User's Manual

2801250

REVISION HISTORY

Title	M/Celeron M Motherbard	
Revision Number	**Description**	**Date of Issue**
1.0	**Initial release**	**May 2006**

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TRADEMARKS

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Glossary

AC '97 Audio Codec 97

ACPI Advanced Configuration and Power Interface

APM Advanced Power Management

ARMD ATAPI Removable Media Device

ASKIR Shift Keyed Infrared

ATA Advanced Technology Attachments

BIOS Basic Input/Output System

CFII Compact Flash Type 2

CMOS Complementary Metal Oxide Semiconductor

CPU Central Processing Unit

Codec Compressor/Decompressor

COM Serial Port

DAC Digital to Analog Converter

DDR Double Data Rate

DIMM Dual Inline Memory Module

DIO Digital Input/Output

DMA Direct Memory Access

EIDE Enhanced IDE

EIST Enhanced Intel SpeedStep Technology

FDD Floppy Disk Drive

FDC Floppy Disk Connector

FFIO Flexible File Input/Output

FIFO First In/First Out

FSB Front Side Bus

IrDA Infrared Data Association

HDD Hard Disk Drive

IDE Integrated Data Electronics

I/O Input/Output

ICH4 I/O Controller Hub 4

L1 Cache Level 1 Cache

L2 Cache Level 2 Cache

LCD Liquid Crystal Display

LPT Parallel Port Connector

LVDS Low Voltage Differential Signaling

MAC Media Access Controller

OS Operating System

PCI Peripheral Connect Interface

PIO Programmed Input Output

PnP Plug and Play

POST Power On Self Test

RAM Random Access Memory

SATA Serial ATA

S.M.A.R.T Self Monitoring Analysis and Reporting Technology

SPD Serial Presence Detect

S/PDI Sony/Philips Digital Interface

SDRAM Synchronous Dynamic Random Access Memory

SIR Serial Infrared

UART Universal Asynchronous Receiver-transmitter

USB Universal Serial Bus

VGA Video Graphics Adapter

Chapter

1

1 Introduction

1.1 2801250 Overview

The mini-ITX form factor 2801250 socket 479 Pentium M and Celeron M CPU platform is fully equipped with advanced multi-mode I/Os. The 2801250 is designed for system manufacturers, integrators, and VARs that want performance, reliability, and quality at a reasonable price.

1.1.1 2801250 Models

The 2801250 series has four models:

- 2801250A
- 2801250B
- 2801250C
- 2801250D

The specifications for the four models are show in **Table 1-1**.

2801250	2801250C	2801250D	2801250A	2801250B
Onboard CPU	NO	YES	NO	YES
VGA	YES	YES	YES	YES
LVDS	YES	YES	NO	NO
TV-OUT	YES	YES	YES	YES
Dual GbE	YES	YES	YES	YES
Audio	YES	YES	YES	YES
SATA	YES	YES	YES	YES

Table 1-1: 2801250 Model Specifications

The CPU on the 2801250D and 2801250B is a zero cache Celeron M 800.

1.1.2 2801250 Applications

The 2801250 is designed for applications in the following areas:

- Industrial PC applications

- Human Machine Interface (HMI) applications
- Marine, GPS and transportation applications
- Financial, retail and kiosk applications

1.1.3 2801250 Benefits

Some of the 2801250 benefits include:

- Low power, high performance
- Flexible dual display options including:
  - Primary CRT+SiS302LV TV
  - Primary CRT+SiS302LV LCD
  - SiS302LV TV+SiS302LV LCD
- Multiple storage option integration including
  - 40 Pin IFM or 3.5" HDD
  - 44 Pin IFM or 2.5" HDD
  - Dual SATA ports with RAID 0 and RAID 1 support
  - Optional CFII support
  - Optional floppy disk drive (FDD) support
- Data security SATA RAID support

1.1.4 2801250 Features

Some of the 2801250 features are listed below:

- Complies with mini-ITX form factor
- Complies with RoHS
- Supports socket 479 Intel® Pentium M CPUs
- Supports a maximum front side bus (FSB) speed up to 533MHz
- Supports up to 2GB of 333MHz or 400MHz of DDR memory
- Comes with two high performance gigabit Ethernet (GbE) controller
- Supports two SATA channels with transfer rates up to 150MB/s
- Supports six USB 2.0 devices

1.2 2801250 Overview

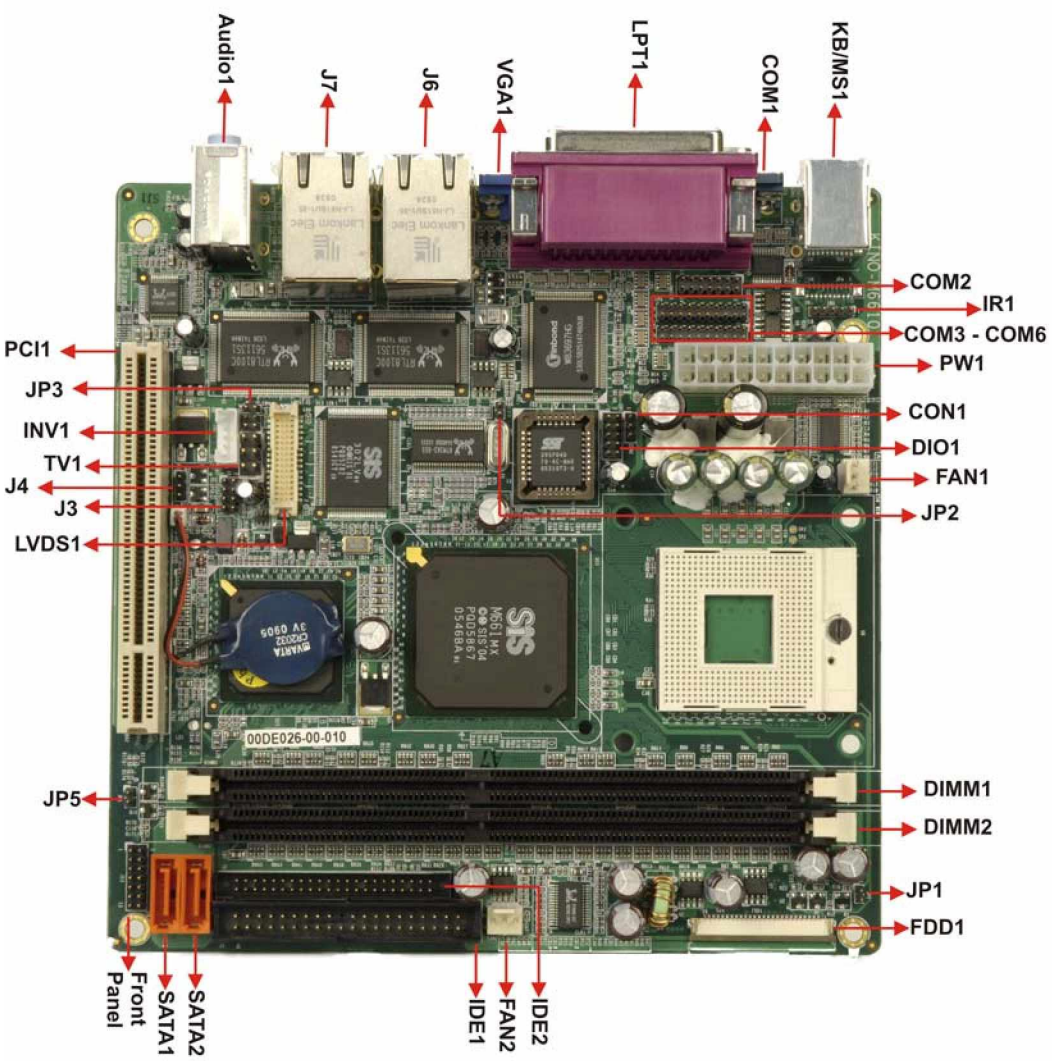

Figure 1-1: 2801250 Overview

1.2.1 2801250 Connectors

The 2801250 has the following connectors onboard:

- 1 x ATX power connector
- 1 x Audio connector
- 1 x Compact Flash (CF) connector (reverse side)
- 2 x Fan connectors
- 1 x Floppy disk connector

- 1 x Front panel connector
- 1 x FPC connector
- 1 x GPIO connector
- 2 x IDE Interface connectors (40-pin and 44-pin)
- 1 x Inverter power connector
- 1 x IR interface connector
- 1 x LCD LVDS interface Connector
- 1 x TV out connector
- 1 x RS-232/485 serial port connector
- 4 x RS-232 serial port connector
- 1 x USB connector
- 1 x PCI connector
- 2 x 184-pin DIMM sockets

The 2801250 has the following connectors on the board rear panel:

- 1 x Audio connector (three audio jacks)
- 1 x CRT connector
- 2 x Ethernet connectors
- 2 x PS/2 keyboard/mouse connector
- 1 x Parallel port
- 1 x RS-232 serial port connector
- 4 x USB connectors

The 2801250 has the following onboard jumpers:

- Clear CMOS
- CPU FSB setting
- CPU frequency setting
- CF card setup
- LCD voltage setup
- COM2 setup (RS-232/485)

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

1.2.2 Technical Specifications

2801250 technical specifications are listed in **Table 1-2**. Detailed descriptions of each specification can be found in **Chapter 2 Detailed Specifications**.

SPECIFICATION	
CPUs Supported	Intel® Pentium® M Intel® Celeron® m
Chipsets	Northbridge: SIS 661CX Southbridge: SIS 964
I/O Controller	SIS 964
Graphics Support	SiS Mirage™ Graphic Engine
Memory	Two DDR memory modules (Max. 2GB)
PCI Bus Interface	33MHz, Revision 2.3
Serial ATA (SATA)	Two SATA channels with 150MB/s transfer rates
HDD Interface	Two IDE channels supports four Ultra ATA 100/66/33 devices
Floppy Disk Drive (FDD)	Supports FDD
USB Interfaces	Six USB 2.0 connectors supported
Serial Ports	Six COM ports
Real Time Clock	256-byte battery backed CMOS RAM
Hardware Monitoring	Cooling fans, temperature and system voltages
Power Management	Supports Advanced Configuration and Power Interface (ACPI) Specifications Revision 2.0
Infrared Support	One Infrared Data Association (IrDA) interface
Ethernet	Gigabit Ethernet (GbE)
BIOS	AMI flash BIOS

Physical Dimensions	**17cm x 17cm (width x length)**
Operating Temperature	**Minimum: 0ºC (32°F)** **Maximum: 60°C (140°F)**
Audio Interfaces	**One Audio Codec ’97 (AC’97) version 2.3 connector**

Table 1-2: Technical Specifications

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Chapter

2

2 Detailed Specifications

2.1 CPU Support

NOTE:

The 2801250D and the 2801250B have a preinstalled zero cache Celeron M 800 onboard.

