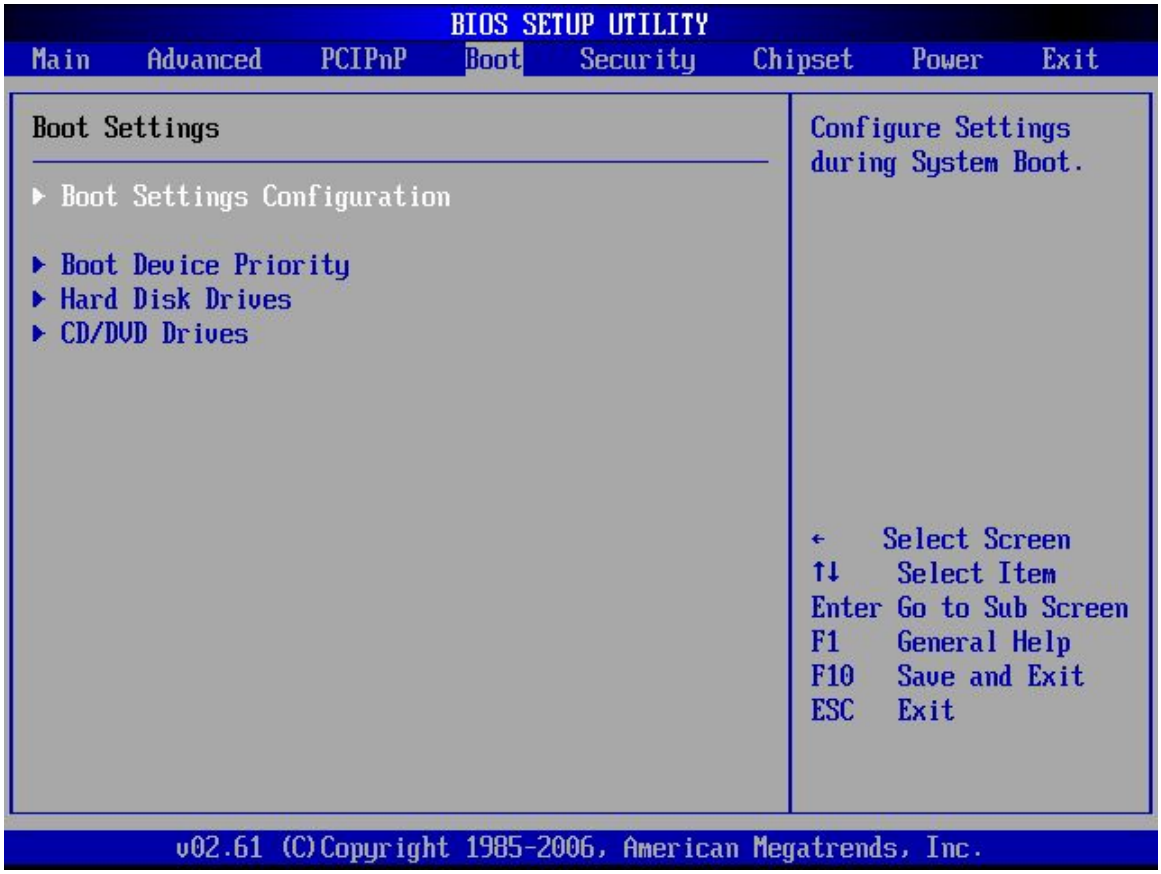
| | | |
|---|---|---|
| ➔ **Available** | **DEFAULT** | The specified DMA is available to be used by PCI/PnP devices |
| ➔ **Reserved** | | The specified DMA is reserved for use by Legacy ISA devices |

Available DMA Channels are:

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

## 6.5 Boot

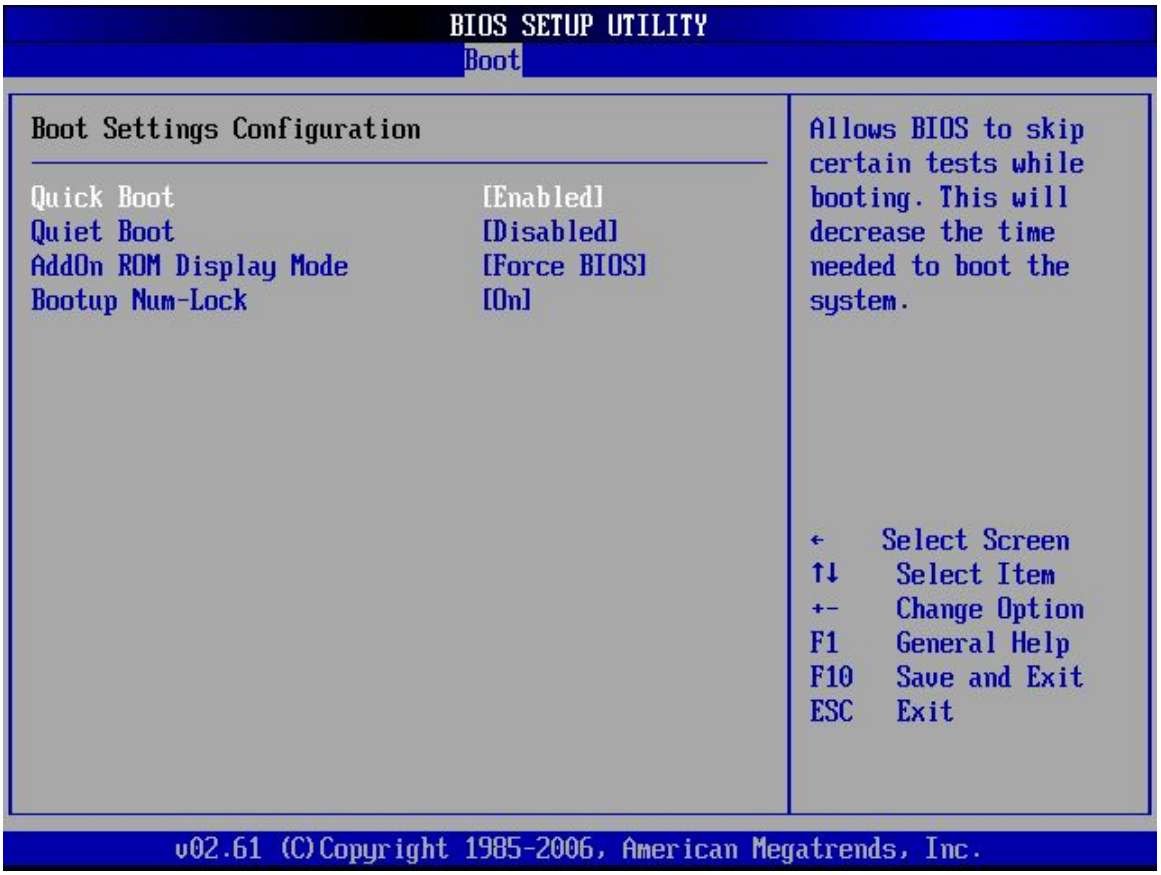
Use the Boot menu (BIOS Menu 10) to configure system boot options.




**BIOS Menu 10: Boot**

### 6.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (BIOS Menu 10) to configure advanced system boot options.




**BIOS Menu 11: 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]**

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

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

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

➔ **Bootup Num-Lock [Off]**

The **Bootup Num-Lock** BIOS option allows the Number Lock setting to be modified during boot up.

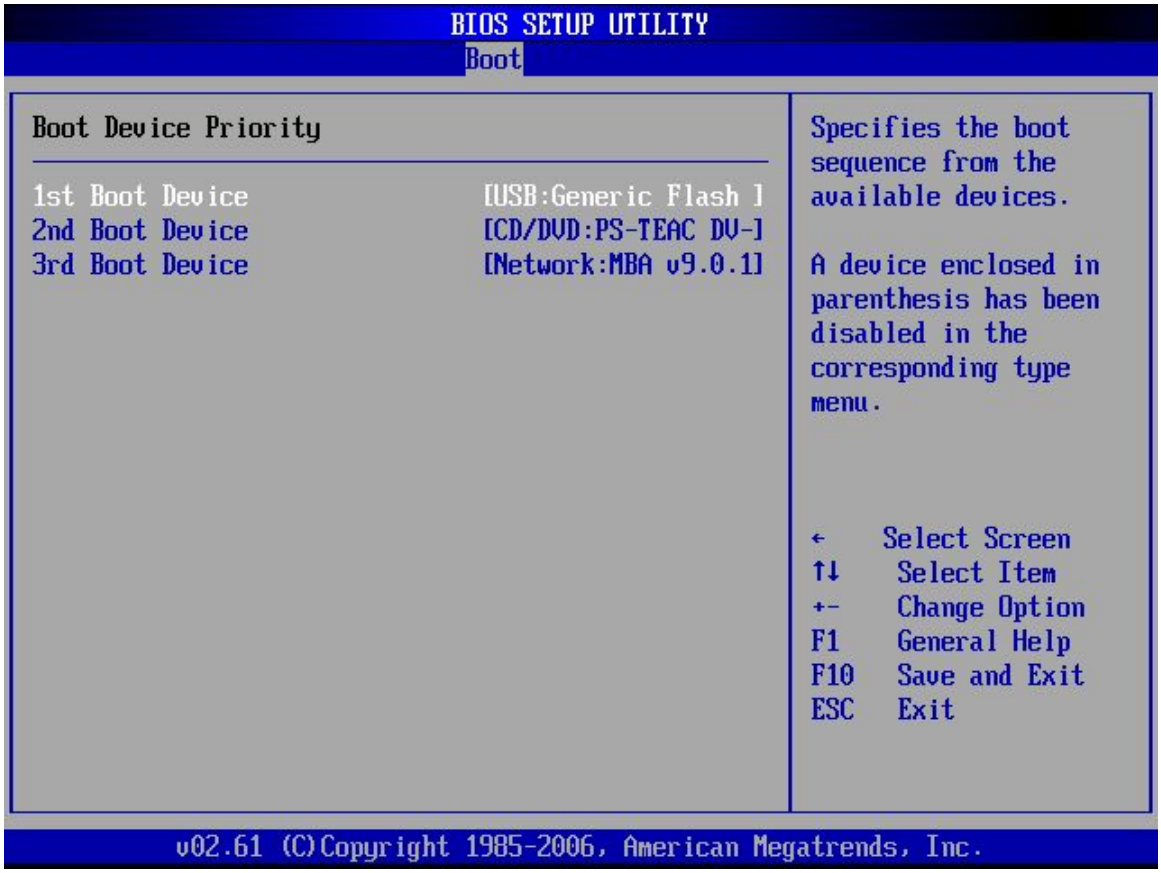
➔ **Off** **DEFAULT** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** 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.

### 6.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (**BIOS Menu 12**) to specify the boot sequence from the available devices. The following options are available:

- 1st Boot Device
- 2nd Boot Device
- 3rd Boot Device
-




**BIOS Menu 12: Boot Device Priority Settings**

### 6.5.3 Hard Disk Drives

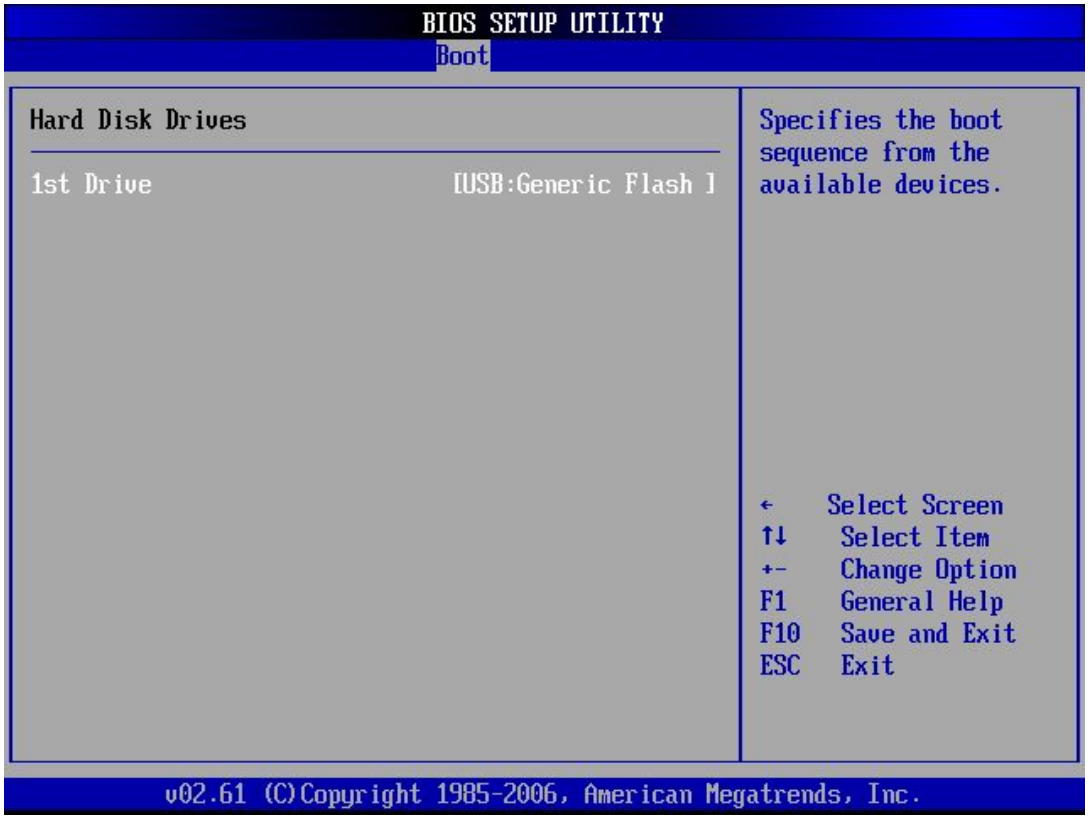
Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

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

**NOTE:**

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

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




**BIOS Menu 13: Hard Disk Drives**

### 6.5.4 CD/DVD Drives

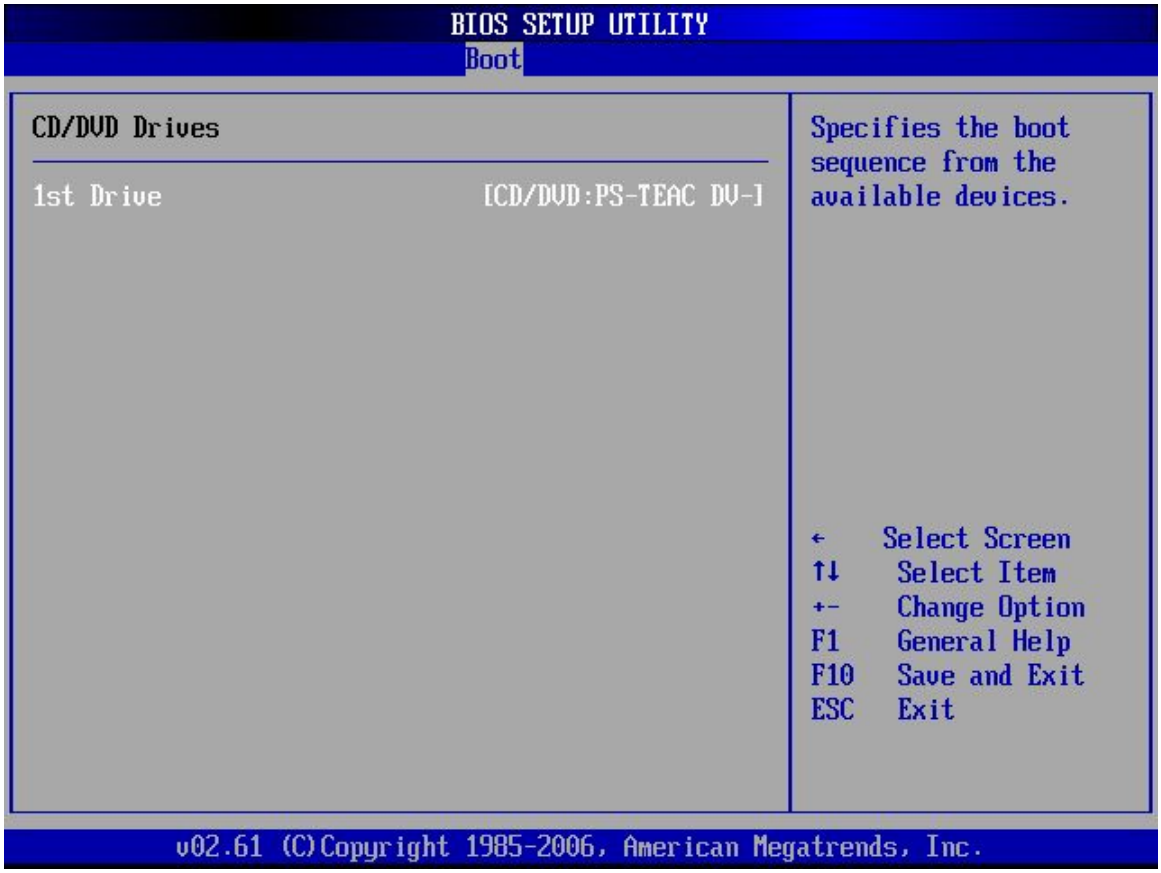
Use the **CD/DVD Drives** menu to specify the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

- 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.

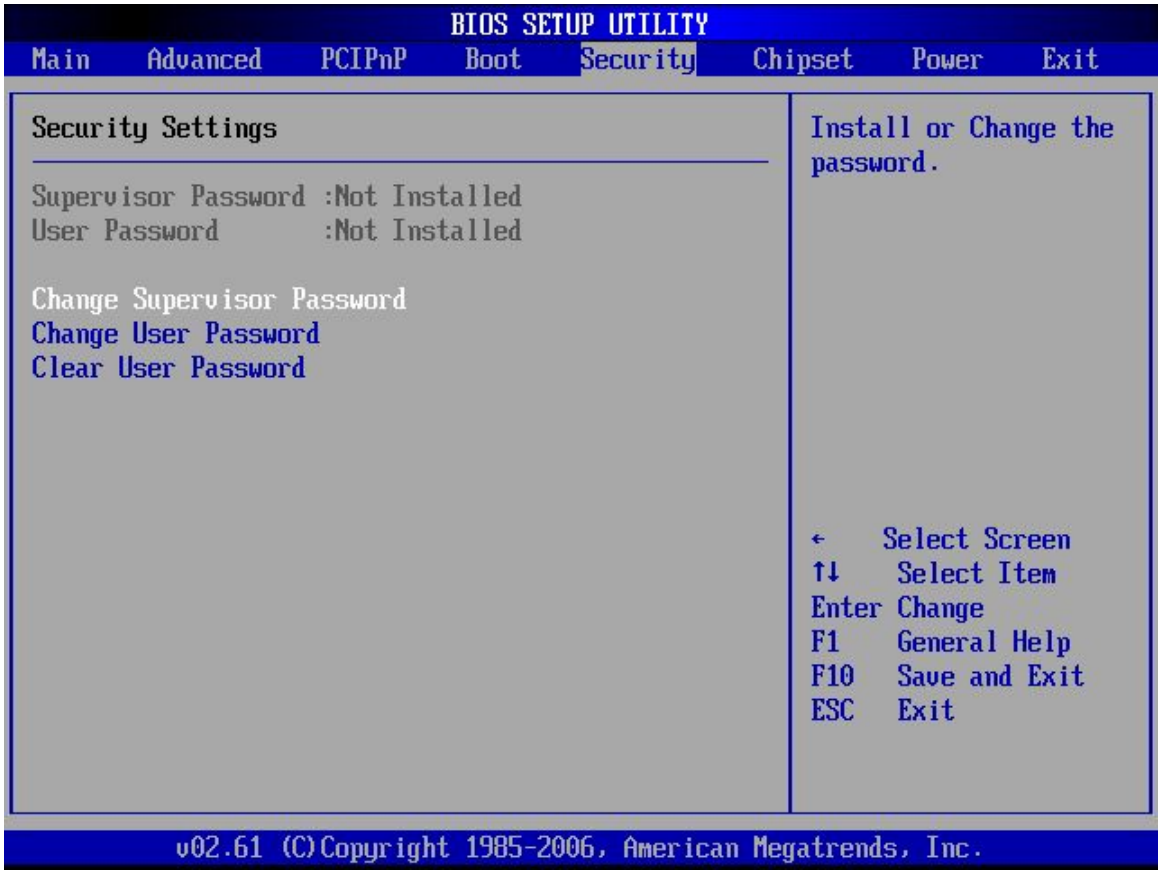
The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available CD/DVD drives is shown. Select the first CD/DVD drive the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.