Table 2-1 lists the socket 479 Pentium M CPUs supported by the 2801250C and the 2801250A .

Mfg.	Processor Number	Architecture	L2 Cache	Speed	FSB
Intel®	**760**	**90nm**	**2MB**	**2GHz**	**533MHz**
Intel®	**755**	**90nm**	**2MB**	**2GHz**	**400MHz**

Table 2-1: Supported CPUs

2.2 Onboard Chipsets

2.2.1 Northbridge and Southbridge Chipsets

The following chipsets are preinstalled on the board:

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

The following two sections (**Section 2.2.2** and **Section 2.2.3**) list some of the features of the SiS661CX and the SiS964 chipsets. For more information on these two chipsets please refer to the SiS website.

2.2.2 SiS661CX Northbridge Chipset

The SiS661CX northbridge chipset comes with the following features:

- Host Interface
  - Intel® Pentium® 4 Hyper-Threading processor support
  - FSB 800MHz w/ 2X Address and 4X Data Rate

- 12 Outstanding Transactions support
- Quasi-Synchronous/Asynchronous Host/DRAM Timing support
- Supports 2M/4M/8M/16M TSEG SMRAM
- Supports Dynamic Bus Inversion.

- DRAM Controller
  - DDR400/DDR333/DDR266 supported
  - Up to two un-buffered DIMMs DDR400 supported
  - Up to 1GB per DIMM with 512Mb tech.
  - Dynamic Clock Enable (CKE) control placing the Memory into Suspend to DRAM state.
- SiS MuTIOL® 1G Delivering 1GB/s Bandwidth
  - Proprietary Interconnect between Northbridge and Southbridge
  - Bi-Directional 16 bit Data Bus at 800MHz Operating Frequency

2.2.3 SiS964 Southbridge Chipset

The SiS964 southbridge chipset comes with the following features:

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

- LPC 1.1 Interface
- Integrated Keyboard/PS2 Mouse Controller

2.3 Data Flow

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

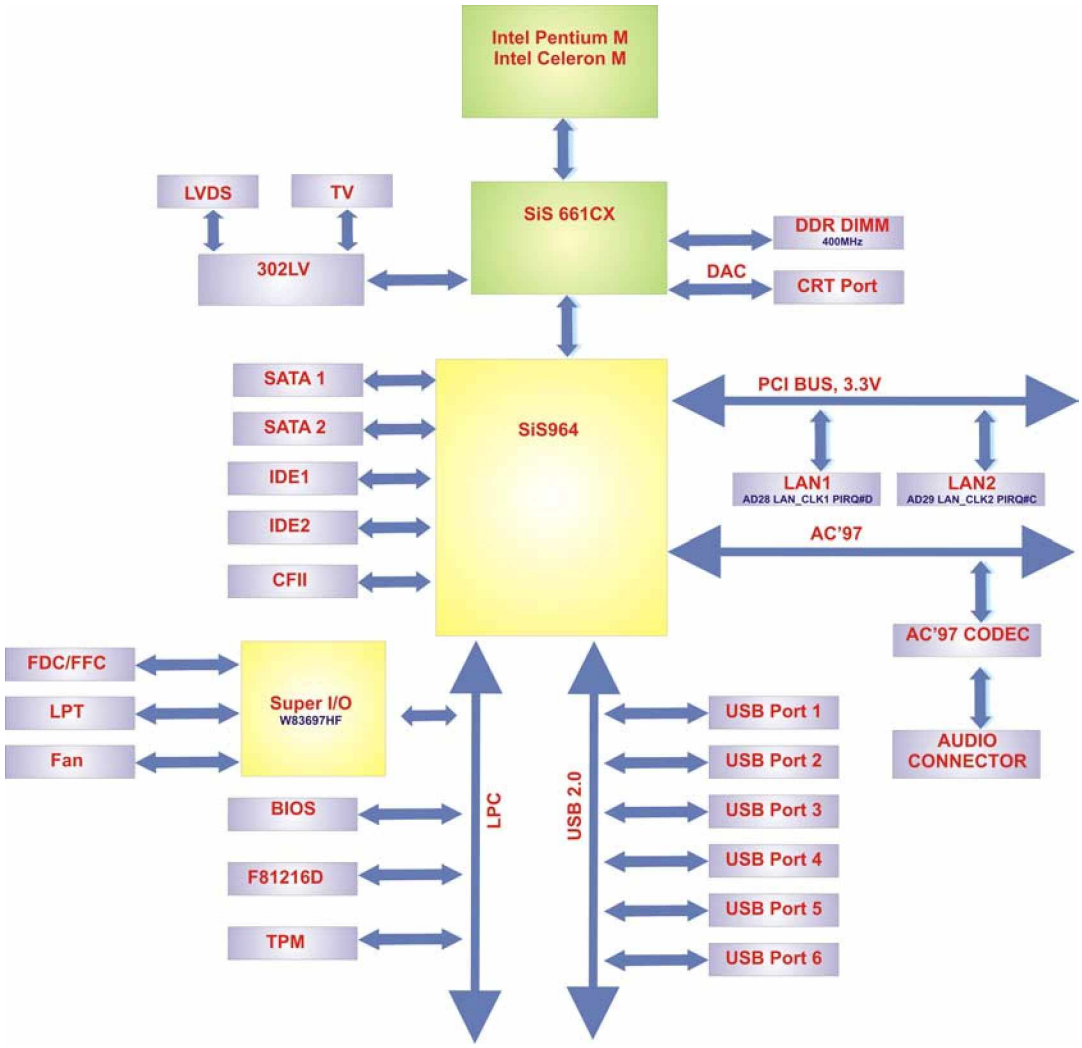

Figure 2-1: Data Flow Block Diagram

2.4 Graphics Support

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

- AGP 3.5 and AGP 2.0 Compliant
  - AGP 8X/4X mode support
  - Fast Write support
  - 1.5V interface support only
- DX9 S/W Compliant
- High performance 256Bit 3D/128Bit 2D Graphic Engine
  - 2 pixel rendering pipelines and 4 texture units per cycle (2P4T)
  - Up to 200 MHz ECLK
- SiS Ultra-AGPII™ Technology w/ up to 3.2GB/s Data Transfer Rate
  - Successor of Ultra-AGPII™ Technology and doubles the bandwidth up to 3.2GB/s with DDR400
  - AGP 8X equivalent bandwidth for 3D/2D/Video

  Advanced Hardware Acceleration for DVD playback
- Dual 12-bit DDR Digital Interface for Digital LCD/TV-OUT support
  - NTSC/PAL TV-OUT
  - LCD Monitor
  - Dual view function support for LCD-TV,LCD-CRT or CRT-TV
- Built-in high performance 333MHz RAMDAC
- Graphics support mode
  - CRT highest resolution mode: 2048x1536x32@75NI
  - LCD highest resolution mode: 1600x1200x32@ 60NI
  - TV highest resolution mode: 1024x768x32@60NI

2.5 Memory Support

The 2801250 has two 184-pin dual inline memory module (DIMM) sockets and supports up to two un-buffered DDR DIMMs with the following specifications:

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

2.6 PCI Bus Interface Support

The PCI bus on the 2801250 has the following features:

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

2.7 GbE Ethernet

The Realtek RTL8110SB GbE controller combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, 32-bit PCI bus controller, and embedded memory. The controller has state-of-the-art DSP technology and mixed-mode signal technology and it offers high-speed transmission over CAT 5 UTP cables or CAT 3 UTP (10Mbps only) cables. The GbE controller specifications are below.

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

2.8 Drive Interfaces

The 2801250 can support the following drive interfaces.

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

2.8.1 SATA Drives

The 2801250 supports two, first generation SATA drives with transfer rates of up to 150MB/s

2.8.2 IDE HDD Interfaces

The 2801250 southbridge chipset IDE controller supports up to two HDDs with the following specifications:

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

2.8.3 Floppy Disk Drive (FDD)

The 2801250 supports a single FDD. The following FDD formats are compatible with the board.

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

2.9 Serial Ports

The 2801250 has two high-speed UART serial ports, configured as COM1 and COM2. The serial ports have the following specifications.

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

2.10 Real Time Clock

256-byte battery backed CMOS RAM

2.11 System Monitoring

The 2801250 is capable of self-monitoring various aspects of its operating status including:

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

2.12 Infrared Data Association (IrDA) Interface

The 2801250 IrDA supports the following interfaces.

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

If an IrDA port is need, COM2 must be configured as either SIR or ASKIR mode in the BIOS under **Super IO devices**. Normal RS-232 COM 2 is then disabled.

2.13 USB Interfaces

The 2801250 has six USB interfaces, two internal and four external. The USB interfaces support USB 2.0.

2.14 BIOS

The 2801250 uses a licensed copy of AMI BIOS. The features of the flash BIOS used are listed below:

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

2.15 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the 2801250 are listed below.

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

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

2.16 Audio Codec

The 2801250 has an integrated REALTEK ALC655 CODEC. The ALC655 CODEC is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR-based designs. Some of the features of the codec are listed below.

- Meets performance requirements for audio on PC99/2001 systems
- Meets Microsoft WHQL/WLP 2.0 audio requirements
- 16-bit Stereo full-duplex CODEC with 48KHz sampling rate
- Compliant with AC'97 Rev 2.3 specifications
- Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing
- 14.318MHz -> 24.576MHz PLL to eliminate crystal
- 12.288MHz BITCLK input
- Integrated PCBEEP generator to save buzzer
- Interrupt capability
- Three analog line-level stereo inputs with 5-bit volume control, LINE_IN, CD, AUX
- High-quality differential CD input
- Two analog line-level mono inputs: PCBEEP, PHONE-IN
- Two software selectable MIC inputs
- Dedicated Front-MIC input for front panel applications (software selectable)
- Boost preamplifier for MIC input
- LINE input shared with surround output; MIC input shared with Center

and LFE output

- Built-in 50mW/20ohm amplifier for both Front-out and Surround-Out
- External Amplifier Power Down (EAPD) capability
- Power management and enhanced power saving features
- Supports Power-Off CD function
- Adjustable VREFOUT control
- Supports 48KHz S/PDIF output, complying with AC'97 Rev 2.3 specifications
- Supports 32K/44.1K/48KHz S/PDIF input
- Power support: Digital: 3.3V; Analog: 3.3V/5V
- Standard 48-pin LQFP package
- EAX™ 1.0 & 2.0 compatible

  Direct Sound 3D™ compatible

  A3D™ compatible

  I3DL2 compatible

  HRTF 3D positional audio

  10-band software equalizer

  Voice cancellation and key shifting in Karaoke mode

  AVRack® Media Player

  Configuration Panel for improved user convenience

2.17 Power Consumption

Table 2-2 shows the power consumption parameters for the 2801250 when a Pentium M processor with a clock speed of 2GHz, an L2 cache of 2MB and a FSB 533MHz is running with a 256MB DDR400 module.

Voltage	Current
+5V	2.36A
+12V	0.072A
+3.3V	0.9A

Table 2-2: Power Consumption

2.18 Packaged Contents and Optional Accessory Items

2.18.1 Package Contents

The 2801250 is shipped with the following components.

- 1x 2801250 single board computer
- 1x mini jumper pack
- 1x ATA66/100 HDD cable
- 1x ATA33 HDD cable
- 2x SATA cable
- 1x SATA power cable
- 2x RS232 cable
- 1x I/O shielding
- 1x Utility CD
- 1x Quick Installation Guide**Optional Accessory Items**

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

- RS232/422/485 cable
- CPU cooler
- USB cable

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Chapter

3

3 Connectors and Jumpers

3.1 Peripheral Interface Connectors

Section 3.1.1 shows peripheral interface connector locations. **Section 0** lists all the peripheral interface connectors seen in **Section 3.1.1**.

3.1.1 2801250 Layout

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

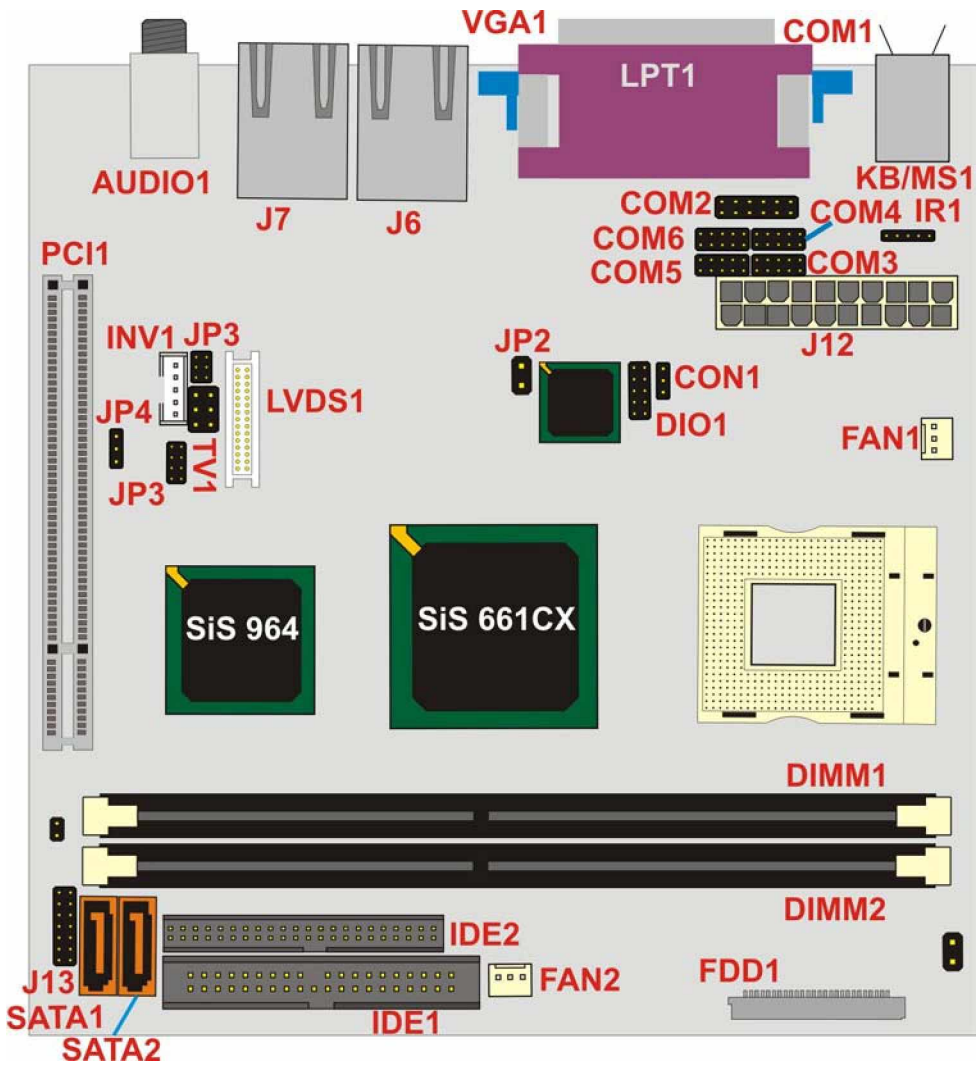

Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

Table 3-1 shows a list of the peripheral interface connectors on the 2801250. Detailed descriptions of these connectors can be found in **Section 3.2** on **page 38**.

Connector	pe	
ATX power connector	20-pin header	J12
Compact Flash (CF) connector	50-pin header	CF1
Fan connector	3-pin header	FAN1
Floppy Disk connector	26-pin header	FDD1
Front Panel connector	14-pin header	J13
FPC connector	20-pin header	TPM1
GPIO connector	10-pin header	DIO1
IDE Interface connector (Primary)	40-pin header	IDE1
IDE Interface connector (Secondary)	44-pin header	IDE2
Inverter Power connector	5-pin header	CN2
IR Interface connector	5-pin header	IR1
LCD LVDS Interface Connector	30-pin header	LVDS1
RS-232/485 serial port connector	14-pin header	COM2
RS-232 serial port connector	10-pin header	COM3
RS-232 serial port connector	10-pin header	COM4
RS-232 serial port connector	10-pin header	COM5
RS-232 serial port connector	10-pin header	COM6
SATA drive connector (150MB/s)	7-pin SATA connector	SATA1
SATA drive connector (150MB/s)	7-pin SATA connector	SATA1
TV out connector	6-pin header	TV1

USB connector (USB and USB)	**8-pin header**	**J3**

Table 3-1: Peripheral Interface Connectors

3.1.3 Rear Panel Connectors

Table 3-2 lists the rear panel connectors on the 2801250. Detailed descriptions of these connectors can be found in **Section 3.3** on **page 61**.

Connector	pe	Label
Audio connector	**3 x audio jacks**	**Audio 1**
CRT connector	**15-pin female connector**	**VGA1.C**
Ethernet connector	**RJ-45**	**J7**
Ethernet connector	**RJ-45**	**J6**
Keyboard/mouse connector	**PS/2**	**KB/MS1**
Parallel port	**26-pin connector**	**CN1.A**
RS-232 serial port connector	**10-pin connector**	**COM1.B**
USB connector	**USB port**	**J7**
USB connector	**USB port**	**J7**
USB connector	**USB port**	**J6**
USB connector	**USB port**	**J6**

Table 3-2: Rear Panel Connectors

3.1.4 Onboard Jumpers

Table 3-3 lists the onboard jumpers. Detailed descriptions of these jumpers can be found in **Section 3.3.1** on **page 62**.

Description	Label	Type
Clear CMOS	**J4**	**3-pin header**

CPU FSB setting	**JP1**	**2-pin header**
CPU frequency setting	**JP2**	**2-pin header**
CF card setup	**JP5**	**2-pin header**
LCD voltage setup	**JP3**	**6pin header**
COM2 setup (RS-232/485)	**CON3**	**2-pin header**

Table 3-3: Onboard Jumpers

3.2 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 2801250.

3.2.1 ATX Power Connector

CN Label: **J12**

CN Type: **20-pin header (1x3)**

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

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

The ATX Power connector (PW1) connects an ATX or AT power supply connector.

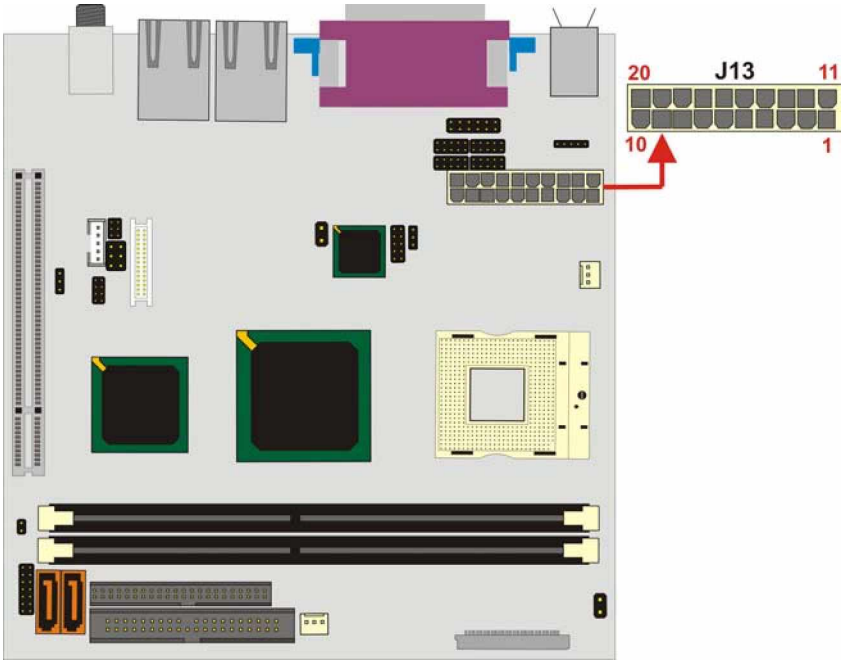

Figure 3-2: ATX PSON Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PSON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PWR OK	18	-5V
9	5VSB	19	5V
10	12V	20	5V

Table 3-4: ATX Power Connector Pinouts

3.2.2 Compact Flash Connector (Optional)

CN Label: **CF1 (reverse side of the motherboard**

CN Type: **50-pin header (2x25)**

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

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

A compact flash memory module is inserted to the Compact Flash connector (CF1). Jumper 3 (JP3) configures the compact flash drive as either a slave or master device.