**BIOS Menu 14: CD/DVD Drives**

## 6.6 Security

Use the Security menu (BIOS Menu 15) to set system and user passwords.




**BIOS Menu 15: 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**

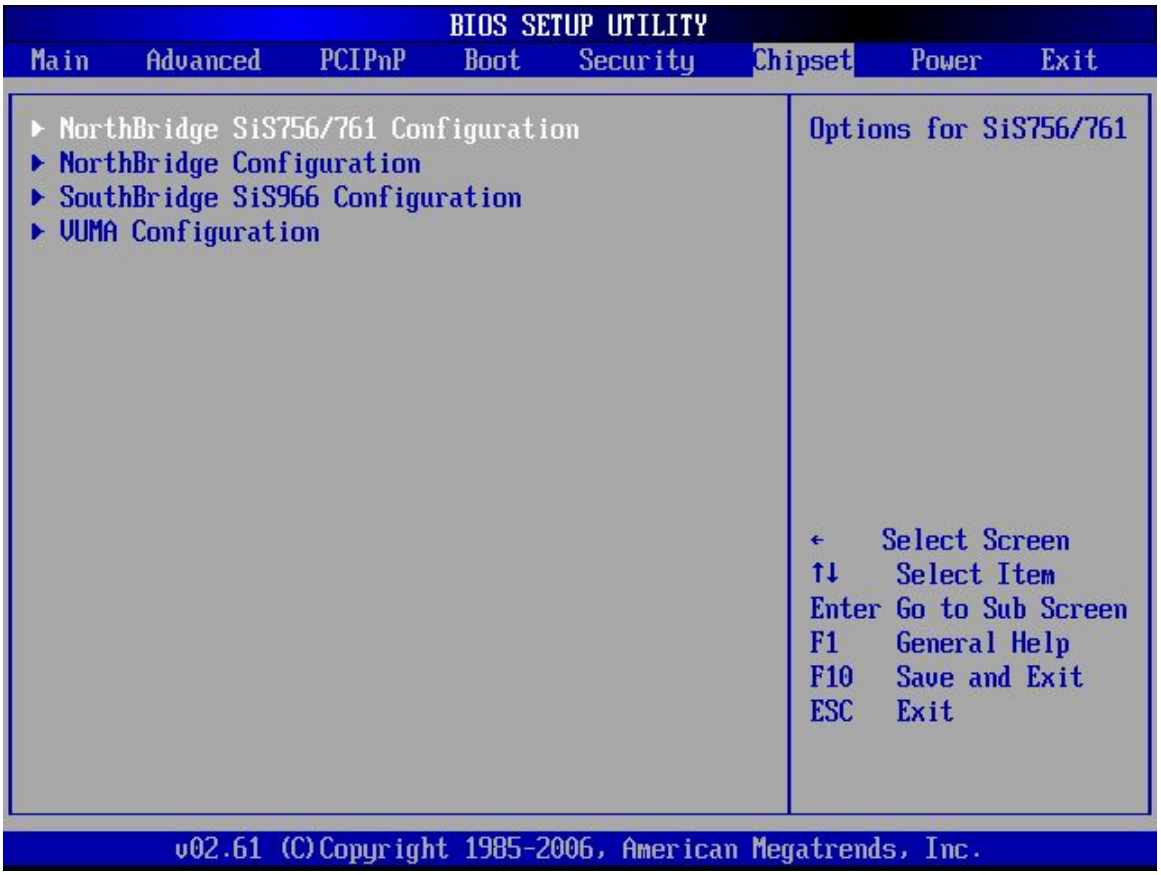
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

## 6.7 Chipset

Use the **Chipset** menu (**BIOS Menu 16**) to access the NorthBridge and SouthBridge configuration menus

**WARNING!**

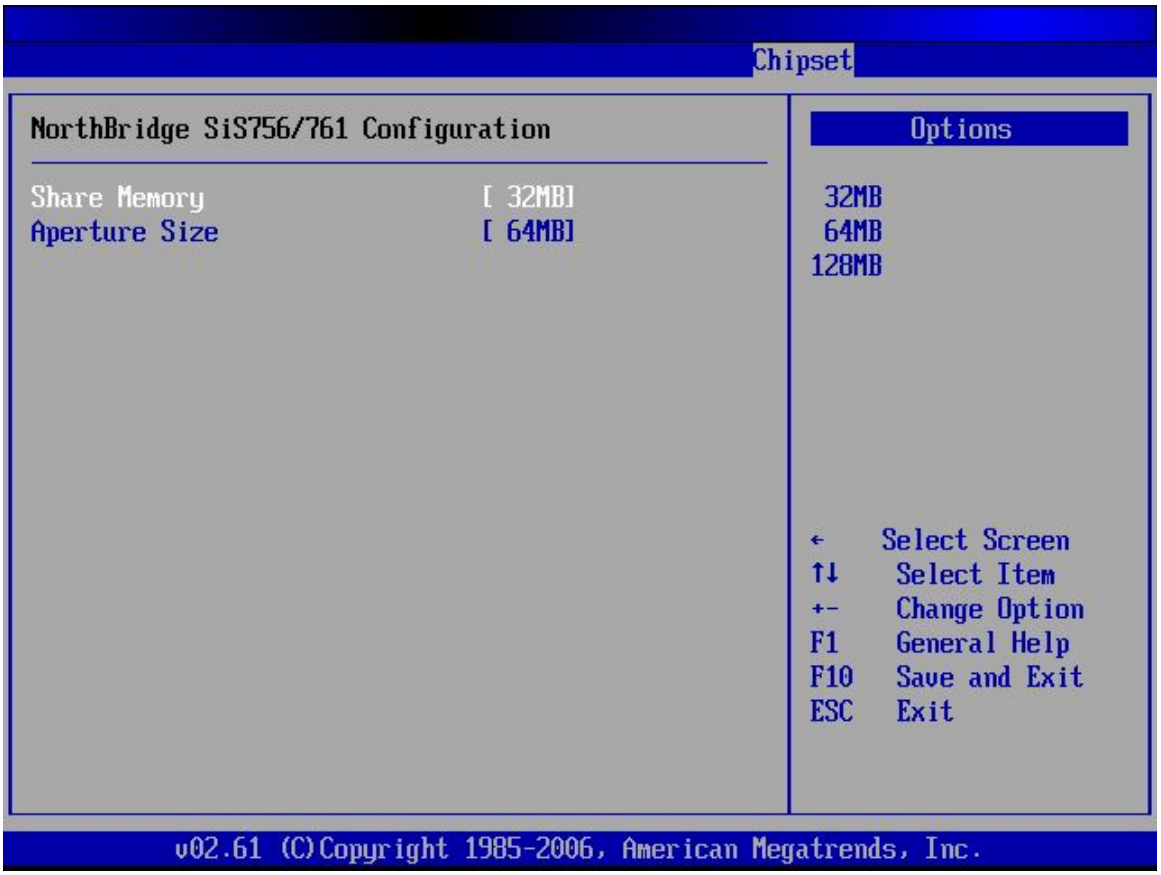
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.




**BIOS Menu 16: Chipset**

### 6.7.1 NorthBridge SiS756/761 Chipset Configuration

Use the **NorthBridge SiS756/761 Chipset Configuration** menu (BIOS Menu 16) to configure the Northbridge chipset settings.




**BIOS Menu 17:NorthBridge Chipset Configuration**

➔ **Primary Graphics Adapter [PCI]**

The **Primary Graphics Adapter** option selects the graphics adapter your system will use.

| | | |
|---|---|---|
| ➔ **PCI** | | PCI graphics adapter is used |
| ➔ **PCI Express Card** | **DEFAULT** | PCI Express Card graphics adapter is used |

➔ **Share Memory 32MB]**

The **Share Memory** BIOS feature allocates the maximum amount of system memory to the integrated graphics processor. The options are:

- 32MB Default
- 64MB

- 128MB

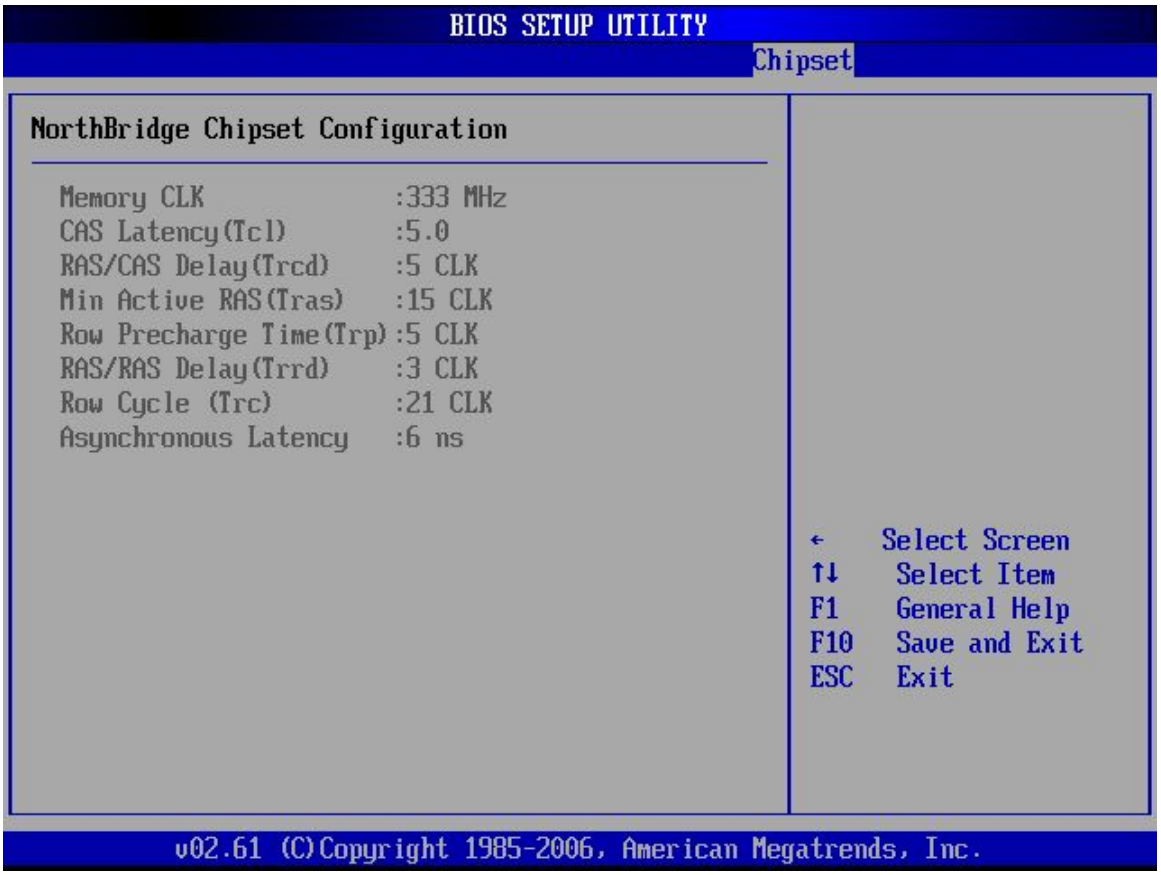
➔ **Aperture Size [64MB]**

The **Aperture Size** option selects the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated as graphics memory address space.

| | | | |
|---|---|---|---|
| ➔ | **32MB** | | Graphics aperture size set as 32MB |
| ➔ | **64MB** | **DEFAULT** | Graphics aperture size set as 64MB |
| ➔ | **128MB** | | Graphics aperture size set as 128MB |
| ➔ | **256MB** | | Graphics aperture size set as 256MB |
| ➔ | **512MB** | | Graphics aperture size set as 512MB |

### 6.7.2 NorthBridge Chipset Configuration

Use the NorthBridge Chipset Configuration menu (BIOS Menu 16) to check the northbridge chipset settings.




**BIOS Menu 18:NorthBridge Chipset Configuration**

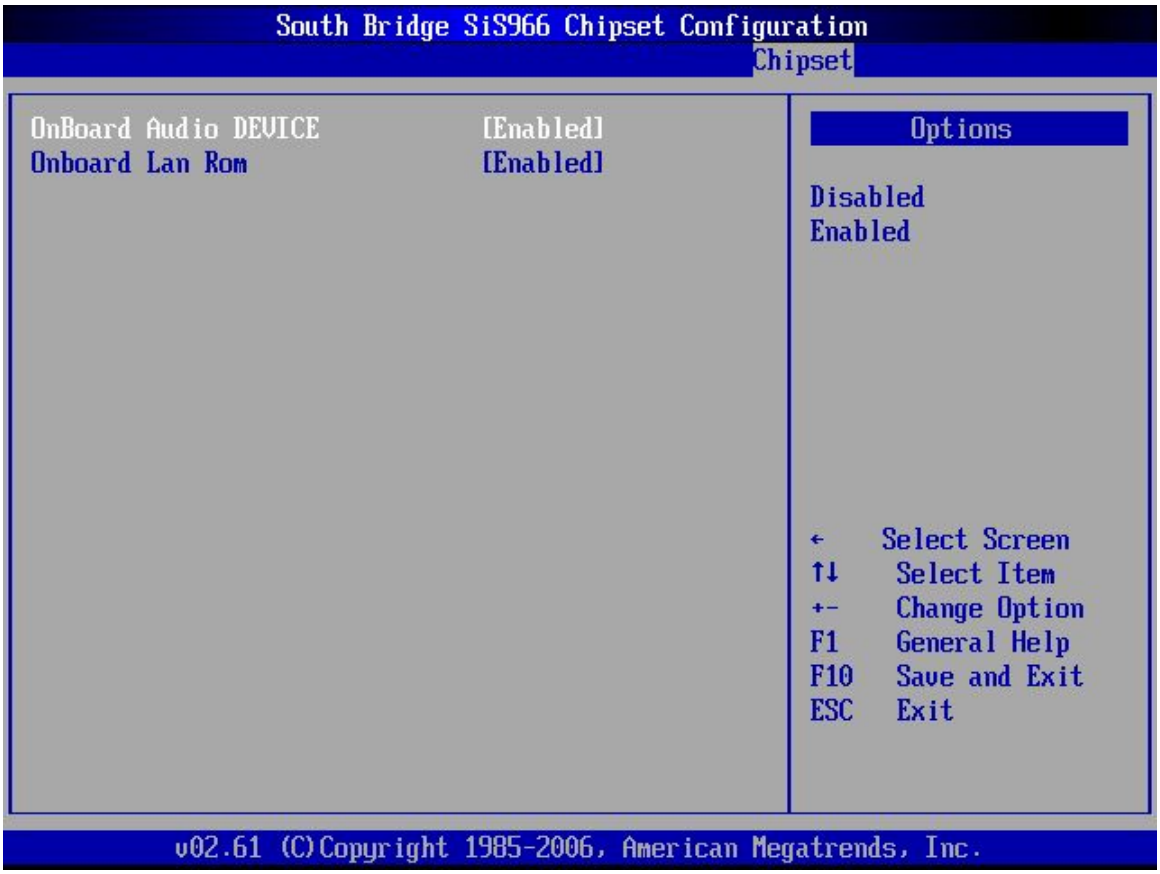
The NorthBridge Chipset configuration menu has no configurable options. The NorthBridge Chipset configuration menu shows the following Northbridge chipset settings:

- **Memory CLK**: Shows the speed of the memory controller
- **CAS (Latency)**: Specifies the Column Address Strobe (CAS) delay time
- **RAS/CAS Delay(Trcd):** Specifies the number of clock cycles that must elapse between sending a RAS (row address strobe) signal and the CAS (column address strobe) signal.
- **Min Active RAS (Tras)**: Specifies the speed at which the RAM terminates the access of one row and start accessing another.
- **Row Precharge Time(Trp)**: Specifies the length of the delay between the activation and precharge commands for the RAS signal.
- RAS/RAS Delay(Trrd):

- Row Cycle (Trc):
- Asynchronous Latency:

### 6.7.3 SouthBridge Configuration

The **SouthBridge Configuration** menu (BIOS Menu 19) the southbridge chipset to be configured.




**BIOS Menu 19:SouthBridge Chipset Configuration**

➔ **Onboard Audio Device**

Use the **Onboard Audio Device** option to enable or disable the AC'97 CODEC.