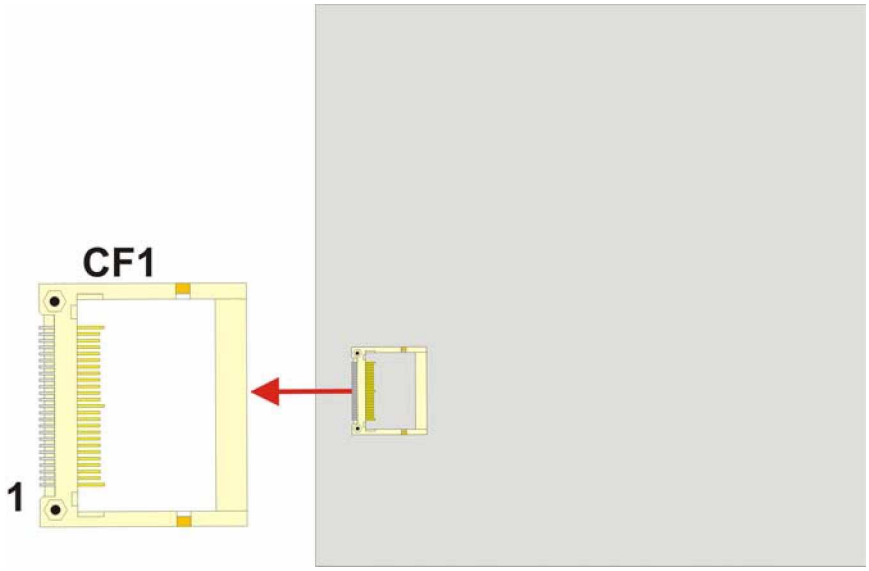

Figure 3-3: CF Flash Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	VCC_COM
12	N/C	37	IRQ15

13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	SDREQ
19	SA1	44	SDACK#
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	66DET
22	DATA 1	47	DATA 8
23	DATA 2	48	DATA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

Table 3-5: Compact Flash Connector Pinouts

3.2.3 Fan Connector

CN Label: **FAN1 and FAN2**

CN Type: **3-pin header**

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

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

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

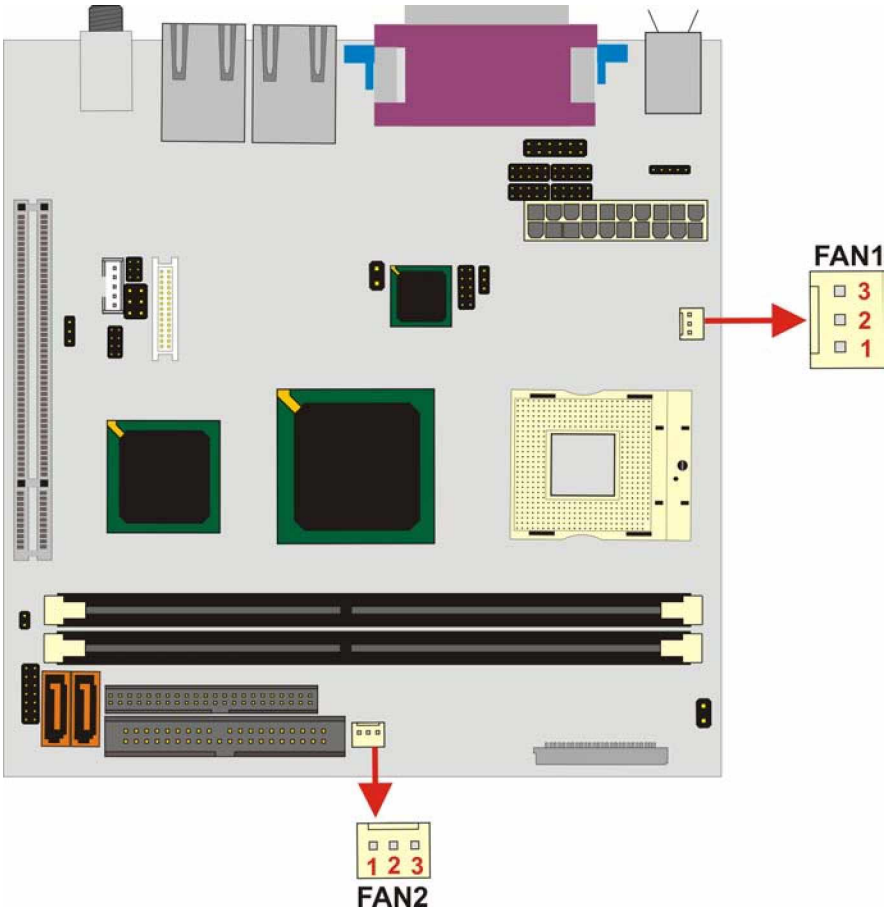

Figure 3-4: Fan Connector Pinout Locations

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

Table 3-6: Fan Connector Pinouts

3.2.4 Floppy Disk Connector

NOTE:

The floppy disk drive (FDD) connector is an optional item.

CN Label: **FDD1**

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

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

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

The floppy disk connector (FDD1) is connected to a floppy disk drive.

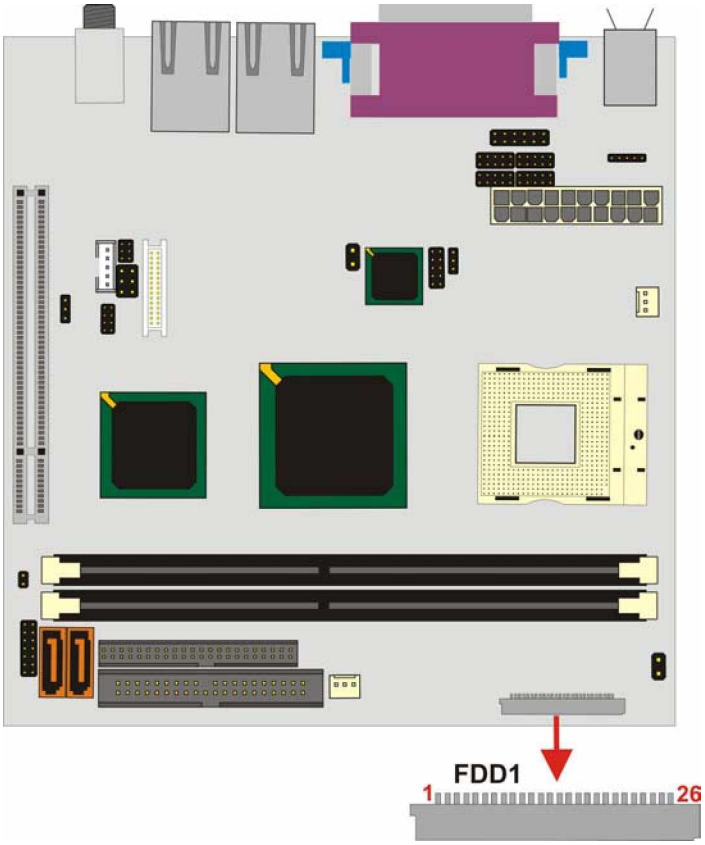

Figure 3-5: FDD Pinout Locations

PIN NO.	DESCRIPTION
1	5V
2	-INDEX
3	5V

4	-DSA
5	5V
6	-DSKCHG
7	NC
8	NC
9	NC
10	-MOA
11	NC
12	-DIR
13	NC
14	-STEP
15	GND
16	-WDATA
17	GND
18	-PWE
19	GND
20	-TRK0
21	GND
22	-WPT
23	GND
24	-RDATA
25	GND
26	-HDSEL

Table 3-7: FDD Connector Pinouts

3.2.5 Front Panel Connector

CN Label: **CN1**

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

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

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

The front panel connector (CN1) connects to several external switches and indicators to monitor and controls the motherboard. These indicators and switches include:

- Power button
- Reset button
- Speaker
- Power LED
- HDD LED

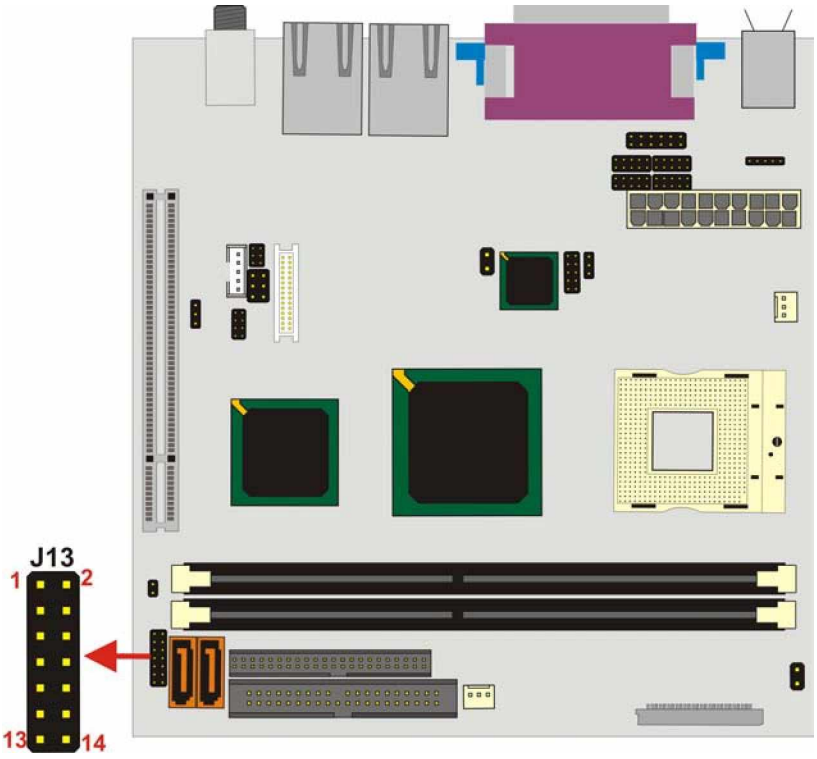

Figure 3-6: Front Panel Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1-5	POWER LED	2-8	SPEAKER
7-9	PWR BUTTON	12-14	RESET
11-13	HDLED		

Table 3-8: Front Panel Connector Pinouts

3.2.6 GPIO Connector

CN Label: **DIO1**

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

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

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

The General Purpose Input Output (GPIO) connector can be connected to external I/O control devices including sensors, lights, alarms and switches.

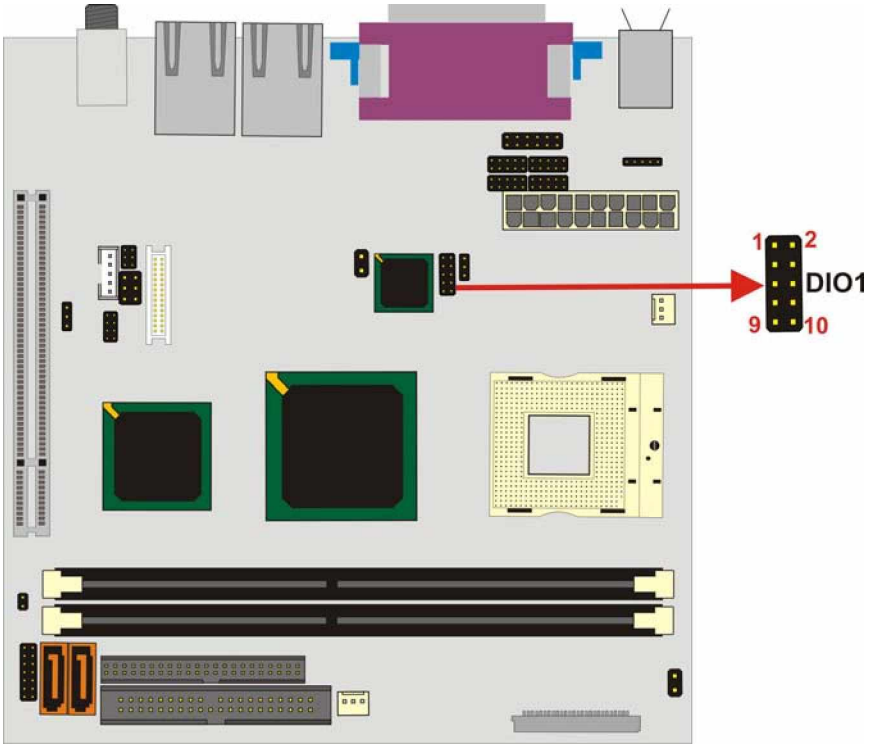

Figure 3-7: GPIO Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	5V
3	GPI0	4	GPI1
5	GPI2	6	GPI3
7	GPO0	8	GPO1

9	GPO2	10	GPO3

Table 3-9: GPIO Connector Pinouts

3.2.7 IDE Connector (Primary)

CN Label: **IDE1**

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

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

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

One primary 40-pin primary IDE device connector on the 2801250 motherboard supports connectivity to Ultra ATA/133 IDE devices with data transfer rates up to 133MB/s.

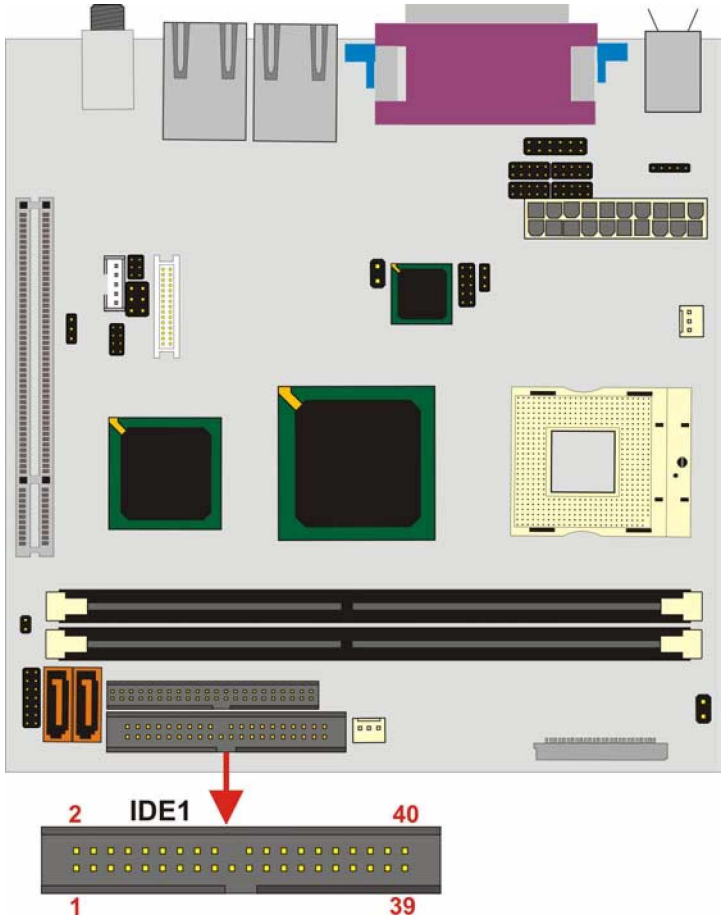

Figure 3-8: Primary IDE Device Connector Locations

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 3-10: Primary IDE Connector Pinouts

3.2.8 IDE Connector (Secondary)

CN Label: **IDE2**

CN Type: **44pin header (2x22)**

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

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

One primary 44-pin secondary IDE device connector on the 2801250 motherboard supports connectivity to Ultra ATA/133 IDE devices with data transfer rates up to 133MB/s.

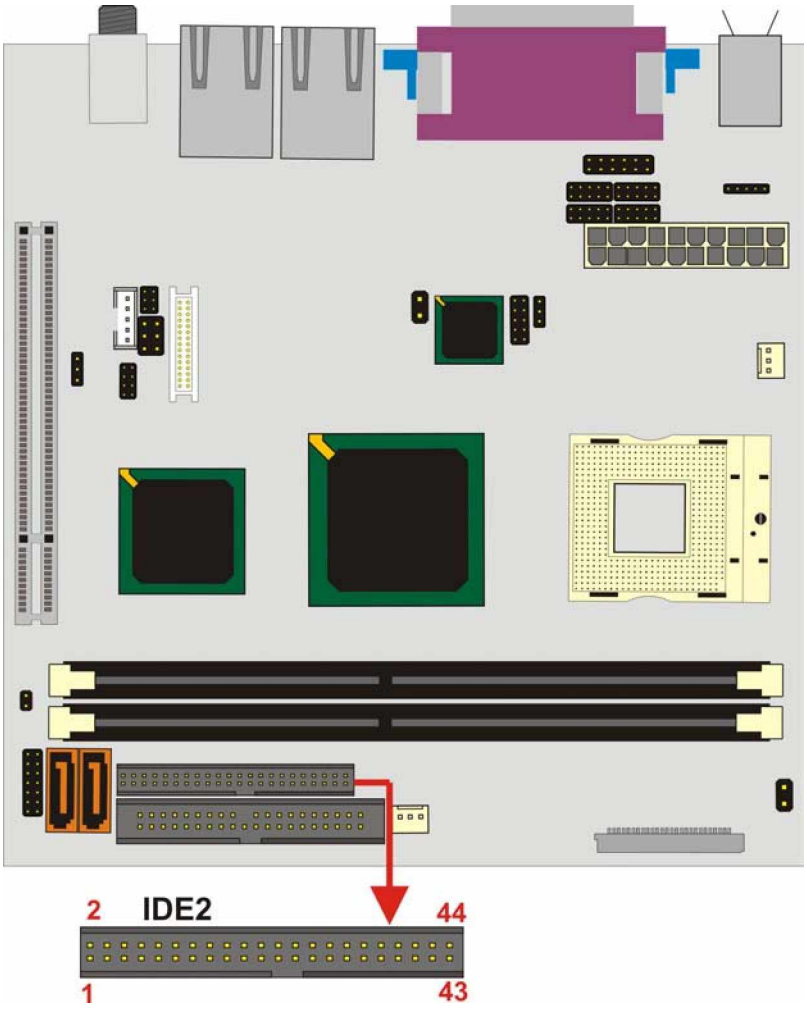

Figure 3-9: Secondary IDE Device Connector Locations

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
41	VCC	42	VCC
43	GROUND	44	N/C

Table 3-11: Secondary IDE Connector Pinouts

3.2.9 Inverter Power Connector

CN Label: **CN2**

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

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

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

The inverter connector is connected to the LCD backlight.