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

➔ **Auto** (Default) The onboard AC'97 automatically detected and enabled

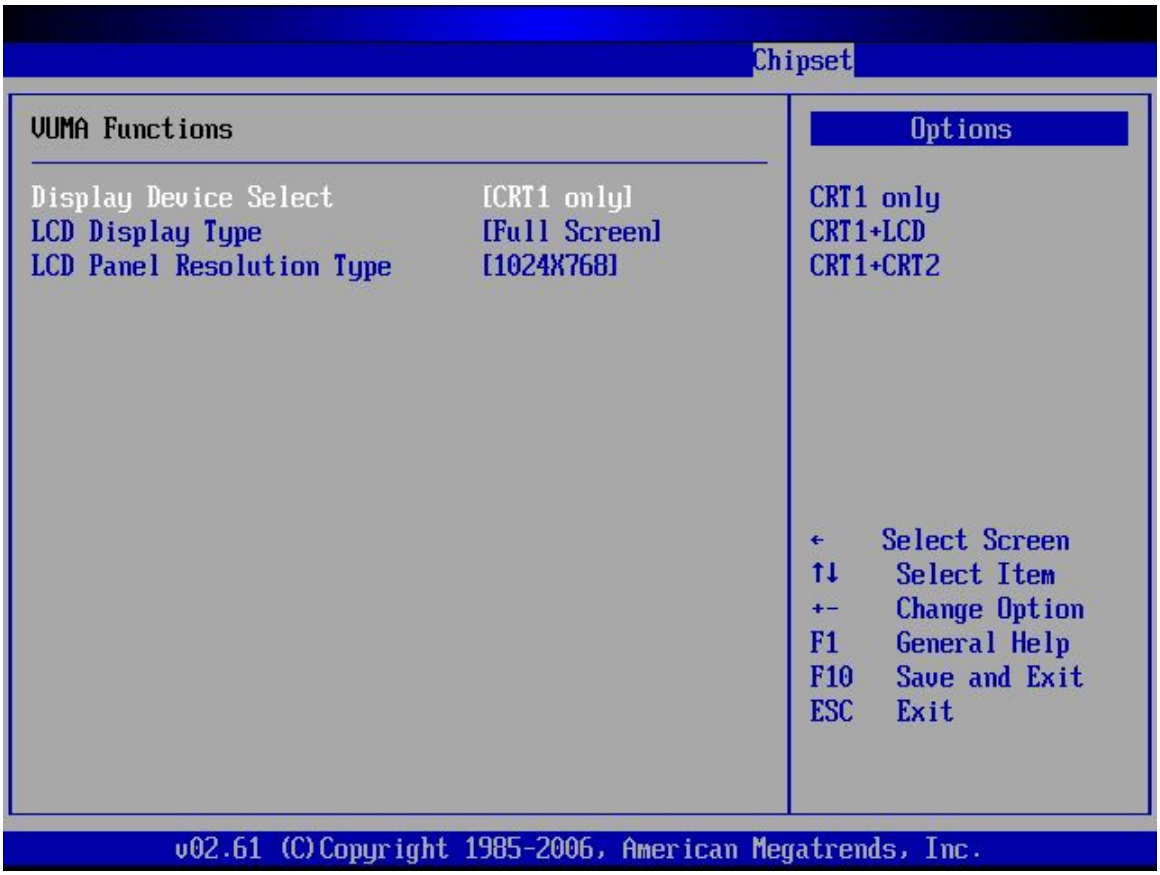
➔ **OnBoard Lan Rom [Enabled]**

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

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

### 6.7.4 VUMA Functions

Use **VUMA Functions** menu (BIOS Menu 19) to set the display options for the system.




**BIOS Menu 20:SouthBridge Chipset Configuration**

➔ **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

➔ **LCD Display Type [Full Screen]**

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

- Full Screen **DEFAULT**
- Center Screen

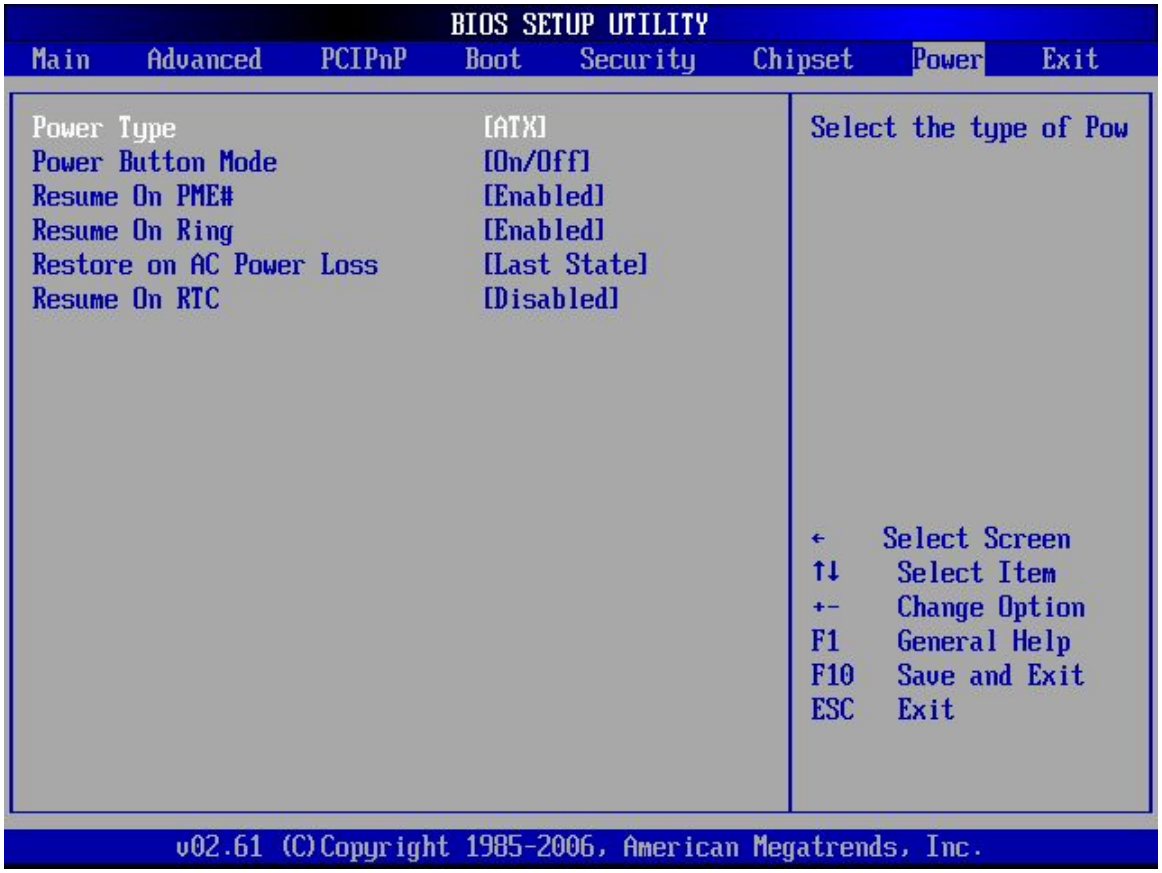
➔ **LCD Panel Resolution Type**

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

- 1024 x 768
- 1280 x 1024
- 1440 x 900
- 1920 x 1200
- 1280 x 854
- 1400 x 1050
- 1280 x 768
- 1600 x 1200
- 1280 x 800

## 6.8 Power

The **Power** menu (**BIOS Menu 21**) allows the advanced power management options to be configured.




**BIOS Menu 21:Power**

➔ **Power Supply Mode [ATX]**

Use the **Power Supply Mode** BIOS option to select the power supply that is connected to the system.

| | | |
|---|---|---|
| ➔ **AT** | | An AT power supply is connected to the system |
| ➔ **ATX** | **DEFAULT** | An ATX power supply is connected to the system |

➔ **Power Button Mode [On/Off]**

The **Power Button Mode** BIOS specifies how the power button functions.

| | | |
|---|---|---|
| ➔ **On/Off** | **DEFAULT** | When the power button is pressed the system is either turned on or off |
| ➔ **Standby** | | When the power button is pressed the system goes into standby mode |
| ➔ **Suspend** | | When the power button is pressed the system goes into suspend mode |

➔ **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 |

➔ **Resume on Ring [Disabled]**

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

| | | |
|---|---|---|
| ➔ **Disabled** | **DEFAULT** | Wake event not generated by an incoming call |
| ➔ **Enabled** | | Wake event generated by an incoming call |

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

The Restore on AC Power Loss BIOS option specifies 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. |

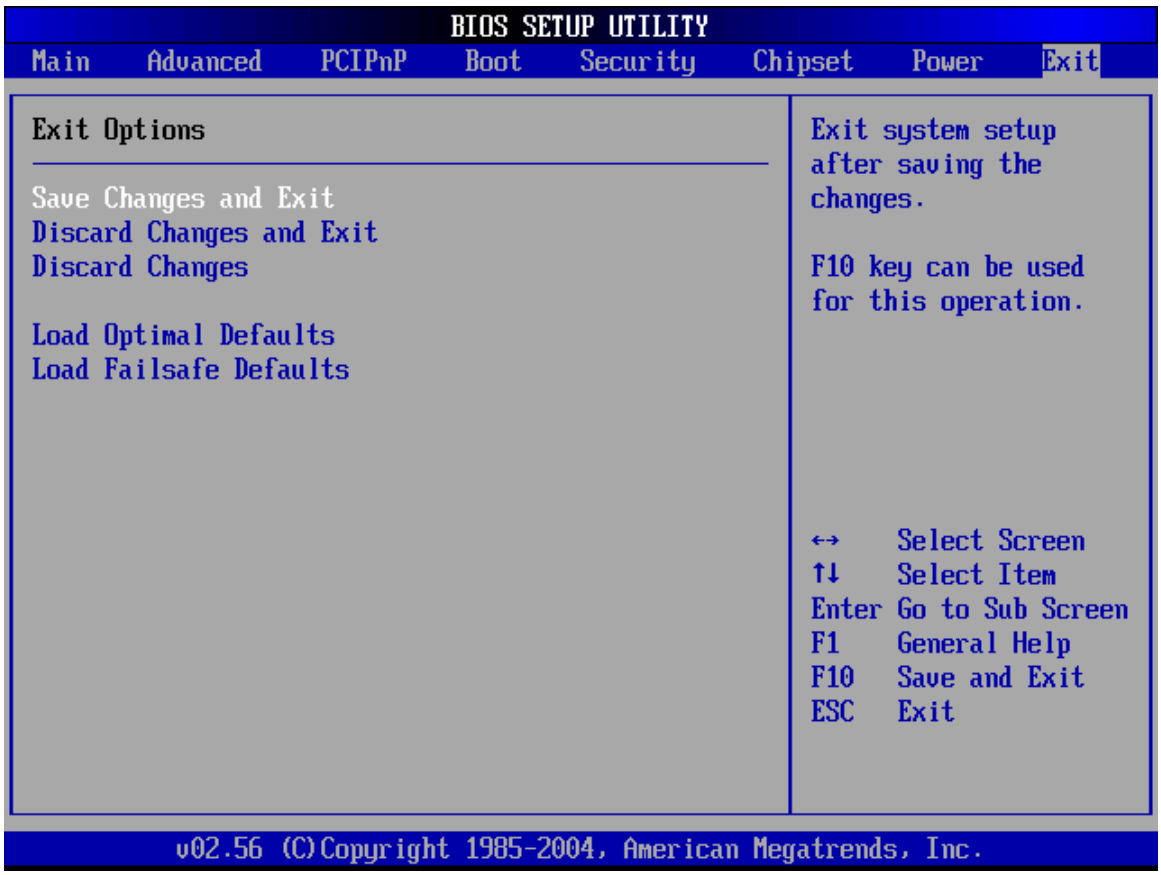
➔ **Resume On RTC Alarm [Disabled]**

The **Resume On RTC Alarm** determines when the computer will be roused from a suspended state.

| | | |
|---|---|---|
| ➔ **Disabled** | **DEFAULT** | The real time clock (RTC) cannot generate a wake event |
| ➔ **Enabled** | | If selected, the following will appear with values that can be selected:<br>➔ **RTC Alarm Date (Days)**<br>➔ **System Time**<br>After setting the alarm, the computer will turn itself on from a suspend state when the alarm goes off. |

## 6.9 Exit

Use the **Exit** menu (**BIOS Menu 22**) to load default BIOS values, optimal failsafe values and to save configuration changes.




**BIOS Menu 22: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

7

# Software Drivers

## 7.1 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. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- SiS AGP
- VGA
- SIS-IDE
- AUDIO
- LAN

Installation instructions are given below.

## 7.2 Driver CD Auto-run

All the drivers for the KINO-761AM2 are on the CD that came with the system. To install the drivers, please follow the steps below.

**Step 1:** Insert the CD into a CD drive connected to the system.

**NOTE:**

If the system does not initiate the "autorun" program when the CD is inserted, click the **Start** button, select **Run**, then type **X:\autorun.exe** (where **X:** is the system CD drive) to access the IEI Driver CD main menu.

**Step 2:** The driver main menu appears (Figure 7-1).

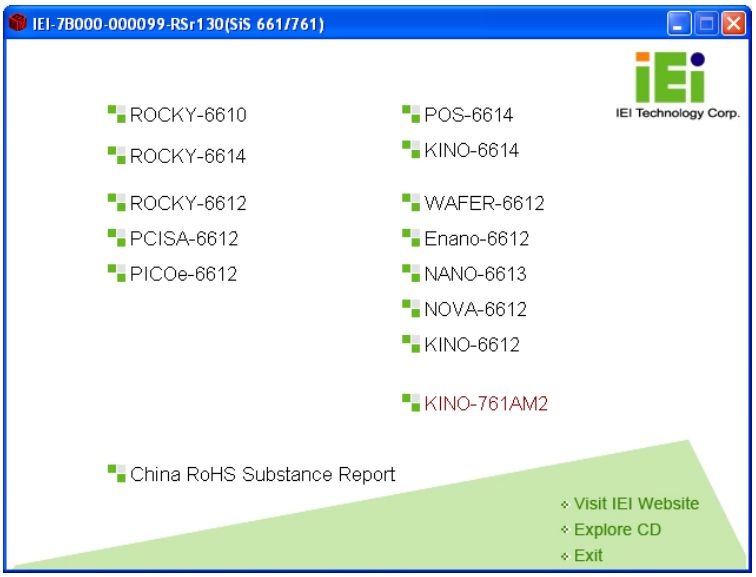


**Figure 7-1: Introduction Screen**

**Step 3:** Click KINO-761AM2.

**Step 4:** A new screen with a list of available drivers appears (Figure 7-2).


**Figure 7-2: Available Drivers**

**Step 5:** Select the driver to install from the list in **Figure 7-2**. Detailed driver installation instructions follow below.

## 7.3 SIS AGP (GRAT) Driver Installation

To install the SiS AGP driver, please follow the steps below.