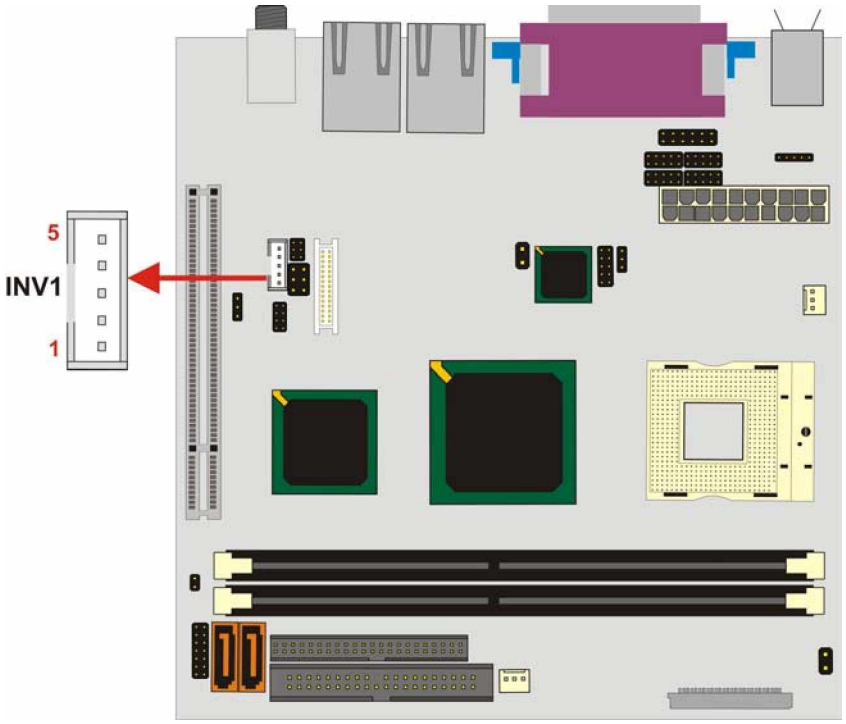

Figure 3-10: Inverter Connector Locations

PIN NO.	DESCRIPTION
1	NC
2	GND
3	12V
4	GND
5	EN_BL

Table 3-12: Inverter Power Connector Pinouts

3.2.10 IR Interface Connector

CN Label: **IR1**

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

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

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

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

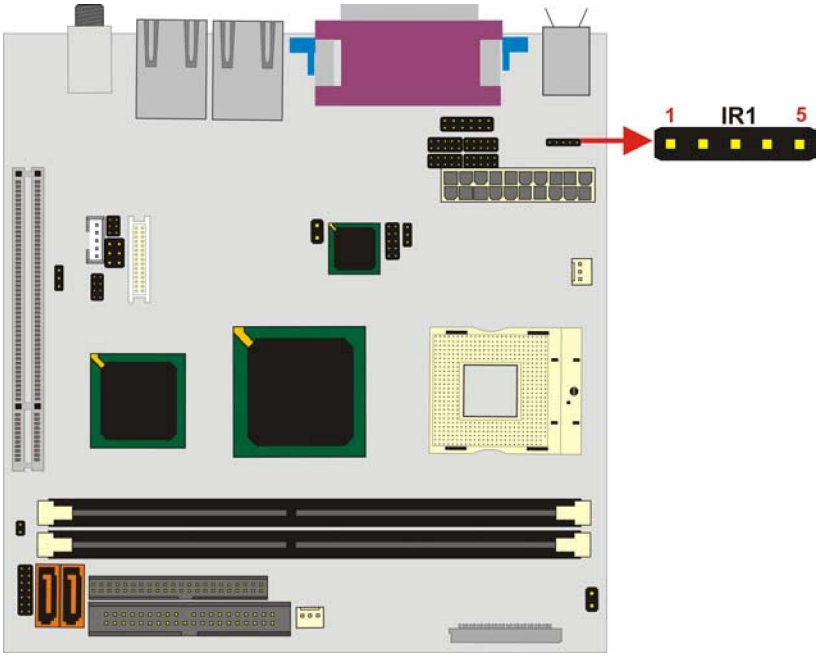

Figure 3-11: IR Connector Pinout Locations

PIN NO.	DESCRIPTION
1	5V
2	NC
3	IRRX
4	GND
5	IRTX

Table 3-13: IR Connector Pinouts

3.2.11 LCD LVDS Connector

CN Label: **LVDS1**

CN Type: **30-pin header (2x15)**

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

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

The LVDS LCD connector (LVDS1) connects to a one or two channel (18-bit or 24-bit) LVDS panel.

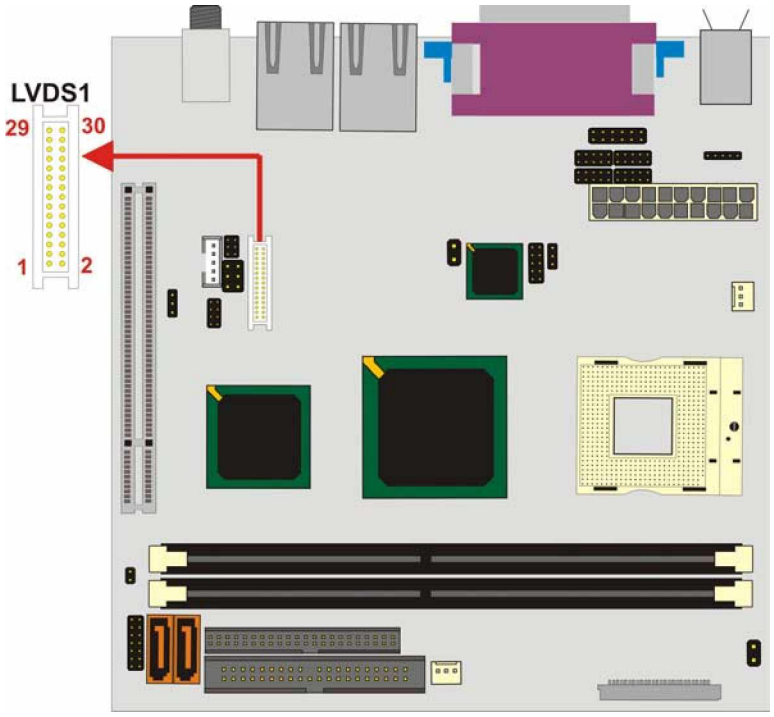

Figure 3-12: LVDS Connector Pinout Locations

PIN	DESCRIPTION	PIN	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 3-14: LCD LVDS Connector Pinouts

3.2.12 RS-232 Serial Port Connectors

CN Label: **COM3, COM4, COM5 and COM6**

CN Type: **2x5 pin header**

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

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

The COM3, COM4, COM5 and COM6 serial ports connectors connect to RS-232 serial port devices.

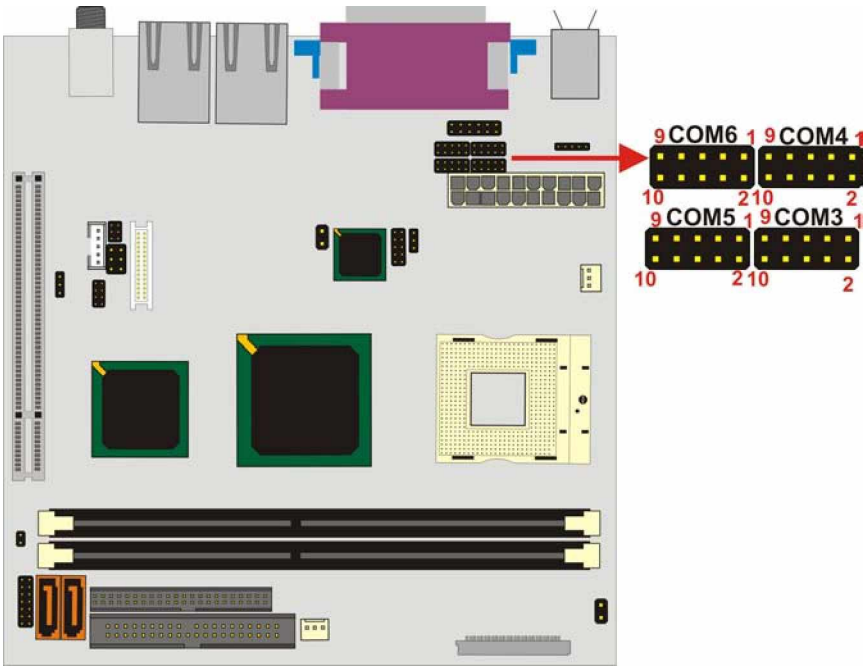

Figure 3-13: RS-232 Serial Port Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD	2	NDSR
3	NRX	4	NRTS
5	NTX	6	NCTS
7	NDTR	8	NRI
9	GND	10	N/C

Table 3-15: RS-232 Serial Port Connector Pinouts

3.2.13 RS-232/485 Serial Port Connectors

CN Label: **COM2**

CN Type: **2x7 pin header**

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

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

The COM2 serial port connector connects to an RS-232 or RS-485 serial port devices.

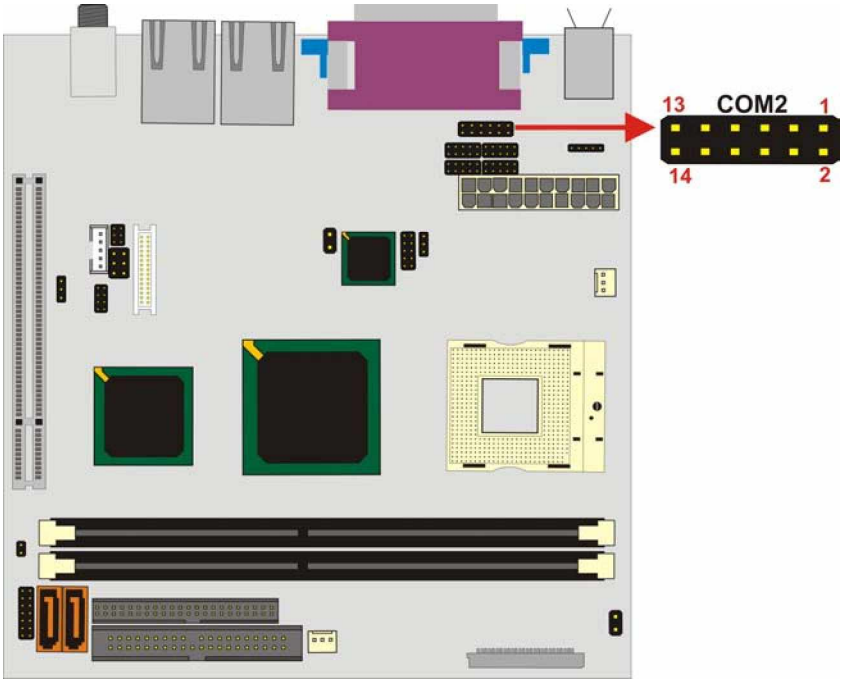

Figure 3-14: RS-232/RS-485 Serial Port Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD2	2	NDSR2
3	NRX2	4	NRTS2
5	NTX2	6	NCTS2
7	NDTR2	8	NRI2
9	GND	10	GND
11	TX2+	12	TX2-
13	RX2+	14	RX2-

Table 3-16: RS-232/RS-485 Serial Port Connector Pinouts

3.2.14 SATA Drive Connectors

CN Label: **SATA1 and SATA2**

CN Type: **1x7 pin SATA drive connectors**

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

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

The two SATA drive connectors are connected to two first generation SATA drives. First generation SATA drives transfer data at speeds as high as 150MB/s.

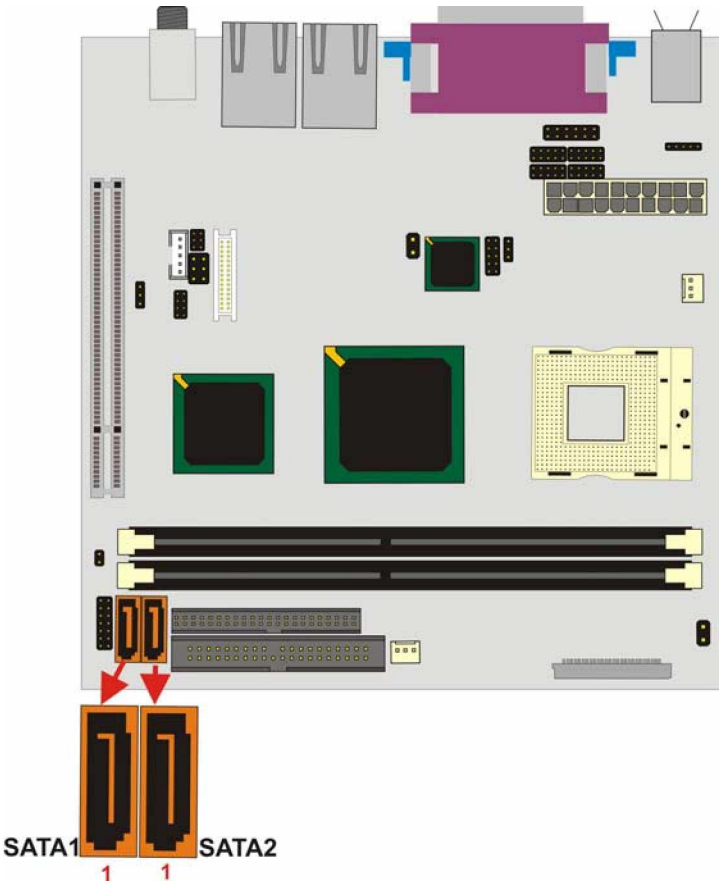

Figure 3-15: SATA Drive Connector Pinout Locations

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

Table 3-17: SATA Drive Connector Pinouts

3.2.15 TV Out Connector

CN Label: **TV1**

CN Type: **2x3 pin header**

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

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

The 2x3 pin TV out connector connects to a TV.

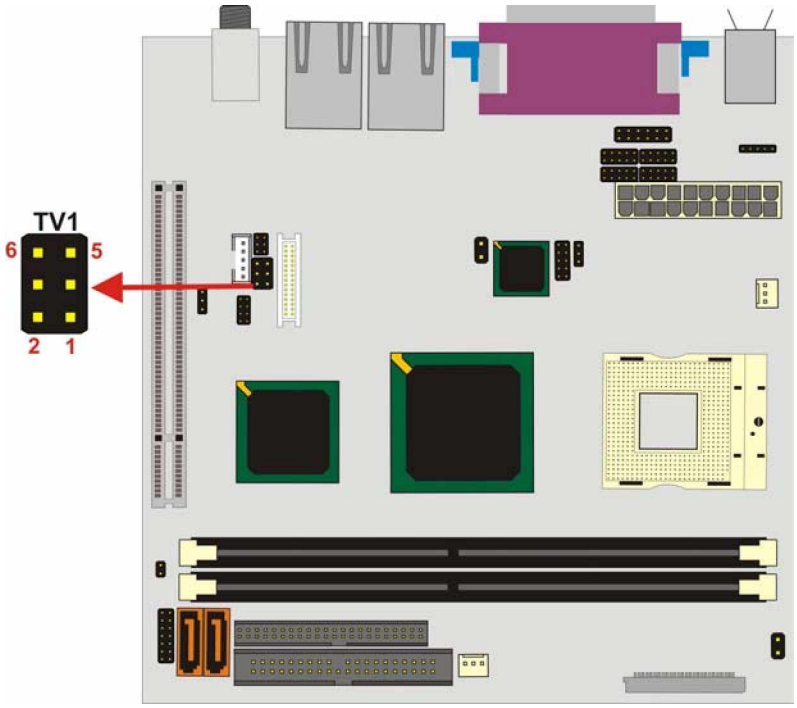

Figure 3-16: TV Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	TVDAC_B
3	GND	4	TVDAC_C
5	GND	6	TVDAC_A

Table 3-18: TV Port Connector Pinouts

3.2.16 Internal USB Connectors

CN Label: **J3**

CN Type: **2x4 pin header**

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

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

Three 2x4 pin connector provides connectivity to two USB 2.0 ports. Four additional USB ports are found on the rear panel. The USB ports are used for I/O bus expansion.

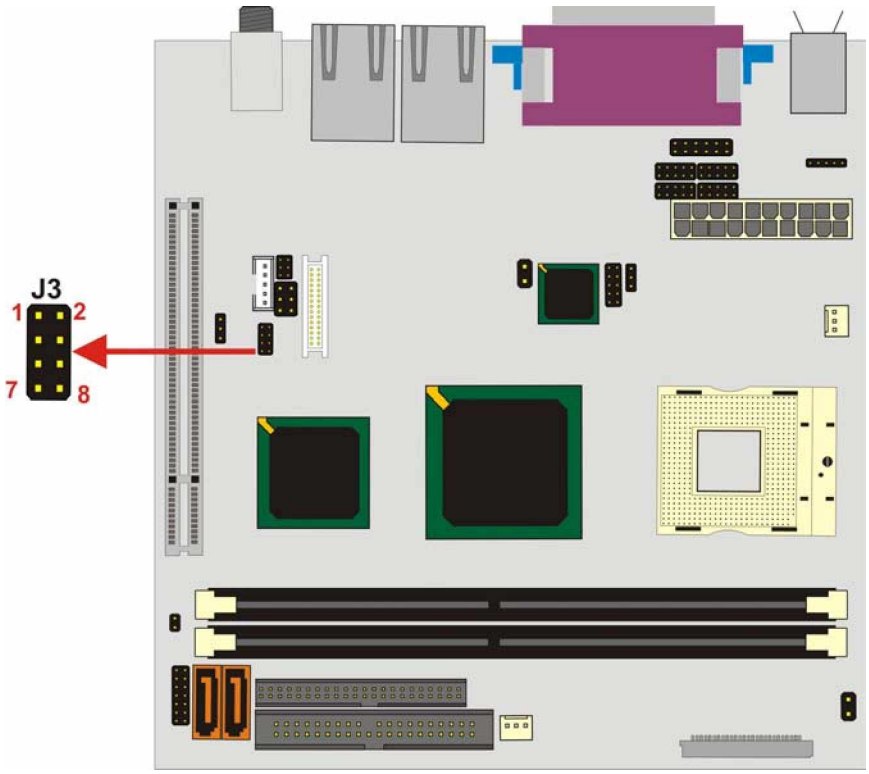

Figure 3-17: USB Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBV0L	2	USBV0L
3	DATA0_N	4	DATA1_N
5	DATA0_P	6	DATA1_P
7	GND	8	GND

Table 3-19: USB Port Connector Pinouts

3.3 External (Rear Panel) Connectors

Figure 3-18 shows the 2801250 rear panel. The peripheral connectors on the back panel are connected to devices externally when the 2801250 is installed in a chassis. The peripheral connectors on the rear panel are:

- 1 x PS/2 keyboard and mouse connector
- 4 x USB connectors
- 2 x RJ-45 GbE connector
- 1 x VGA connector
- 1 x Audio connector (three audio jacks)
- 1 x Serial port connector
- 1 x Parallel port connector

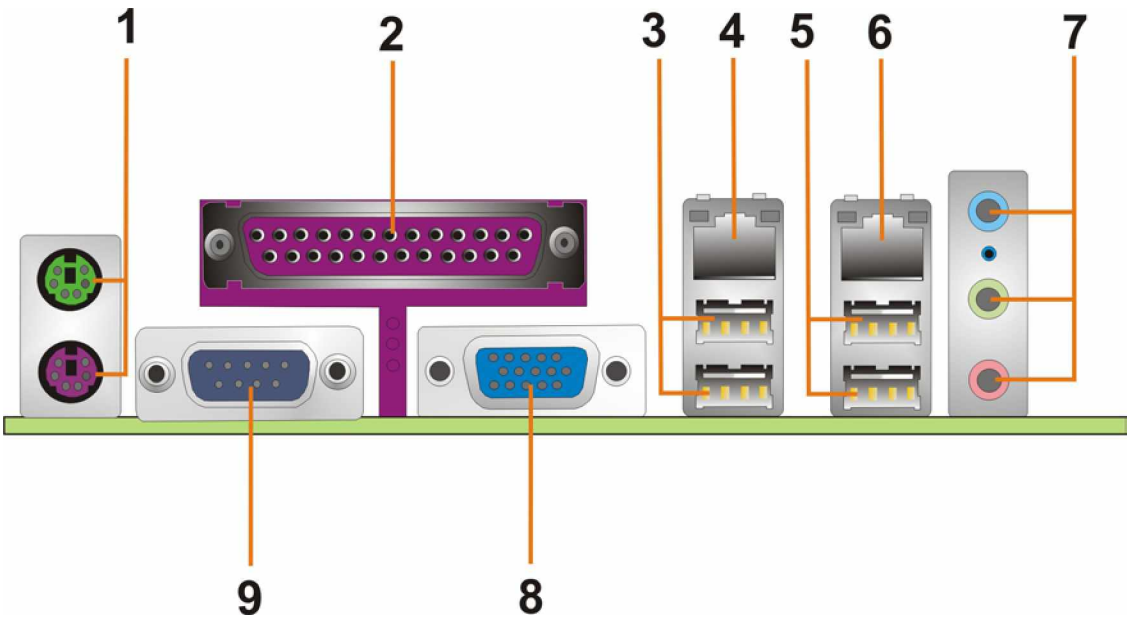

Figure 3-18: 2801250 CP Rear Panel

3.3.1 Keyboard/Mouse Connector

CN Label:	**KB/MS1**
CN Type:	**Dual PS/2**
CN Location:	**See Figure 3-18 (labeled number 1)**
CN Pinouts:	**See Figure 3-19 and Table 3-20**

The 2801250 keyboard and mouse connectors are standard PS/2 connectors.