**Step 1:** Select **SIS-AFP(GRAT)** from the list in **Figure 7-2**.

**Step 2:** The window in **Figure 7-3** appears.

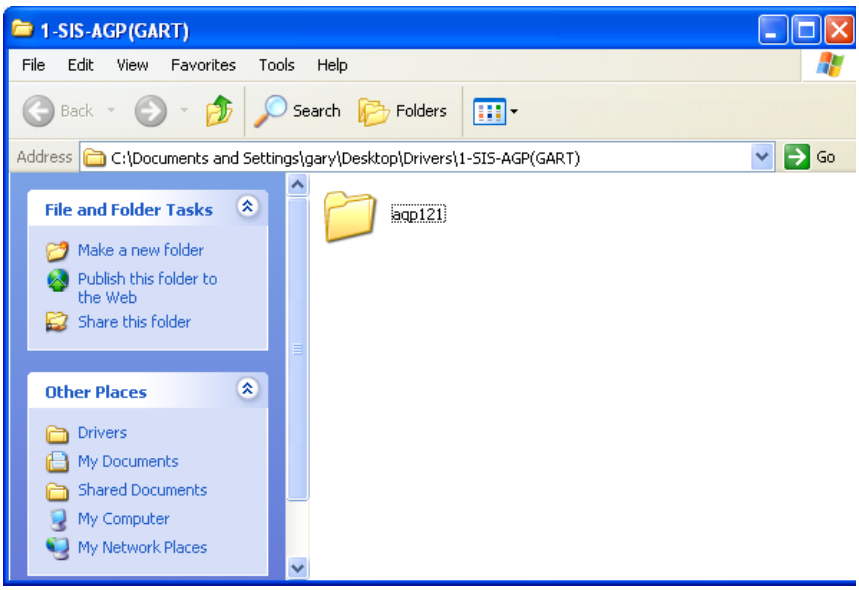


**Figure 7-3: AGP Driver Directory Icon**

**Step 3:** Double click the AGP121 directory icon.

**Step 4:** The window in **Figure 7-4** appears.

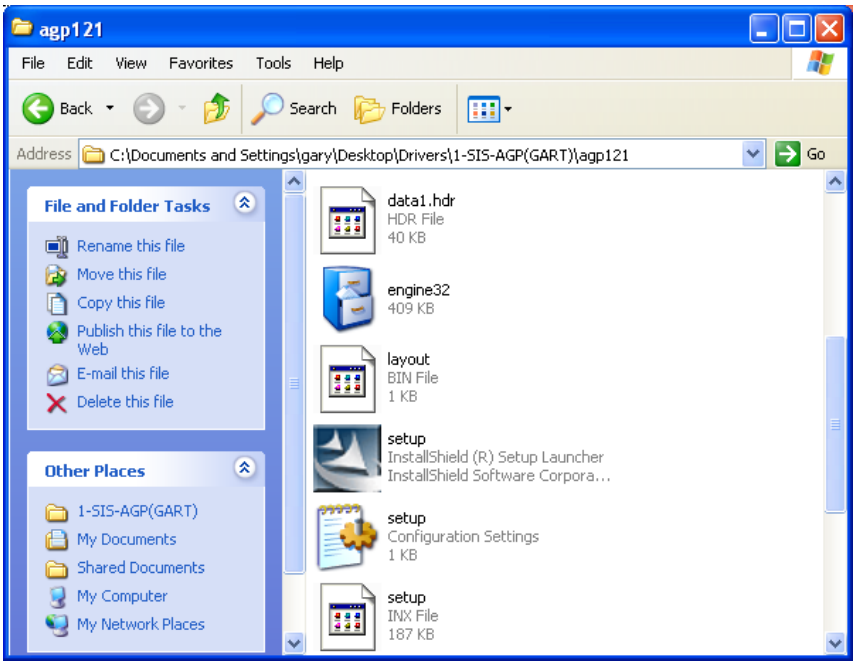


**Figure 7-4: AGP Driver Setup Icon**

**Step 5:** Double click the **Setup** icon in **Figure 7-4**.

**Step 6:** The InstallShiel Wizard prepares the setup. See **Figure 7-5**.

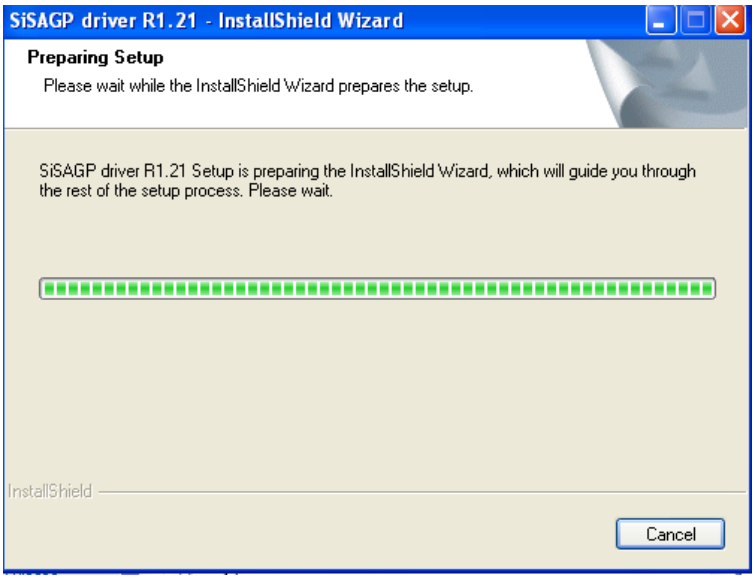


**Figure 7-5: AGP Driver InstallShield Wizard Initialization**

**Step 7:** The SISAGP window in appears. Click **Next** to continue.

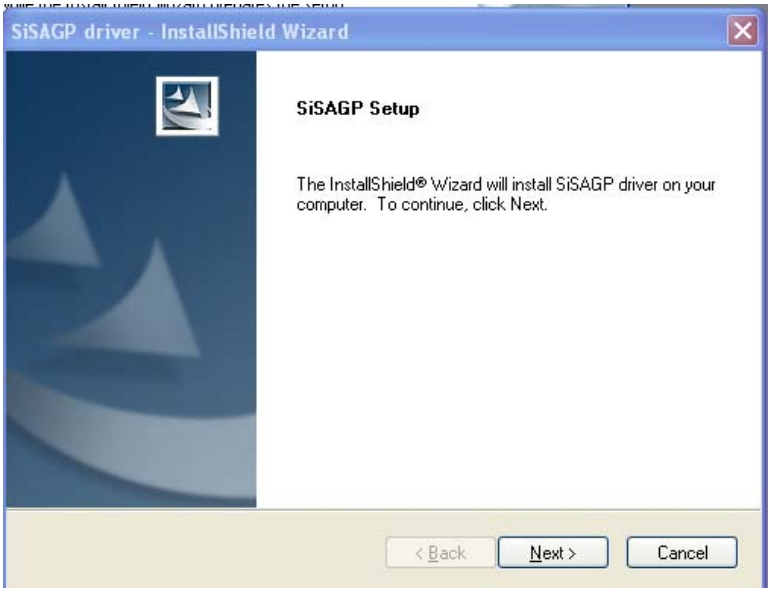


**Figure 7-6: AGP Driver InstallShield Wizard Initialization**

**Step 8:** The installation of the AGP driver is initiated and the progress screen in **Figure 7-7** appears.

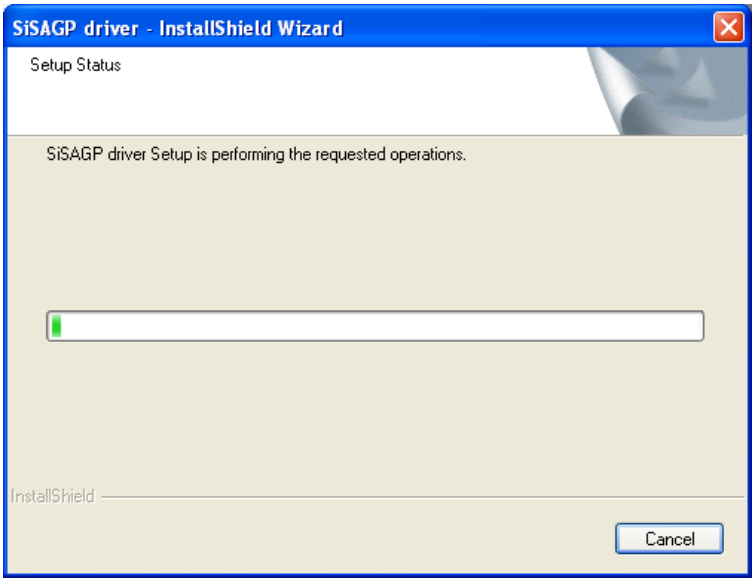


**Figure 7-7: AGP Driver Installation Progress**

**Step 9:** When the AGP driver is installed, the completion screen in **Figure 7-8** appears.


**Figure 7-8: AGP Driver Installation Complete**

**Step 10:** To enable the program, click **Finish** to restart the computer.

## 7.4 SiS VGA Driver Installation

To install the SiS AGP driver, please follow the steps below.

**Step 1:** Select **VGA** from the list in **Figure 7-2**.

**Step 2:** The window in **Figure 7-9** appears.

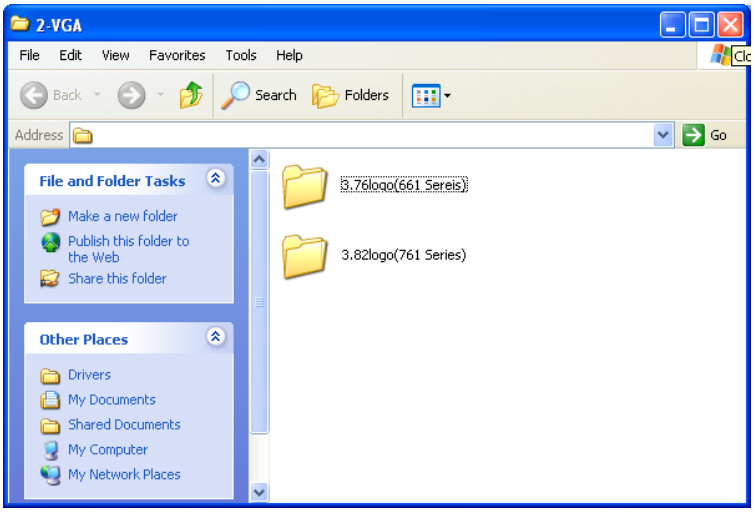


**Figure 7-9: VGA Driver Directory**

**Step 3:** Click the **Logo (761 Series)** directory icon.

**Step 4:** The screen in **Figure 7-10** appears.

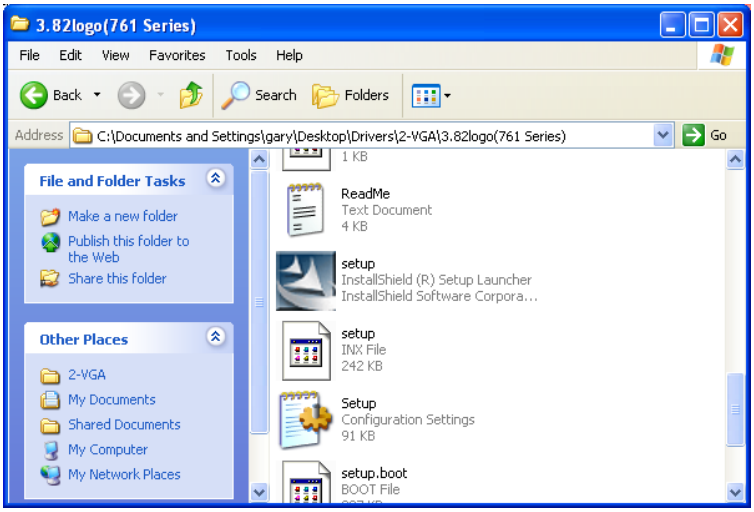


**Figure 7-10: VGA Driver Setup**

**Step 5:** Click on the **Setup** icon in **Figure 7-10**.

**Step 6:** The program prepares for setup as shown in **Figure 7-11**.

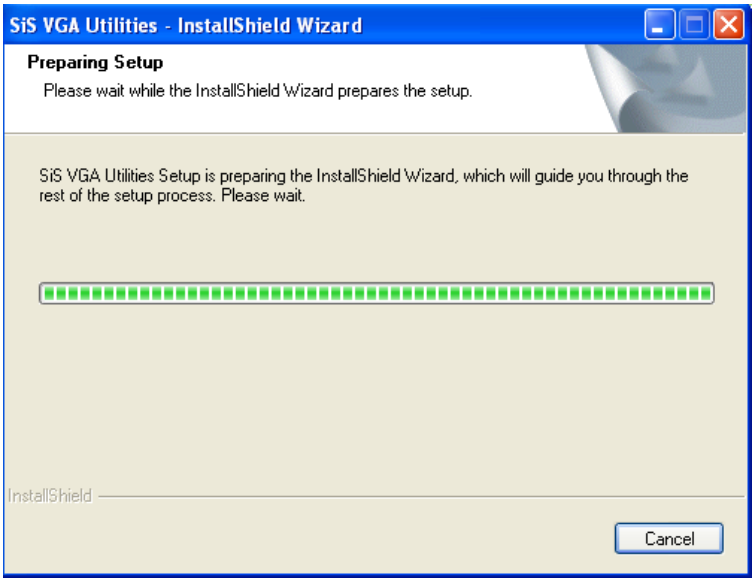


**Figure 7-11: VGA Driver Preparing for Setup**

**Step 7:** The **Welcome** screen in appears.

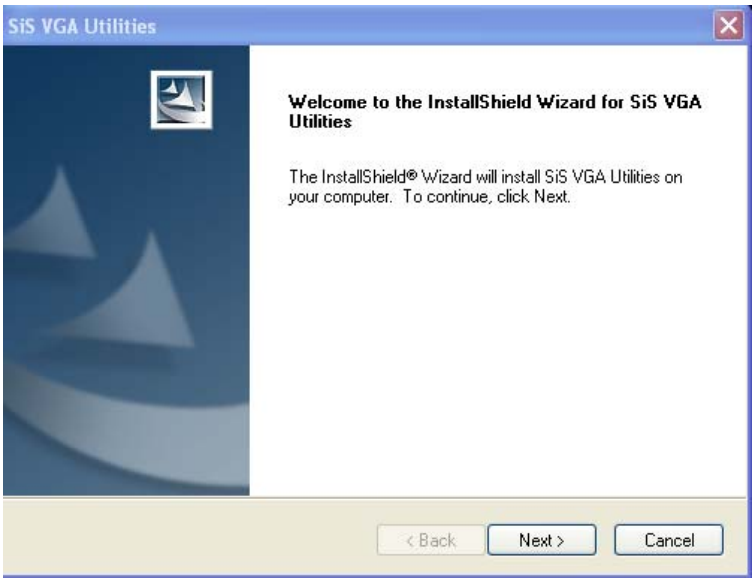


**Figure 7-12: VGA Driver Welcome Screen**

**Step 8:** Click **Next** to continue.

**Step 9:** The screen in **Figure 7-13** appears.

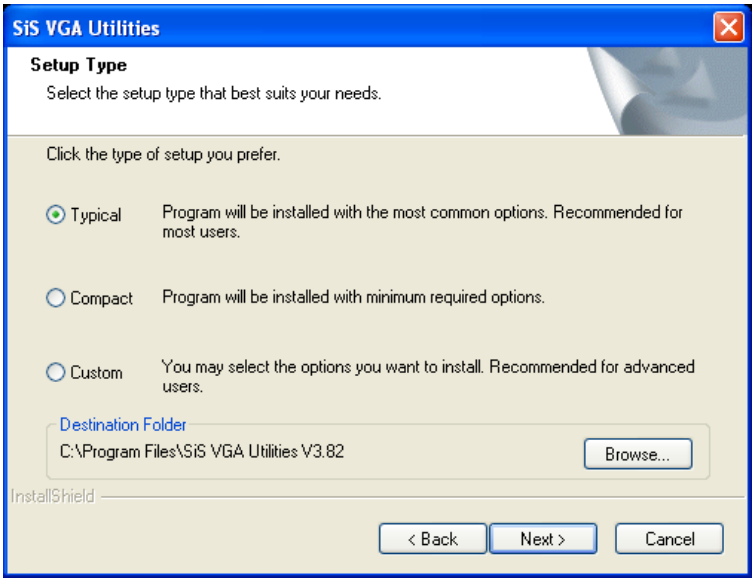


**Figure 7-13: VGA Driver Installation Options**

**Step 10:** Select the type of installation from the options shown in the screen in **Figure 7-13**

**Step 11:** Click **Next** to continue.

**Step 12:** The screen in **Figure 7-14** appears.

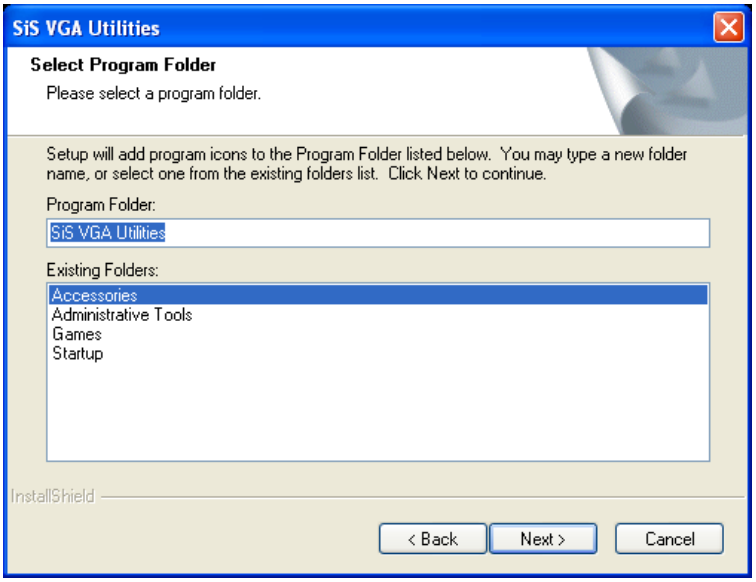


**Figure 7-14: VGA Driver Program Folder Select**

**Step 13:** Select the folder the driver should be stored in from the folders shown in in **Figure 7-14**.

**Step 14:** The screen in **Figure 7-15** appears.

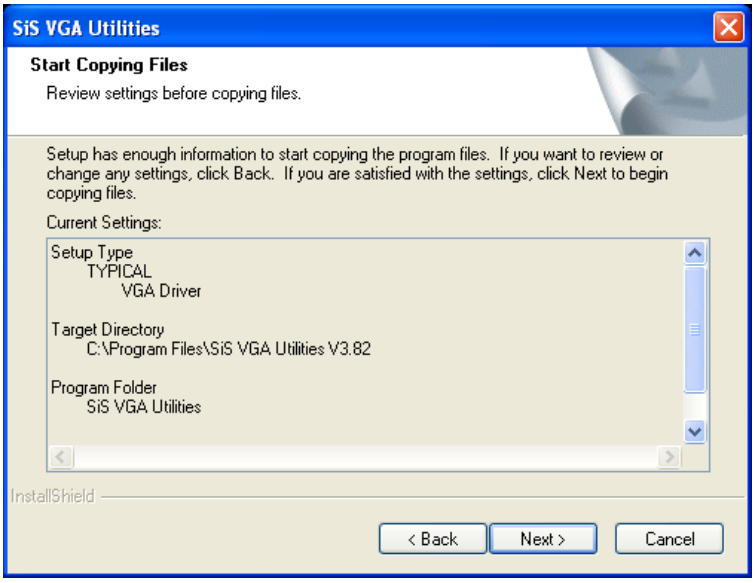


**Figure 7-15: VGA Start Copying Files**

**Step 15:** Click **Next** to continue.

**Step 16:** The driver begins to install and the progress screen in **Figure 7-16** appears.


**Figure 7-16: VGA Driver Installation Progress**

**Step 17:** When the installation is complete the screen in **Figure 7-17** appears

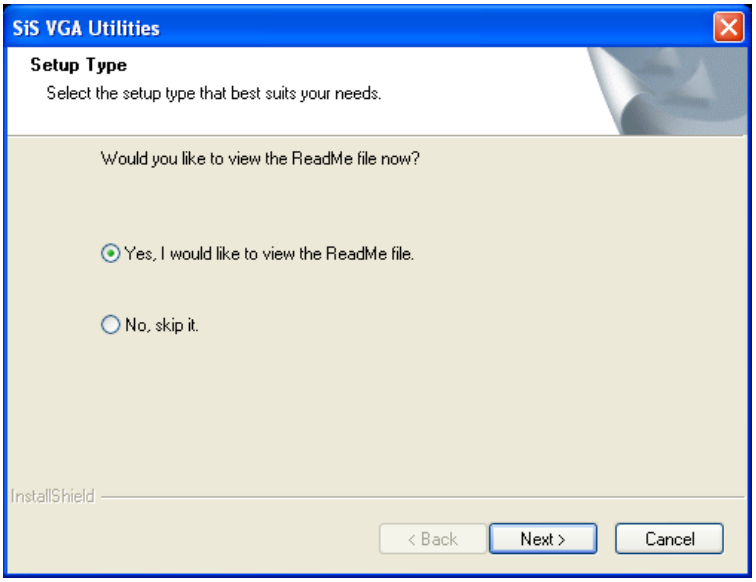


**Figure 7-17: VGA Driver ReadMe file**

**Step 18:** To complete installation, click **Next**.

**Step 19:** The installation complete screen in **Figure 7-18** appears.

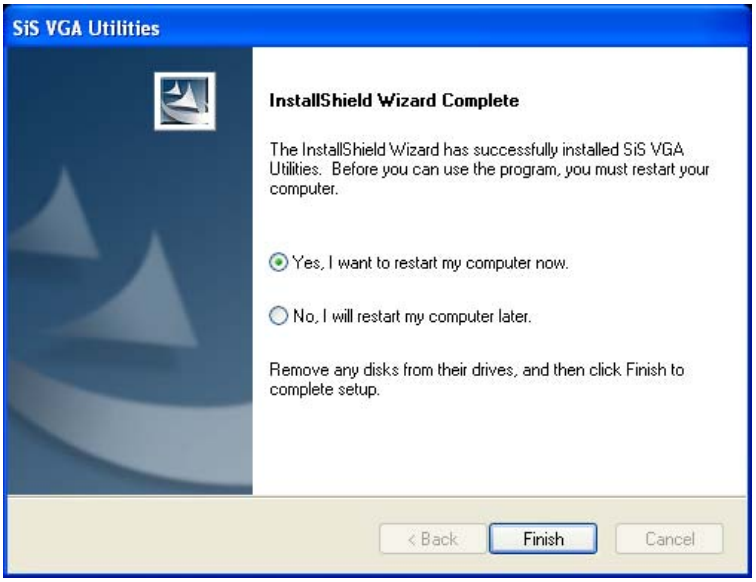


**Figure 7-18: VGA Driver Installation Complete**

**Step 20:** To enable the program, click **Finish** to restart the computer.

## 7.5 SiS IDE Driver Installation

To install the SiS IDE driver, please follow the steps below.

**Step 1:** Select **SIS-IDE** from the list in **Figure 7-2**.

**Step 2:** The screen in **Figure 7-19** appears.

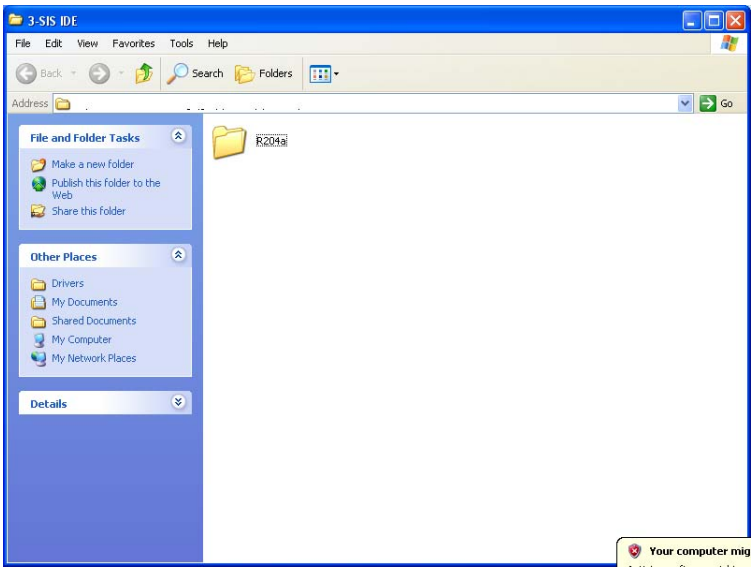


**Figure 7-19: IDE Driver Directory**

**Step 3:** Click on the directory icon in **Figure 7-19**.

**Step 4:** The screen in **Figure 7-20** appears.

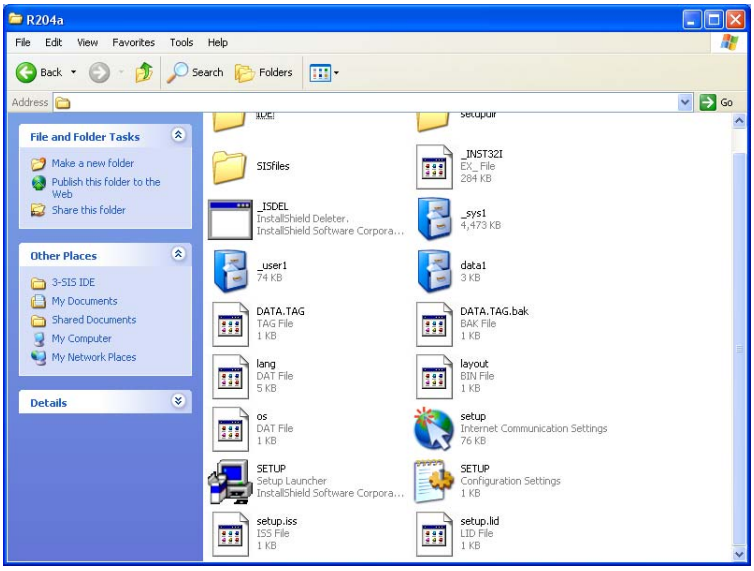


**Figure 7-20: IDE Driver Setup Icon**

**Step 5:** Click on the setup icon in **Figure 7-20**.

**Step 6:** The language option menu in **Figure 7-21** appears.


**Figure 7-21: IDE Driver Language Option Menu**

**Step 7:** Select a language from the menu in **Figure 7-21**. (English is used when describing the installation process below)

**Step 8:** The IDE driver **Welcome** screen in **Figure 7-22** appears.

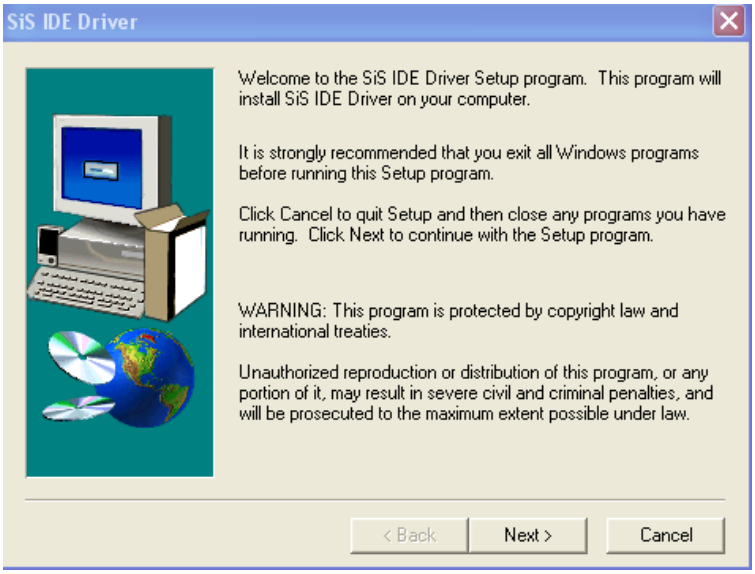


**Figure 7-22: IDE Driver Welcome Screen**

**Step 9:** Click **Next** to continue.

**Step 10:** The screen in **Figure 7-23** appears.

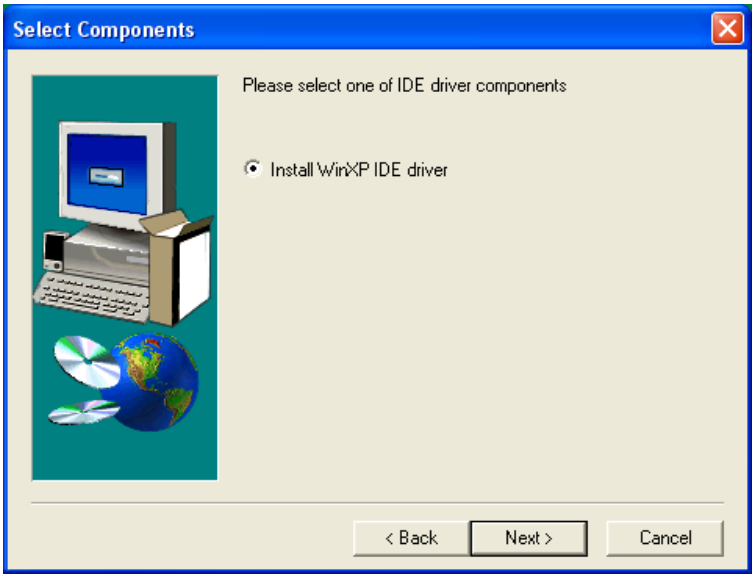


**Figure 7-23: IDE Driver Component Selection**

**Step 11:** Select the component to install and click **Next** to continue.

**Step 12:** The IDE driver is installed.

**Step 13:** The installation complete screen in **Figure 7-24** appears.

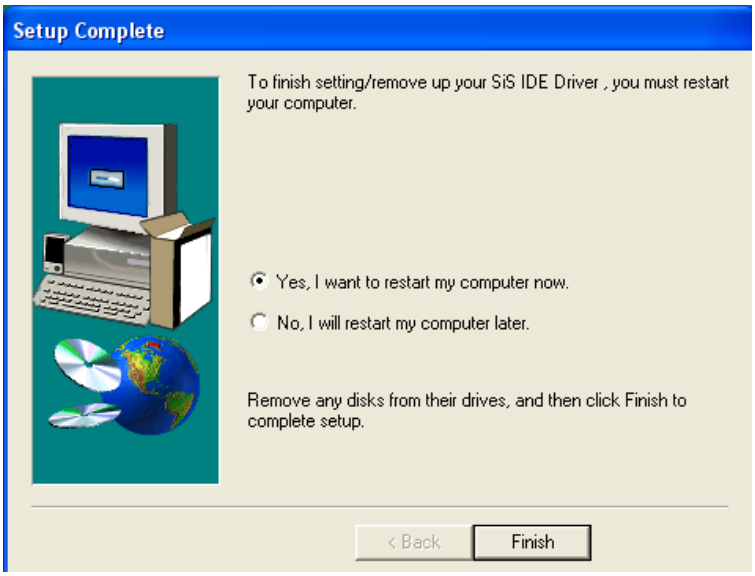


**Figure 7-24: IDE Driver Installation Complete**

**Step 14:** To enable the program, click **Finish** to restart the computer.

## 7.6 Realtek AC`97 Audio Driver (ALC665) Installation

To install the Realtek AC `97 audio driver, please follow the steps below.

### 7.6.1 BIOS Setup

**Step 1:** Enter the BIOS setup. To do this, reboot the system and press **DEL** during POST.

**Step 2:** Go to the Southbridge Configuration menu. Set the **Audio Controller** option to [AC`97].

**Step 3:** Press **F10** to save the changes and exit the BIOS setup. The system reboots.

### 7.6.2 Driver Installation

To install the audio driver please follow the steps below.

**Step 1:** Select **AUDIO** from the list in **Figure 7-2**.

**Step 2:** A new window opens (**Figure 7-25**).

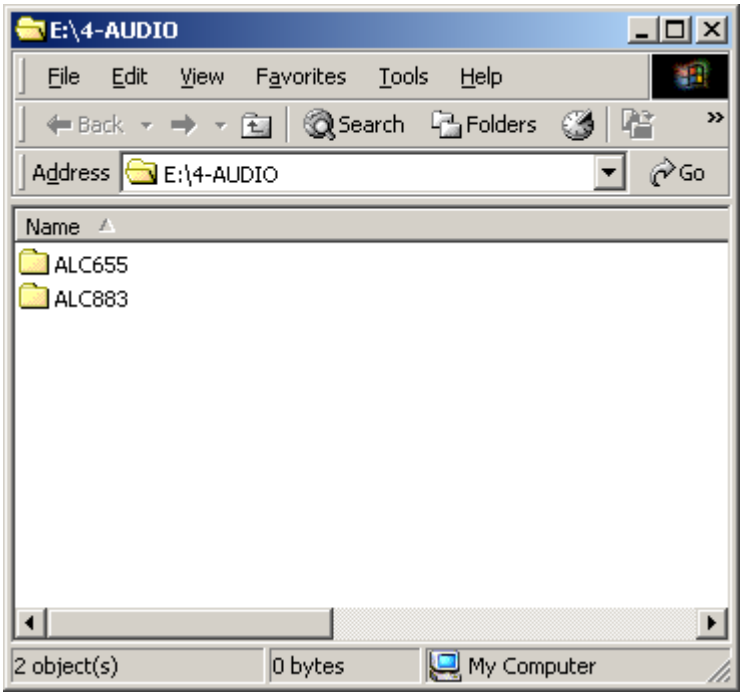


**Figure 7-25: Select the Audio CODEC**

**Step 3:** Double-click the ALC665 folder.

**Step 4:** Double-click the **Setup.exe** program icon in Figure 7-26.

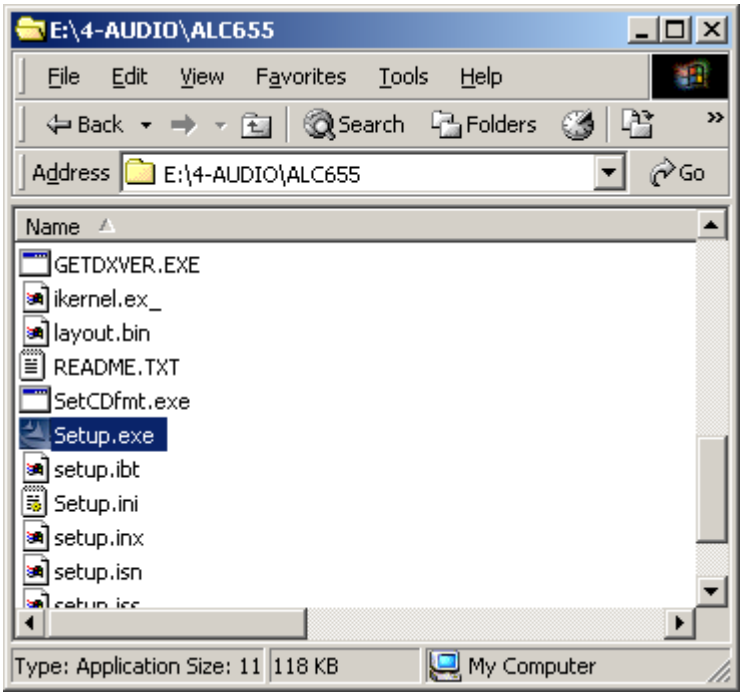


**Figure 7-26: Locate the Setup Program Icon**

**Step 5:** The **InstallShield Wizard** is prepared to guide the user through the rest of the process (**Figure 7-27**).

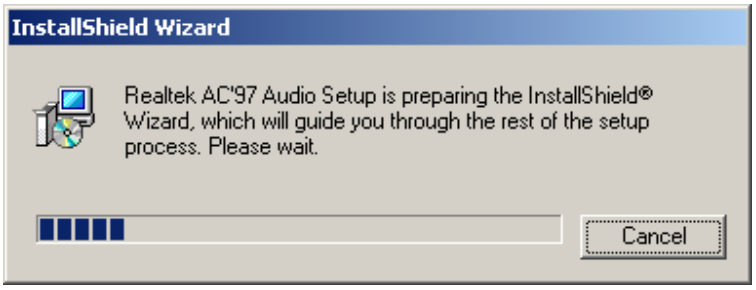


**Figure 7-27: Preparing Setup Screen**

**Step 6:** Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 7-28**).

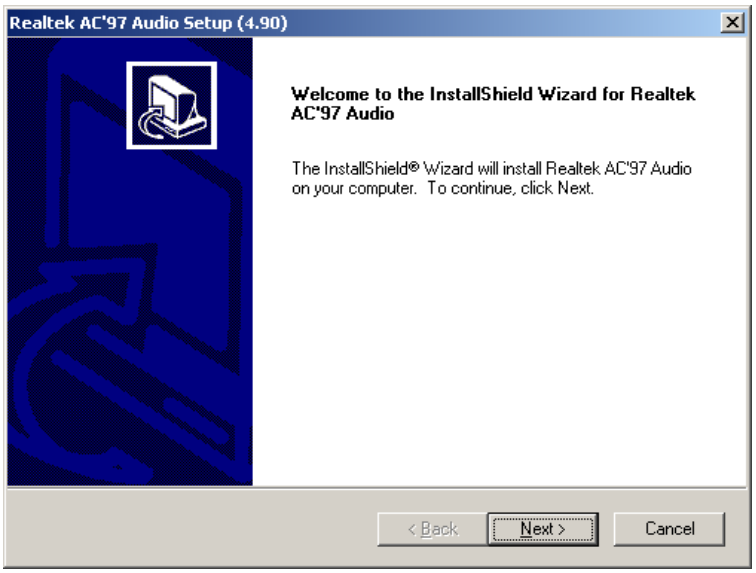


**Figure 7-28: InstallShield Wizard Welcome Screen**

**Step 7:** Click **NEXT** to continue the installation.

**Step 8:** InstallShield starts to install the new software as shown in **Figure 7-29**.

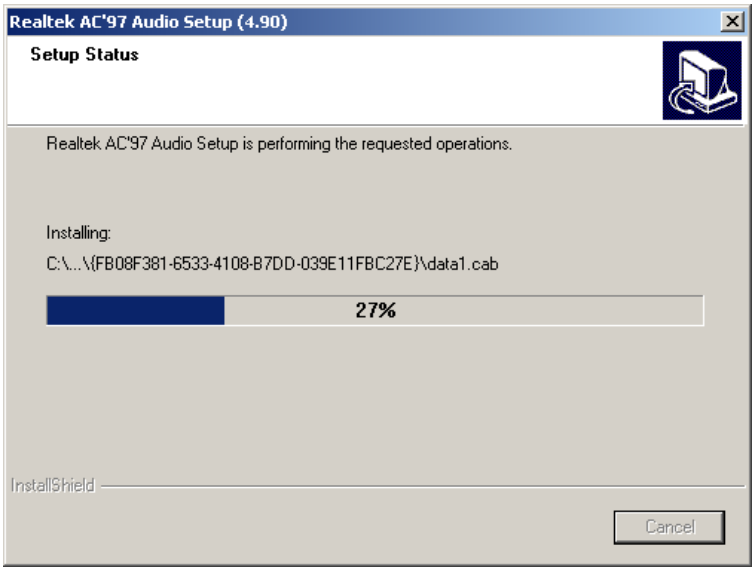


**Figure 7-29: Audio Driver Software Configuration**

**Step 9:** At this stage the **Digital Signal Not Found** screen shown in **Figure 7-30** appears.

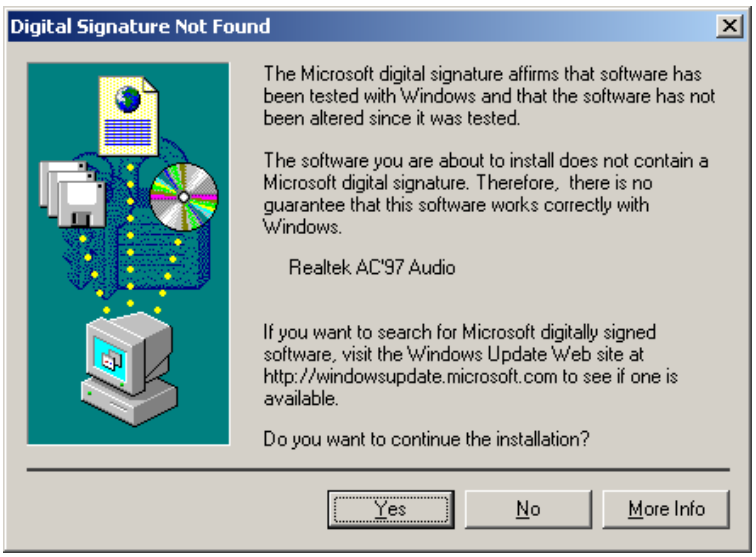


**Figure 7-30: Audio Driver Digital Signal**

**Step 10:** Click **YES** and the driver installation begins (**Figure 7-31)**.


**Figure 7-31: Audio Driver Installation**

**Step 11:** After the driver installation process is complete, a confirmation screen appears (**Figure 7-32**).

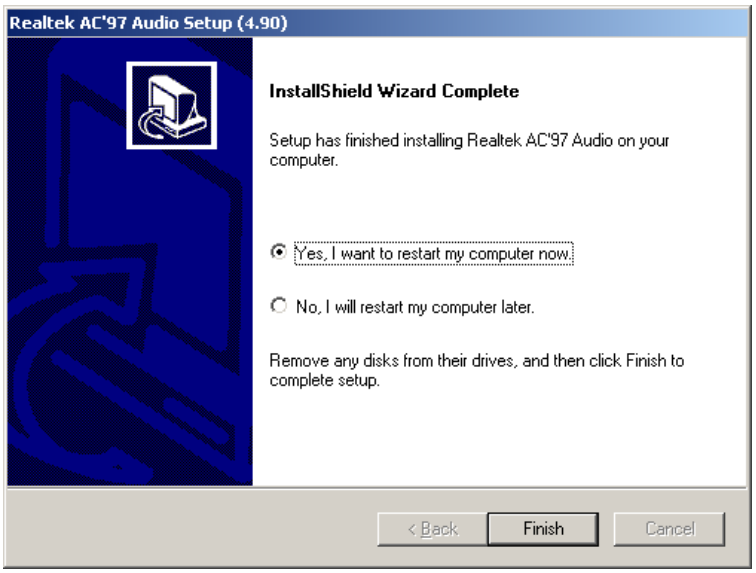


**Figure 7-32: Restart the Computer**

**Step 12:** 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.

## 7.7 Broadcom LAN Driver (for GbE LAN) Installation

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

**Step 1:** Open **Windows Control Panel (**Figure 7-33).

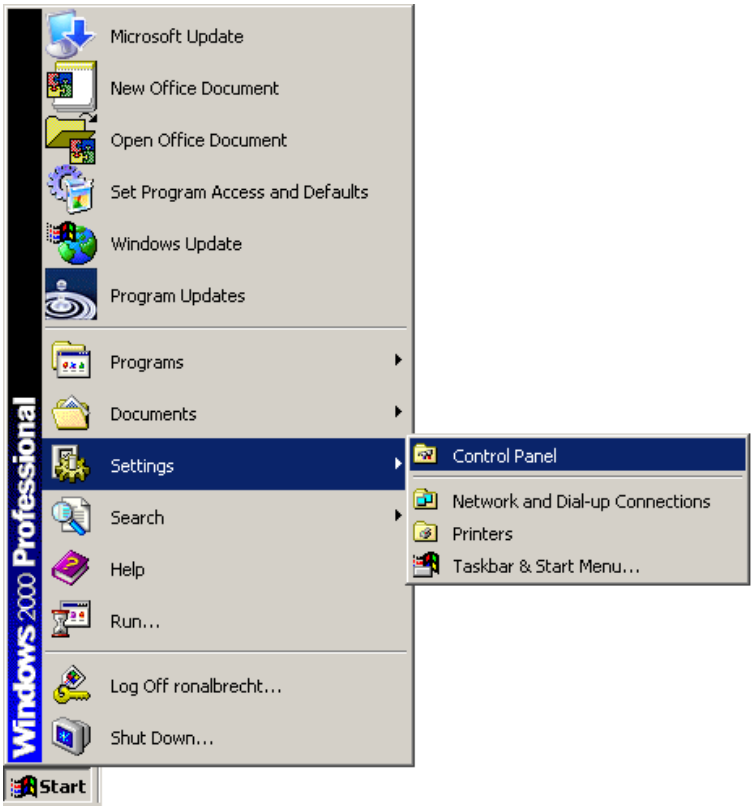


**Figure 7-33: Windows Control Panel**

**Step 2:** Double-click the **System** icon (Figure 7-34).

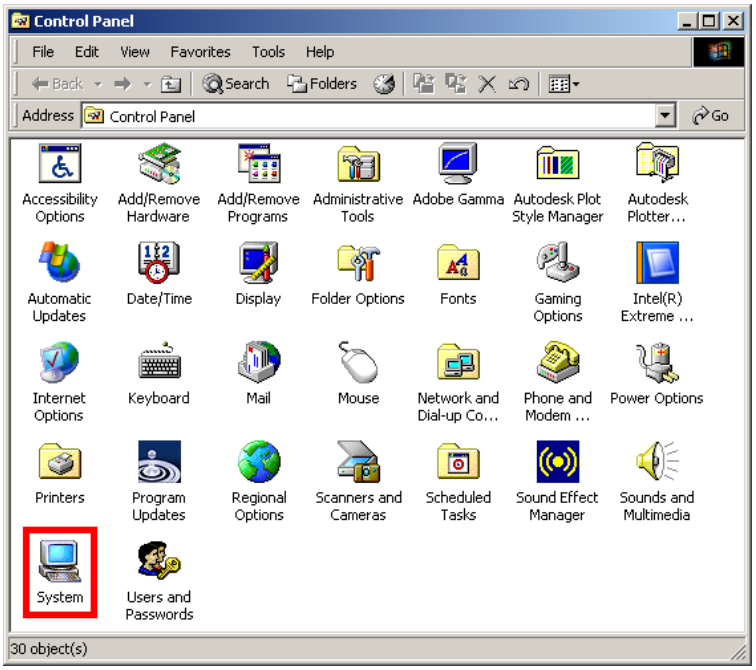


**Figure 7-34: System Icon**

**Step 3:** Click the **Device Manager** tab (Figure 7-35).

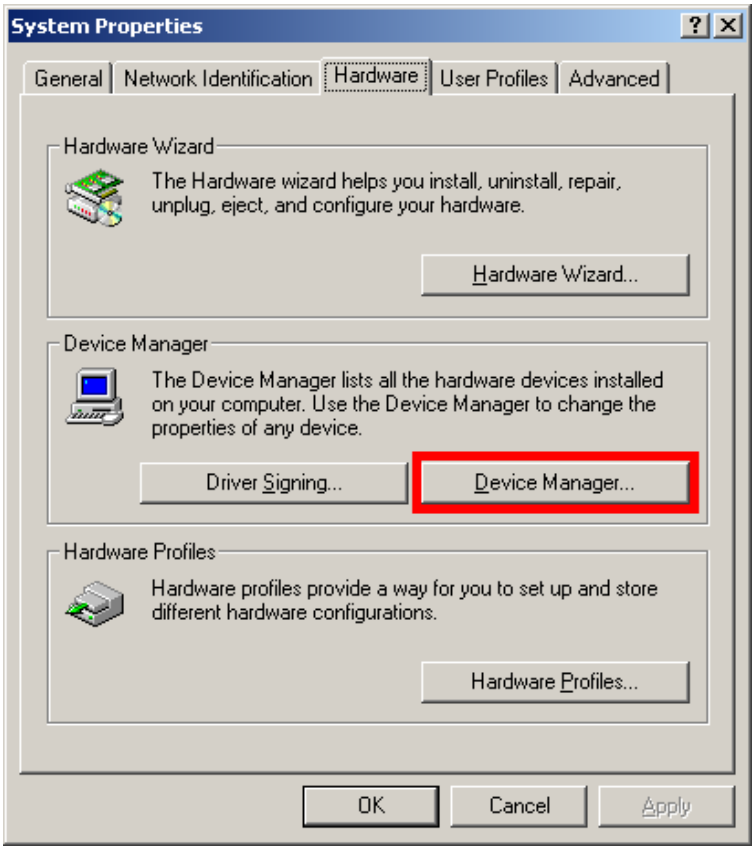


**Figure 7-35: Device Manager Tab**

**Step 4:** A list of system hardware devices appears (Figure 7-36).

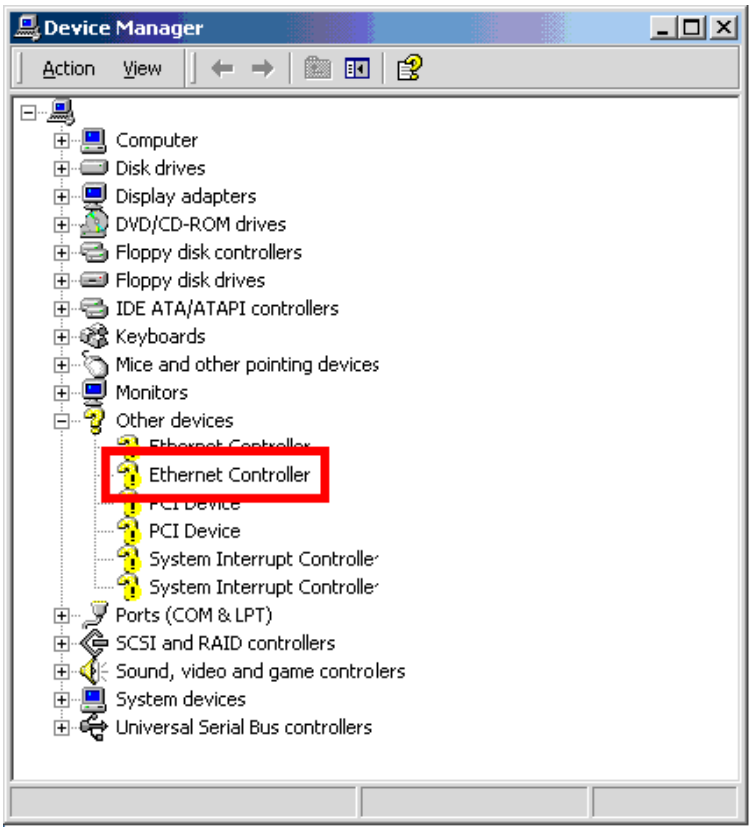


**Figure 7-36: Device Manager List**

**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 7-37).

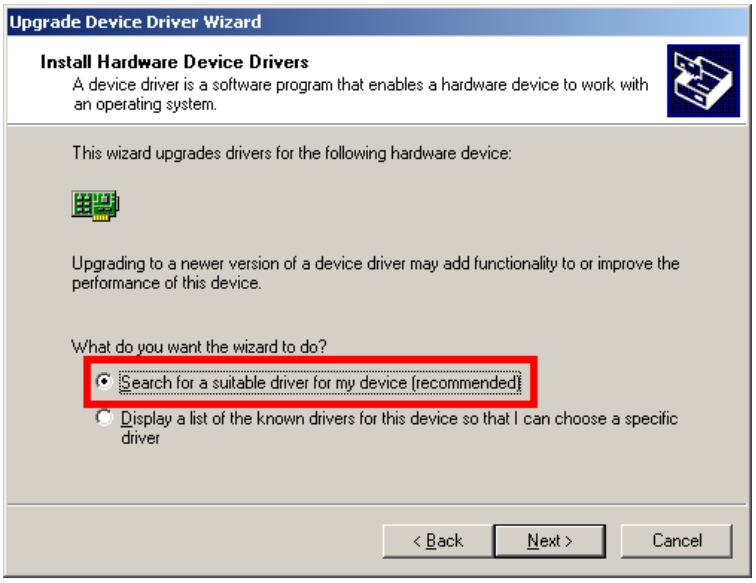


**Figure 7-37: Search for Suitable Driver**

**Step 7:** Select "**Search for a suitable driver for my device (recommended)**," and click **NEXT** to continue.

**Step 8:** Select "**Specify a Location**" in the **Locate Driver Files** window (Figure 7-38).

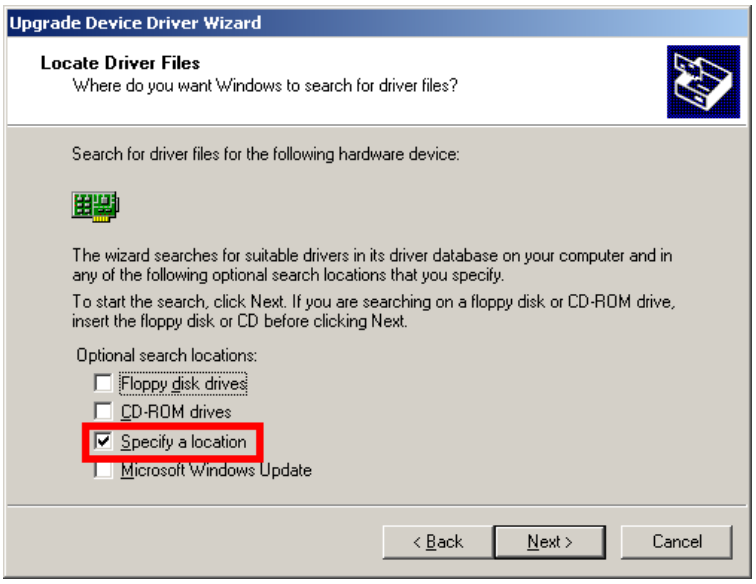


**Figure 7-38: Locate Driver Files**

**Step 9:** Click **NEXT** to continue.

**Step 10:** The **Locate File** window appears (Figure 7-39).

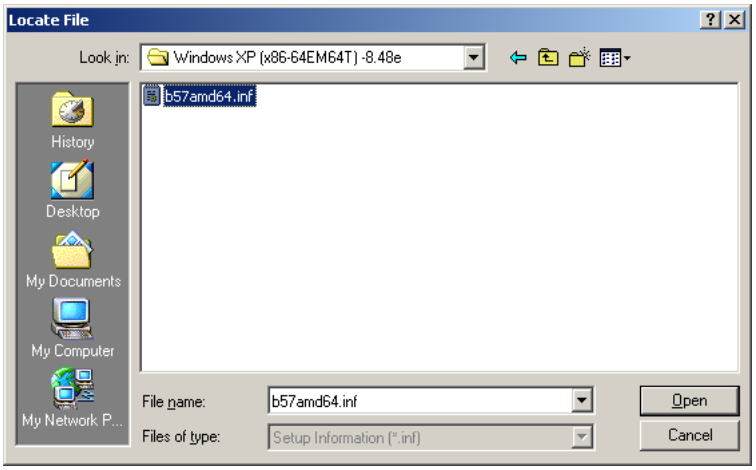


**Figure 7-39: Location Browsing Window**

**Step 11:** Select the proper OS folder under the "**X:\3-LAN\BROADCOM BCM57xx Drivers**" directory in the **Locate File** window, where "**X:\"** is the system CD drive.

**Step 12:** Click **OPEN** and the driver is installed.

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Chapter

8

# RAID Setup

## 8.1 Introduction

**NOTE**:

Please refer to Appendix G for a more detailed description of the different RAID levels.

The SiS chipset supports JBOD, RAID 1 and RAID 0 data storage configurations. JBOD (Just a Bunch of Disks) increases the overall all storage capacity of a single logical drive. RAID 0 increases the data read/write speed to multiple drives strung together in a logical drive and RAID 1 provides data protection by mirroring drive data.

**CAUTION!**

A configured RAID volume (which may consist of multiple hard drives) appears to an operating system as a contingent storage space. The operating system will not be able to distinguish the physical disk drives contained in a RAID configuration.

One key benefit a RAID 1 configuration brings is that a single hard drive can fail within a RAID array without damaging data. With a RAID 1 array, a failed drive can be replaced and the RAID configuration restored. Total data loss occurs when one drive fails in a JBOD or RAID 0 array.

**WARNING!**

Irrecoverable data loss occurs if a working drive is removed when trying to remove a failed drive. It is strongly recommended to mark the physical connections of all SATA disk drives. Drive locations can be identified by attaching stickers to the drive bays. If a drive member of a RAID array should fail, the failed drive can then be correctly identified.

**CAUTION!**

Do not accidentally disconnect the SATA drive cables. Carefully route the cables within the chassis to avoid system down time.

## 8.2 Features and Benefits

- Supports JBOD, RAID 0 and RAID 1
- Supports connectivity to four DATA drives
- Graphical software for RAID management in Windows

## 8.3 Setting Up the RAID

### 8.3.1 Preliminary Setup

Before installing the RAID drivers or configuring the RAID, make sure the following components are properly installed.

**Step 1:** Connect a minimum of two SATA drives to the system.

**NOTE**:

Make sure the SATA drives are EXACTLY the same when they are configured in a RAID configuration (JBOD, RAID 0 or RAID 1). If they are not the same size, disk drive capacity is sacrificed and overall performance affected.

**Step 2:** Connect two USB CD-ROM drives to the system

**Step 3:** Insert the OS CD installation disk into one of the USB CD-ROM drives

**Step 4:** Insert the IEM-8522 driver CD into the second USB CD-ROM drive.

### 8.3.2 Configure the BIOS

Before installing the RAID drivers or configuring the RAID, the system BIOS must be properly specified.

**Step 1:** Turn on the system.

**Step 2:** Access the system BIOS.

**Step 3:** Go to the IDE configuration menu (**BIOS Menu 4**) and enable the SATA drives by setting the “SATA Mode Selection” option to [RAID].

**Step 4:** Access the BOOT Device Priority menu (**BIOS Menu 12**).

**Step 5:** Change the **1st Boot Device** to CD-ROM.

**Step 6:** Save the settings and exit BIOS.

**Step 7:** Continue to allow the system to boot.

### 8.3.3 Access the SiS RAID Utility

To access the **SiS RAID Utility**, please follow the steps below:

**Step 1:** After the BIOS settings are correctly configured, allow the system to continue to boot.

**Step 2:** The screen in **Figure 8-1** appears. Press **Ctrl-S** to enter the **SiS RAID BIOS** setup program.

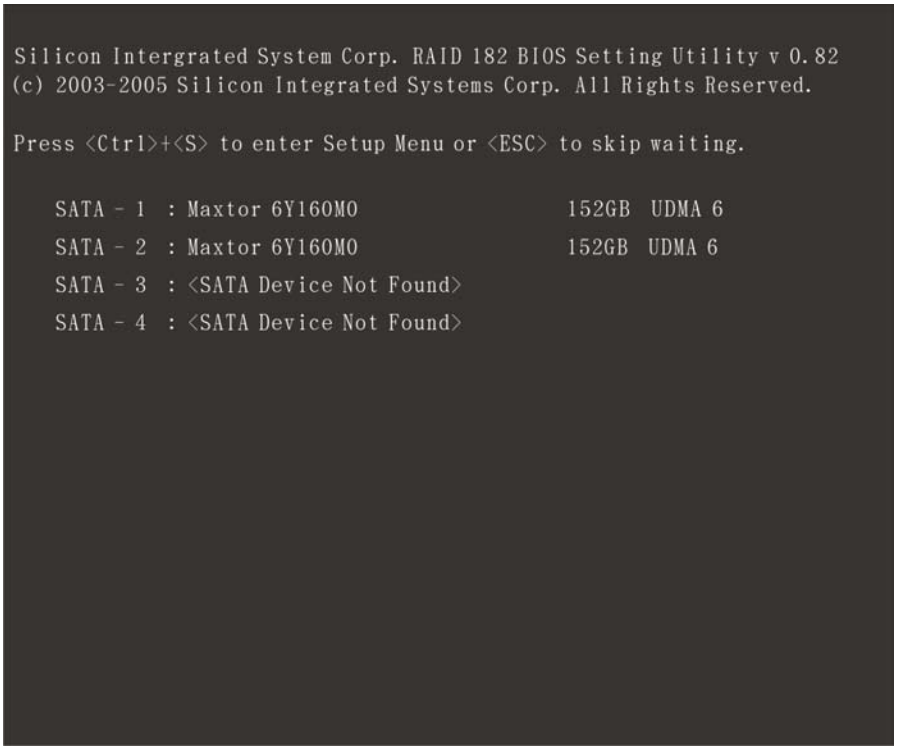


**Figure 8-1: Accessing SiS RAID Setup Utility**

**Step 3:** The **RAID Setup Utility** in **Figure 8-2** appears.

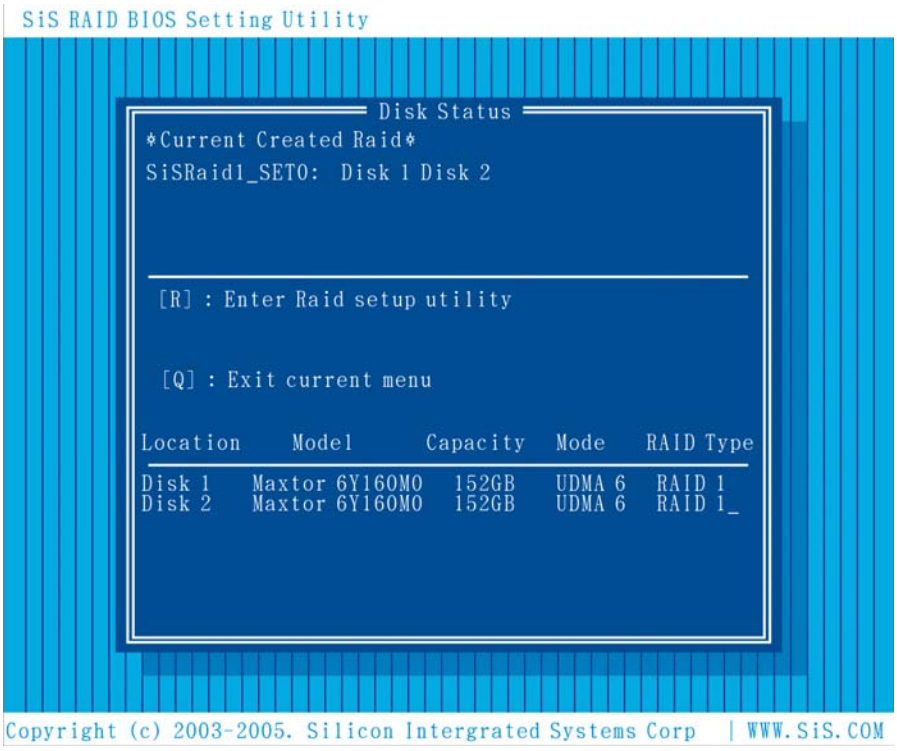


**Figure 8-2: SiS RAID Setup Utility**

**Step 4:** To enter the RAID utility press "**R**"

**Step 5:** The screen in **Figure 8-3** appears.

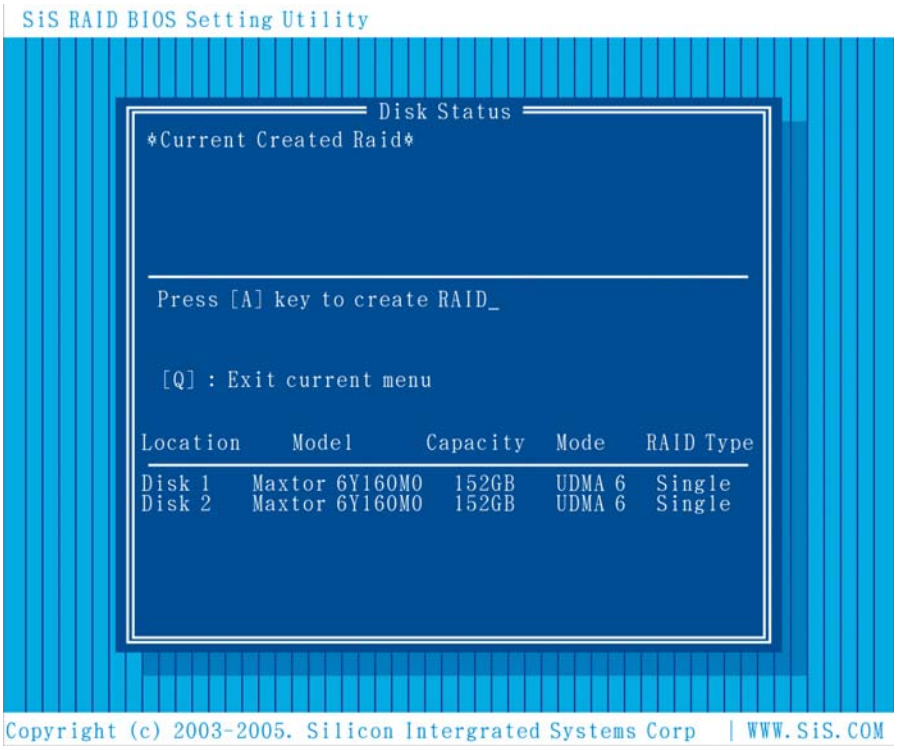


**Figure 8-3: SiS RAID Setup Utility**

**Step 6:** To create a RAID array, press "**A**".

**Step 7:** The screen in **Figure 8-4** appears.

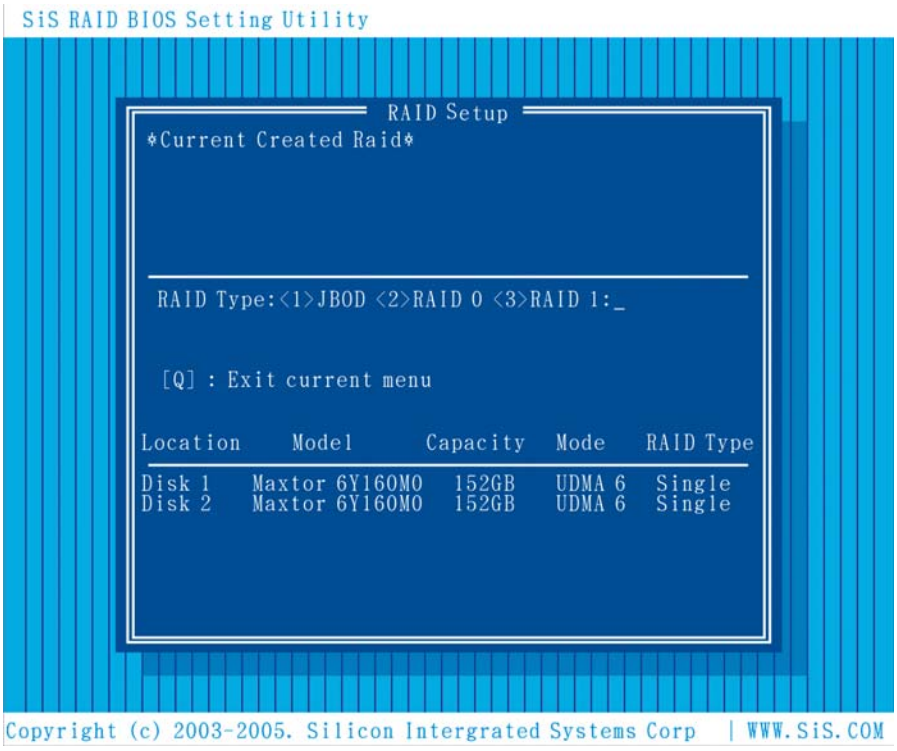


**Figure 8-4: Select RAID Level**

### 8.3.3.1 Create a JBOD RAID Array

**NOTE:**

JBOD is not strictly a RAID array. If the drives are configured in a JBOD array no redundant storage occurs. The drives are merely strung together and appear as one large logical drive. If a drive malfunctions all the data is lost.

To create a JBOD RAID array, please do the following:

**Step 1:** In **Figure 8-4** press "**1**".

**Step 2:** The screen in **Figure 8-5** appears.

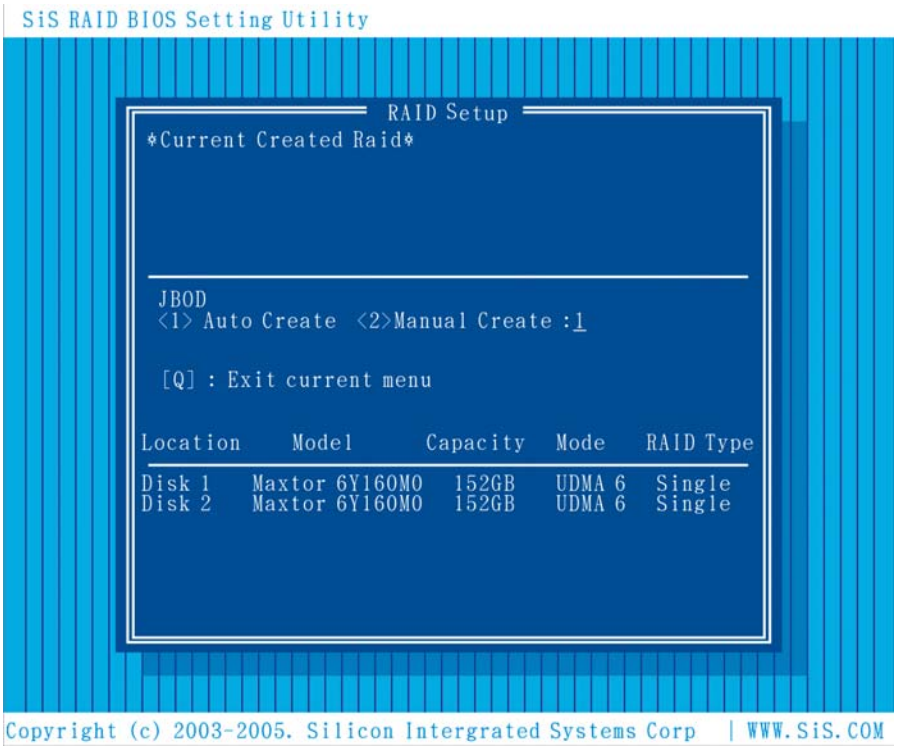


**Figure 8-5: JBOD Configuration**

**Step 3:** Press "**1**" for the system to automatically configure the JBOD or press "**2**" to configure the JBOD manually.

**Step 4:** If manual configuration is selected, the screen in **Figure 8-6** appears.

**Step 5:** Select the drives that are going to be configured in the JBOD array.

**Step 6:** After all the drives are selected, press "**Enter**".

**Step 7:** The system starts to configure the JBOD array.

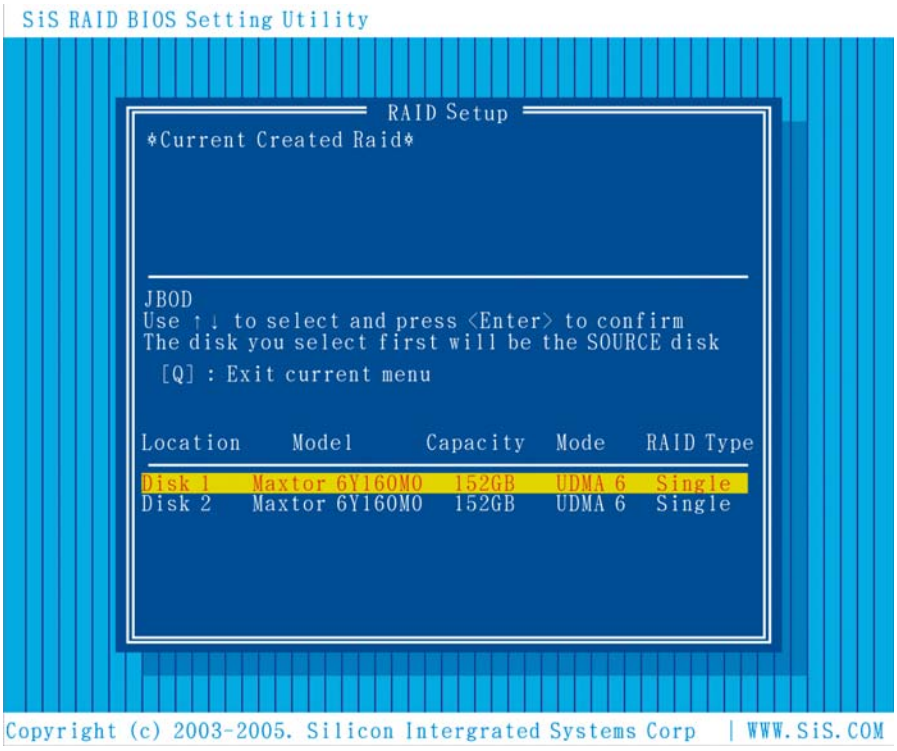


**Figure 8-6: JBOD Drive Selection**

### 8.3.3.2 Create a RAID 0 Array

**NOTE:**

RAID 0 is not strictly a RAID array. If the drives are configured in a RAID 0 array no redundant storage occurs. Data is stripped across the two disks and enables faster data read/writes. The two drives appear together as one large logical drive. If a drive malfunctions all the data is lost.

To create a RAID 0 array, please do the following:

**Step 1:** In **Figure 8-4** press "**2**".

**Step 2:** The screen in **Figure 8-7** appears.

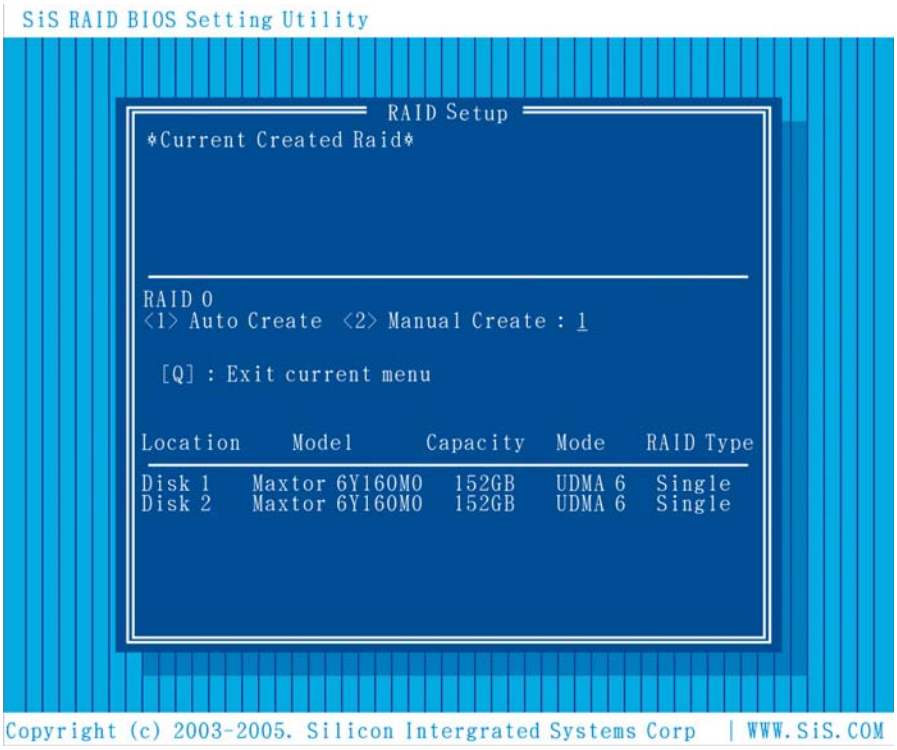


**Figure 8-7: RAID 0 Configuration**

**Step 3:** Press "**1**" for the system to automatically configure the RAID 0 array or press "**2**" to configure the RAID 0 array manually.

**Step 4:** If manual configuration is selected, the screen in **Figure 8-8** appears.

**Step 5:** Select the stripe sizes that are going to be used when striping the data across the drives:

- Press "**1**" for 16K stripes
- Press "**2**" for 32K stripes
- Press "**3**" for 164K stripes
- Press "**4**" for 128K stripes
- Press "**5**" for 256K stripes

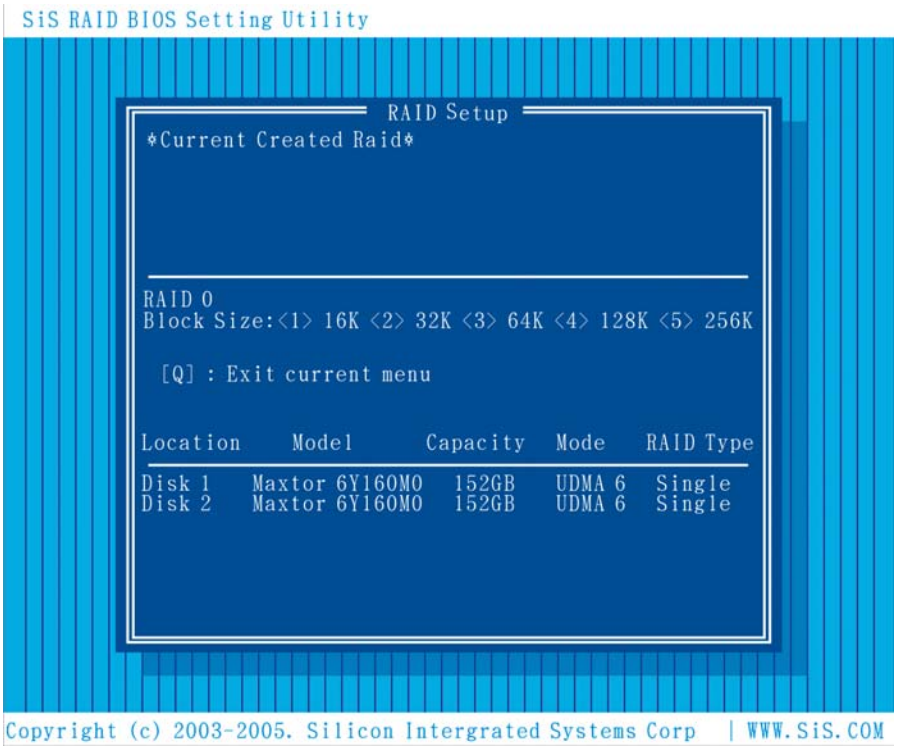


**Figure 8-8: Select RAID 0 Stripe Sizes**

**Step 6:** After the stripe size is selected, select the drives that are going to be configured in the **RAID 0** array.

**Step 7:** After all the drives are selected, press "**Enter**".

**Step 8:** The system starts to configure the RAID 0 array.

### 8.3.3.3 Create a RAID 1 Array

To create a RAID 1 array, please do the following:

**Step 1:** In **Figure 8-4** press "**3**".

**Step 2:** The screen in **Figure 8-9** appears.

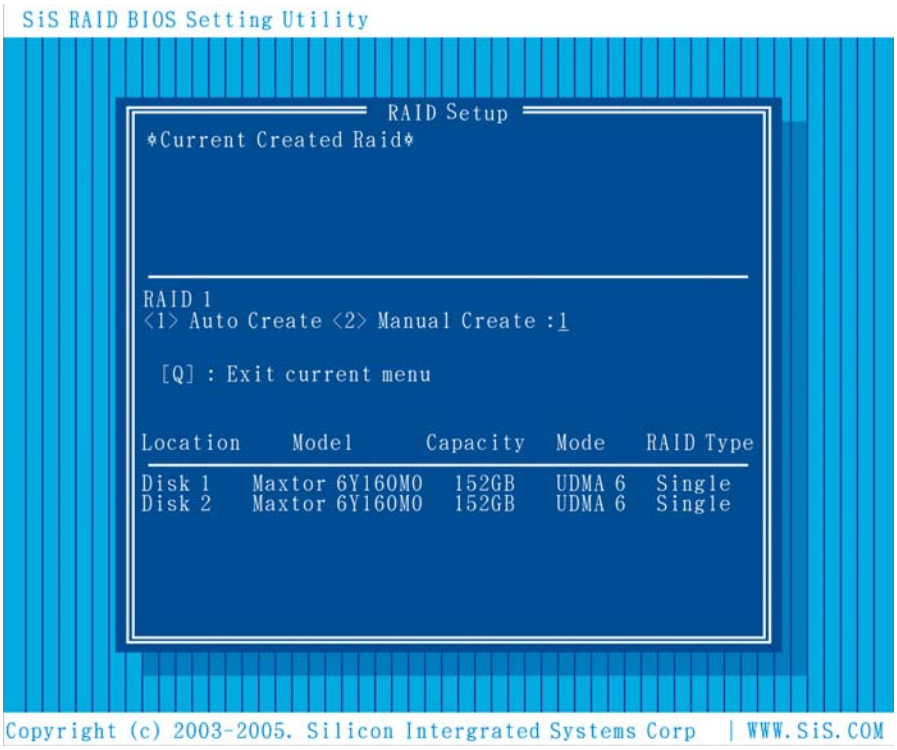


**Figure 8-9: RAID 1 Configuration**

**Step 3:** Press "**1**" for the system to automatically configure the RAID 1 array or press "**2**" to configure the RAID 1 array manually.

**Step 4:** If manual configuration is selected, the screen in **Figure 8-10** appears.

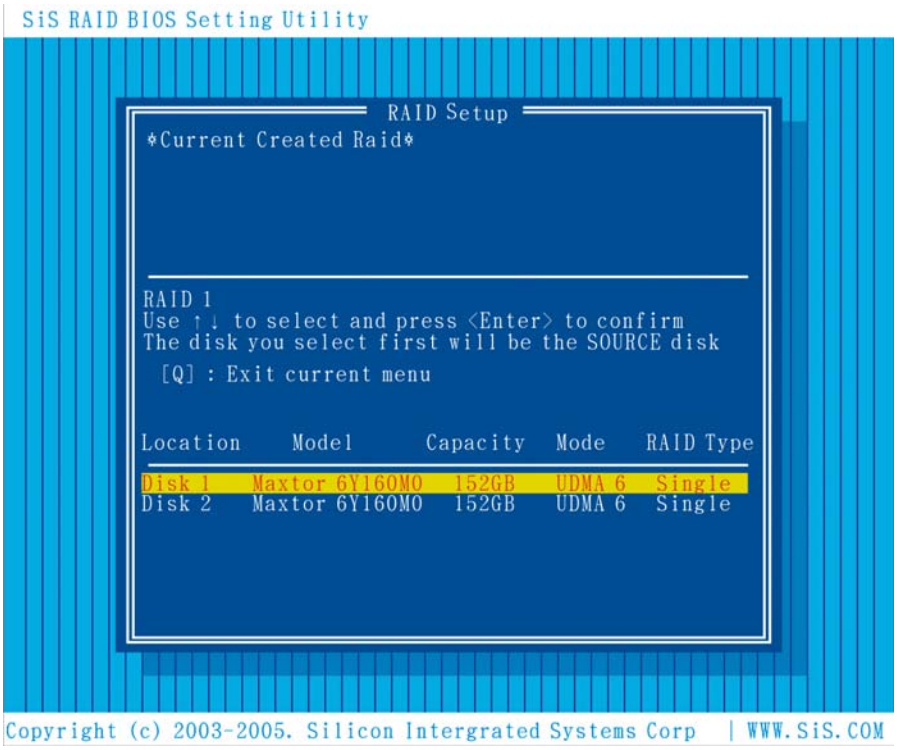


**Figure 8-10: Select RAID 1 Disks**

**Step 5:** In **Figure 8-10** select the drives that are going to be configured in the **RAID 1** array.

**Step 6:** After all the drives are selected, press "**Enter**".

**Step 7:** The system starts to configure the RAID 1 array.

### 8.3.4 RAID Driver Installation

Once the RAID configuration has been completed, the RAID driver must be installed. To do this, please follow the steps below.

**Step 1:** After the RAID is configured in the SiS RAID Configuration Utility, exit the utility and allow the system to continue booting.

**Step 2:** The screen in **Figure 8-11** appears.

**Step 3:** As soon as the screen in **Figure 8-11** appears, press "**F6**".

**NOTE:**

This screen only appears for a short time so make sure F6 is pressed as soon as the screen appears.


**Figure 8-11: Windows Setup Initial Screen**

**Step 4:** The Windows Setup screen in **Figure 8-12** appears.


**Figure 8-12: Windows Setup Screen**

**Step 5:** To select the RAID driver for the operating system press "**S**".

**Step 6:** The screen (**Figure 8-13**) with the available drivers for the different operating systems appears.

**Step 7:** In **Figure 8-13**, select the operating system being installed on the system.

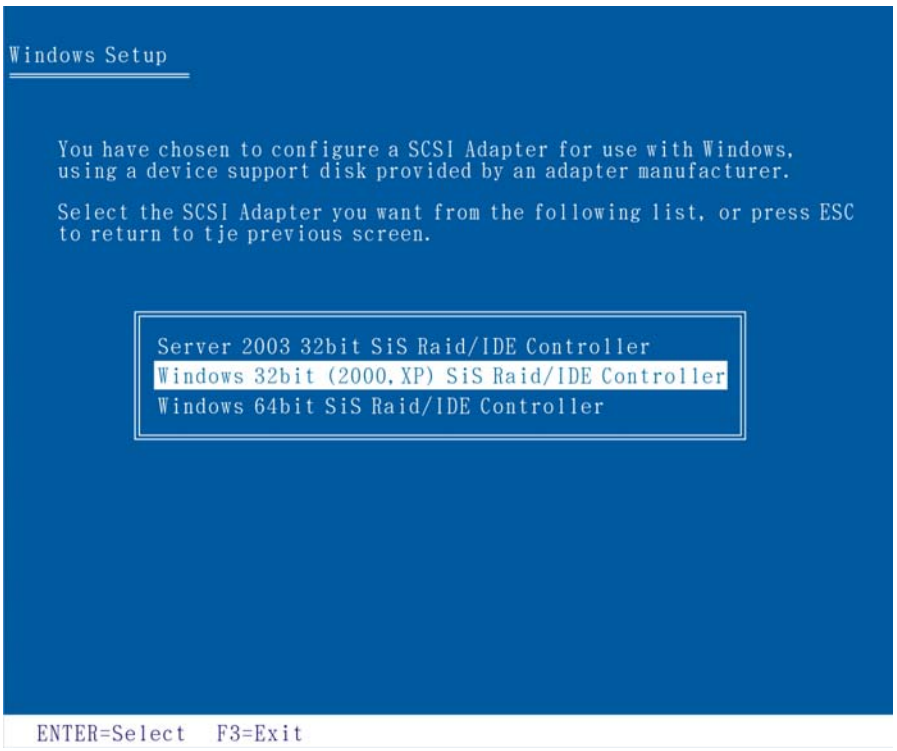


**Figure 8-13: RAID Driver Selection**

**Step 8:** One the operating system is selected, press **Enter**.

**Step 9:** The Windows Setup screen in **Figure 8-14** appears. Note that the driver is specified at the top of the screen in **Figure 8-14**.

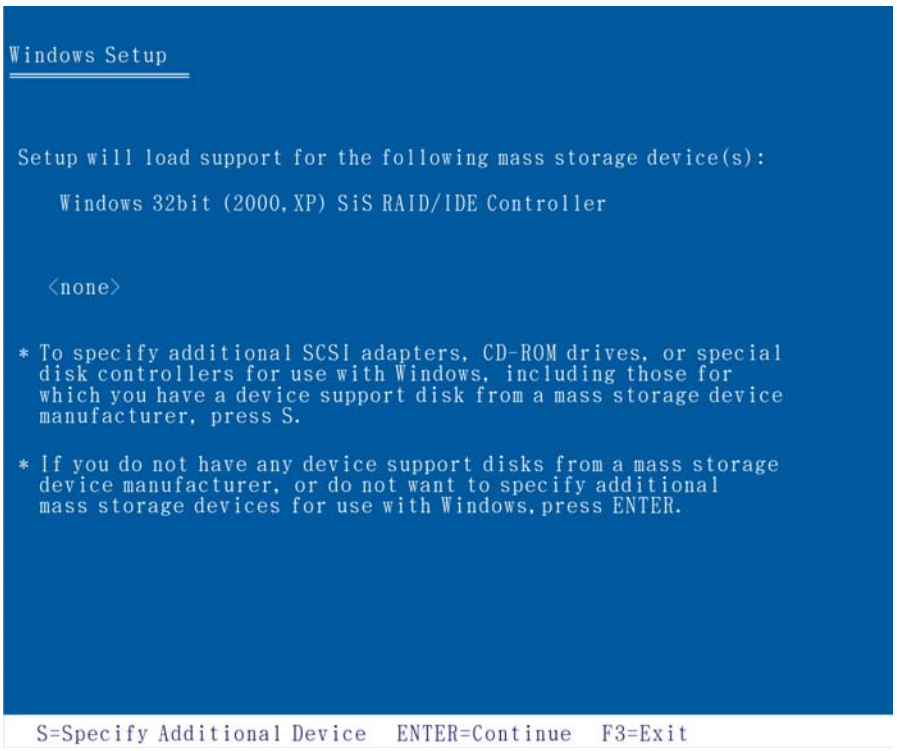


**Figure 8-14: Windows Setup Screen**

**Step 10:** Press enter for the RAID driver to be installed.

**Step 11:** Proceed with the OS installation.

Appendix

A

# BIOS Menu Options

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Appendix

B

# DIO Interface

## B.1 DIO Interface Introduction

The DIO connector on the KINO-761AM2is interfaced to GPIO ports on the Winbond W83697HG Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

**NOTE:**

For further information, please refer to the datasheet for the Winbond W83697HG Super I/O chipset.

## B.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

| Pin | Description | Super I/O Pin | Super I/O Pin Description |
|---|---|---|---|
| 1 | Ground | N/A | N/A |
| 2 | VCC | N/A | N/A |
| 3 | Input 0 | GP10 | General purpose I/O port 1 bit 0. |
| 4 | Input 1 | GP11 | General purpose I/O port 1 bit 1. |
| 5 | Input 2 | GP12 | General purpose I/O port 1 bit 2. |
| 6 | Input 3 | GP13 | General purpose I/O port 1 bit 3. |
| 7 | Output 0 | GP14 | General purpose I/O port 1 bit 4. |
| 8 | Output 1 | GP15 | General purpose I/O port 1 bit 5. |
| 9 | Output 2 | GP16 | General purpose I/O port 1 bit 6. |
| 10 | Output 3 | GP17 | General purpose I/O port 1 bit 7. |

## B.3 Assembly Language Samples

### B.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

| | | |
|---|---|---|
| **MOV** | **AX, 6F08H** | Sets the digital port as input |
| **INT** | **15H** | Initiates the INT 15H BIOS call |

### B.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

| | | |
|---|---|---|
| **MOV** | **AX, 6F09H** | Sets the digital port as output |
| **MOV** | **BL, 09H** | |
| **INT** | **15H** | Initiates the INT 15H BIOS call |

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Appendix

C

# 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

D

# Address Mapping

## D.1 Address Map

| I/O address Range | Description |
|---|---|
| 000-01F | DMA Controller |
| 020-021 | Interrupt Controller |
| 040-043 | System time |
| 060-06F | Keyboard Controller |
| 070-07F | System CMOS/Real time Clock |
| 080-09F | DMA Controller |
| 0A0-0A1 | Interrupt Controller |
| 0C0-0DF | DMA Controller |
| 0F0-0FF | Numeric data processor |
| 1F0-1F7 | Primary IDE Channel |
| 2F8-2FF | Serial Port 2 (COM2) |
| 378-37F | Parallel Printer Port 1 (LPT1) |
| 3B0-3BB | Intel® Graphics Controller |
| 3C0-3DF | Intel® Graphics Controller |
| 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 |
|---|---|---|---|
| IRQ1 | Keyboard | IRQ9 | ACPI |
| IRQ2 | Available | IRQ10 | LAN |
| IRQ3 | COM2 | IRQ11 | LAN/USB2.0/SATA |
| IRQ4 | COM1 | IRQ12 | PS/2 mouse |
| IRQ5 | SMBus Controller | IRQ13 | FPU |
| IRQ6 | FDC | IRQ14 | Primary IDE |
| IRQ7 | Available | IRQ15 | Secondary IDE |

**Table 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: IRQ Mapping Table**

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Appendix

E

# Compatibility

**NOTE:**

The compatible items described here have been tested by the IEI R&D team and found to be compatible with the KINO-761AM2

## E.1 Compatible Operating Systems

The following operating systems have been successfully run on the KINO-761AM2.

- MS-DOS 6.22
- Microsoft Windows Server 2003 (32-bit)
- Microsoft Windows Server 2003 (64-bit)
- Microsoft Windows Vista (32-bit)
- Microsoft Windows Vista (64-bit)
- Microsoft Windows XP (32-bit)
- Microsoft Windows XP (64-bit)
- Microsoft Windows 2000
- WinPOS (XPE)
- QNX Neutrino ver. 6.2.1
- Fedora Core 7
- Mandriva Linux 2006
- Mandriva Linux 2007

## E.2 Compatible Processors

The following Socket AM2 processors have been successfully tested on the KINO-761AM2

| CPU | Model Number | Frequency | L2 Cache |
|---|---|---|---|
| AMD Athlon™ 64 X2 Dual-Core | 5200+ | 2.6 GHz | 2 MB |
| AMD Athlon™ 64 X2 Dual-Core | 5000+ | 2.6 GHz | 1 MB |

| | | | |
|---|---|---|---|
| AMD Athlon™ 64 X2 Dual-Core | 4800+ | 2.4 GHz | 1 MB |
| AMD Athlon™ 64 X2 Dual-Core | 4200+ | 2.1 GHz | 1 MB |
| AMD Athlon™ 64 X2 Dual-Core | 3400+ | 1.8 GHz | 1 MB |
| AMD Athlon™ 64 | 3500+ | 2.2 GHz | 512 KB |
| AMD Athlon™ 64 | 3200+ | 2.0 GHz | 512 KB |
| AMD Sempron™ | 3600+ | 2.0 GHz | 256 KB |

## E.3 Compatible Memory Modules

**NOTE:**

The memory modules listed below have been tested on the KINO-761AM2 other memory modules that comply with the specifications may also work on the KINO-761AM2 but have not been tested.

The following memory modules have been successfully tested on the KINO-761AM2.

| Manufacturer | Model No. | Capacity | Speed |
|---|---|---|---|
| CORSAIR | 64M8CFEG PS0900702 | 1 GB | 667 MHz |
| CORSAIR | 64M8CFEG EL1000617 | 512 MB | 667 MHz |
| Kingston | KHX5400D2K2/1G | 512 MB | 667 MHz |
| Kingston | KVR667D2E5/512 | 512 MB | 667 MHz |
| Kingston | KVR800D2E5K2/1G | 512 MB | 800 MHz |
| Twinmos | ELPIDA E5116AB-5C-E | 256MB | PC2-4300 U-DIMM/CL4 |
| Elixir | N2TU51280AF-37B | 512MB | PC2-4200U |
| Apacer | ELPIDA E5108AG-8E-E | 1GB | PC2-5300 |
| KINGSTEK | KST3216533-612MP | 256MB | 533 MHz |
| KINGSTEK | Elixir N2TU51280AE-37B | 512MB | 533 MHz |
| KINGSTEK | KST648533-612LA | 1GB | 533 MHz |
| KINGSTEK | KKEA88B4LAUG-37DX | 512MB | 533 MHz |
| Hynix | Hy5PS56821 FP-C4 | 256MB | 533 MHz |
| Hynix | Hy5PS12821 PH-C4 | 512MB | 533 MHz |

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Appendix

F

# Hazardous Materials Disclosure

## F.1 Hazardous Material Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

| Part Name | Toxic or Hazardous Substances and Elements | | | | | |
|---|---|---|---|---|---|---|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (CR(VI)) | Polybrominated Biphenyls (PBB) | Polybrominated Diphenyl Ethers (PBDE) |
| Housing | x | O | O | O | O | x |
| Display | X | O | O | O | O | X |
| Printed Circuit Board | X | O | O | O | O | X |
| Metal Fasteners | X | O | O | O | O | O |
| Cable Assembly | X | O | O | O | O | X |
| Fan Assembly | X | O | O | O | O | X |
| Power Supply Assemblies | X | O | O | O | O | X |
| Battery | O | O | O | O | O | O |

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (CR(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 壳体 | X | O | O | O | O | X |
| 显示 | X | O | O | O | O | X |
| 印刷电路板 | X | O | O | O | O | X |
| 金属螺帽 | X | O | O | O | O | O |
| 电缆组装 | X | O | O | O | O | X |
| 风扇组装 | X | O | O | O | O | X |
| 电力供应组装 | X | O | O | O | O | X |
| 电池 | O | O | O | O | O | O |

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。

Appendix

G

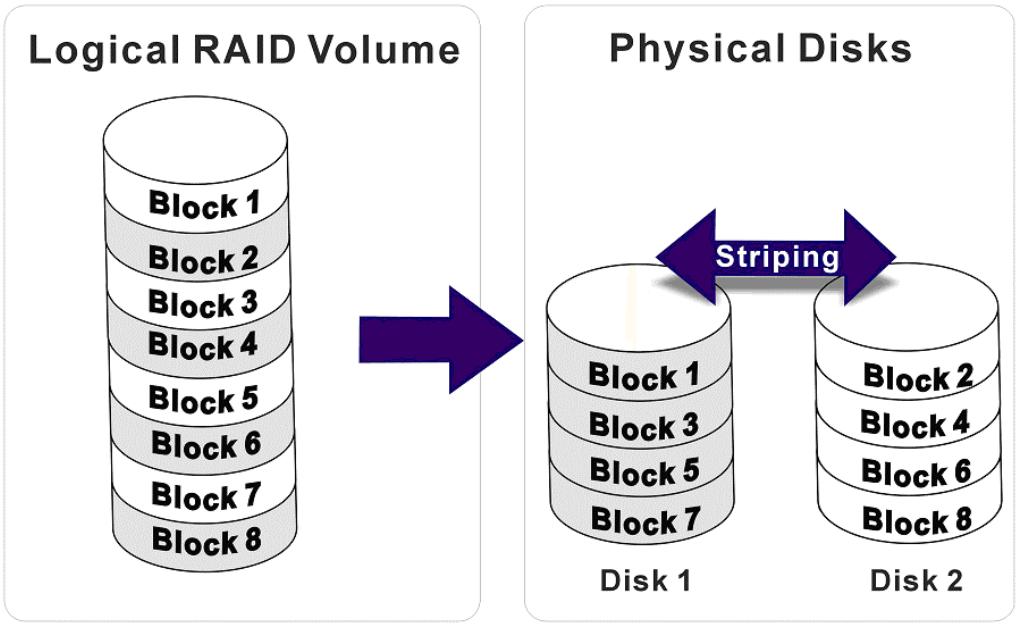
# RAID Levels Description

## G.1 RAID Options

The SiS RAID controller has offers RAID 0, RAID 1 and JBOD RAID solutions.

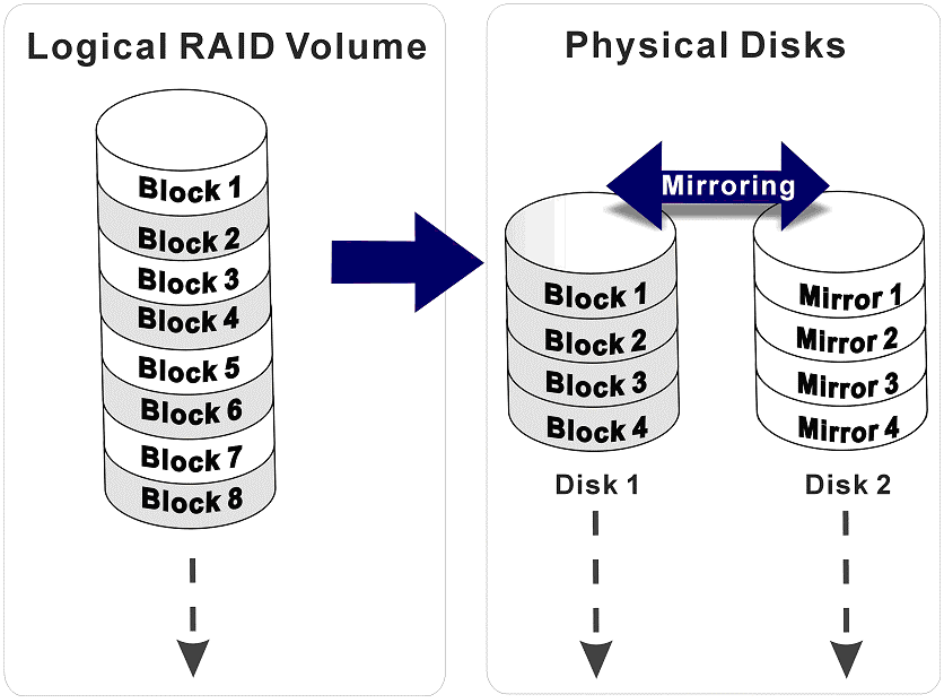
### G.1.1 RAID 0 Striping – For Performance

RAID 0 stripes logical data over both the disks in the RAID array. Blocks of data are alternately written to one disk and then the other. This method results in much faster performance than a single drive. The disadvantage is that there is no redundancy so if one drive fails, all the data is lost. The maximum size of a RAID 0 array is double the size of the smallest disk.




### G.1.2 RAID 1 Mirror – For Redundancy

RAID 1 repeats data over both the disks in the RAID array. One disk is an exact copy of the other. RAID 1 allows redundancy so data can be restored if one of the disks fails. There is a negligible performance difference between a RAID 1 array and a normal drive.




### G.1.3 JBOD

JBOD allows a bunch of hard disks to be seen as one large disk. Unlike RAID 0, there is no performance advantage. All data is still lost if one drive fails.

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## U



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## W