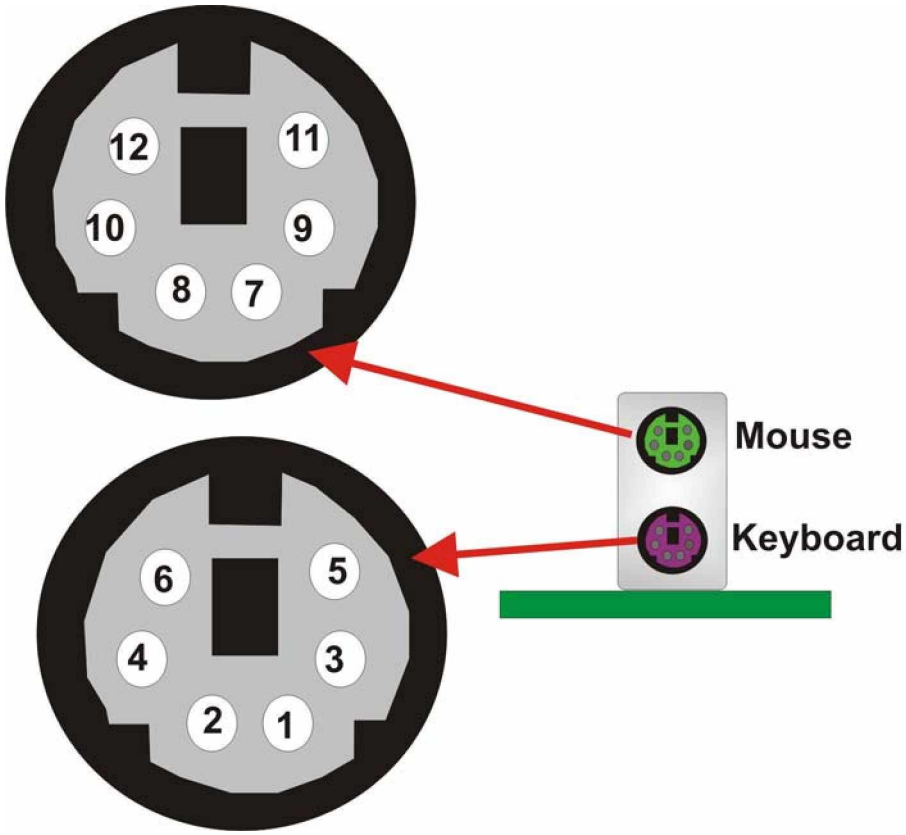

Figure 3-19: PS/2 Pinouts

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 3-20: PS/2 Connector Pinouts

3.3.2 VGA connector

CN Label: **VGA1**

CN Type: **15-pin Female**

CN Location: **See Figure 3-18 (labeled number 8)**

CN Pinouts: **See Figure 3-20, Table 3-21 (VGA)**

A 15-pin VGA connector connects to standard displays.

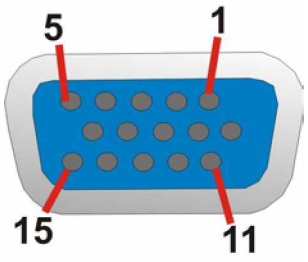

Figure 3-20: Serial Port (COM1) and VGA Connector

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	9	NC
2	GREEN	10	GROUND
3	BLUE	11	NC
4	NC	12	DDCDAT
5	GROUND	13	HSYNC
6	GROUND	14	VSYNC
7	GROUND	15	DDCCLK
8	GROUND		

Table 3-21: VGA Connector Pinouts

3.3.3 Serial Port Connector

CN Label: **COM1**

CN Type: **D-SUB Serial Port Connector**

CN Location: **See Figure 3-18 (labeled number 9)**

CN Pinouts: **See Figure 3-21, Table 3-22 (COM1, RS-232)**

The 2801250 has an RS-232 serial port on the rear panel.

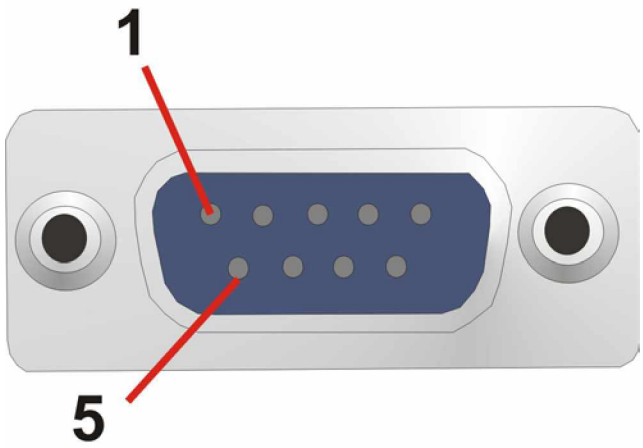

Figure 3-21: COM1 Serial Port Connector

COM1 pinouts are shown below.

PIN	Description	PIN	Description
1	DCD1	6	DSR1
2	RXD1	7	RTS1
3	TXD1	8	CTS1
4	DTR1	9	RI1
5	GROUND	10	

Table 3-22: COM1 Pinouts

3.3.4 Parallel Port Connector

CN Label: **LPT1**

CN Type: **25-pin female connector**

CN Location: **See Figure 3-18 (labeled number 2)**

CN Pinouts: **See Table 3-23 or Figure 3-22**

The 2801250 has one rear panel parallel port to connect to a printer or other parallel communication devices.

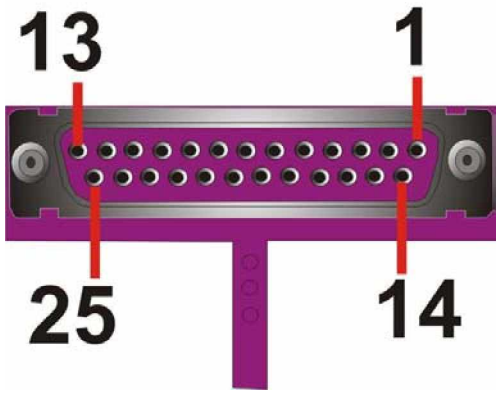

Figure 3-22 Parallel Port Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	N/C
25	GROUND	26	

Table 3-23: Parallel Port Pinouts

3.3.5 LAN Connectors

CN Label: **On the connectors labeled J6 and J7**

CN Type: **RJ-45**

CN Location: **See Figure 3-18 (labeled number 4 and 6)**

CN Pinouts: **See Table 3-24 (RJ-45)**

The 2801250 is equipped with two built-in GbE Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

PIN	DESCRIPTION	PIN	DESCRIPTION
1	+2.5VCC	2	TX0+
3	TX0-	4	TX1+
5	TX1-	6	TX2+
7	TX2-	8	TX3+
9	TX3-	10	GND
11	LINK-	12	LINK+
13	ACTIVE-	14	ACTIVE+

Table 3-24: LAN Pinouts

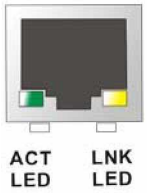

Figure 3-23: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 3-25**.

STATUS	DESCRIPTION	STATUS	
GREEN	Activity	YELLOW	Linked

Table 3-25: RJ-45 Ethernet Connector LEDs

3.3.6 USB Connectors

CN Label: **On the connectors labeled J6 and J7**

CN Type: **USB port**

CN Location: **See Figure 3-18 (LAN labeled number 3 and 5)**

CN Pinouts: **See Table 3-26**

The 2801250 has a four rear panel USB 2.0 ports. These 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 3-26: USB Port Pinouts

3.3.7 Audio Connector

CN Label: **AUDIO1**

CN Type: **3 x audio jacks**

CN Location: **See Figure 3-18 (labeled number 7)**

- **Line In port (Light Blue):** Connects a CD-ROM, DVD player, or other audio devices.
- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.

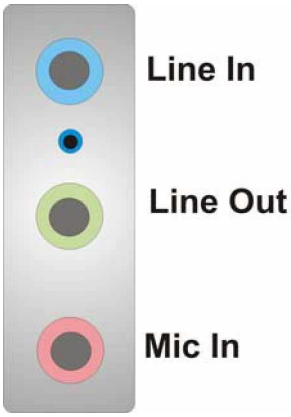

Figure 3-24: Audio Connector

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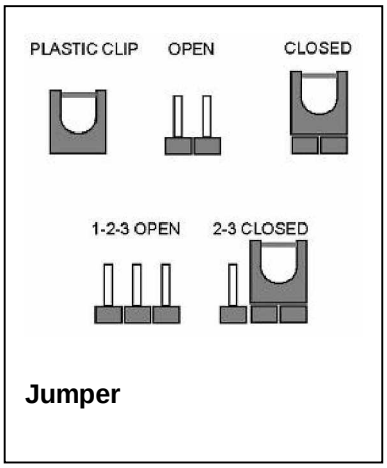
3.4 Onboard Jumpers

NOTE:

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



Jumper

The 2801250 motherboard has six onboard jumpers. The jumpers are described in **Table 3-27**.

Description	Label	Type
Clear CMOS	**J4**	**3-pin header**
CPU FSB setting	**JP1**	**2-pin header**

CPU frequency setting	**JP2**	**2-pin header**
CF card setup	**JP2**	**3-pin header**
LCD voltage setup	**JP1**	**6-pin header**
COM2 setup (RS-232/485)	**CON3**	**2-pin header**

Table 3-27: Jumpers

3.4.1 Clear CMOS Jumper

Jumper Label: **J4**

Jumper Type: **3 pin header**

Jumper Settings: **See Table 3-28**

Jumper Location: **See Figure 3-25**

If the 2801250 fails to boot due to improper BIOS settings, use this jumper to clear the CMOS data and reset the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

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

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

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

Clear CMOS	DESCRIPTION
1-2 (Default)	Keep CMOS Setup
2-3	Clear CMOS Setup

Table 3-28: Clear CMOS Jumper Settings

The clear CMOS jumper is located in **Figure 3-25**.

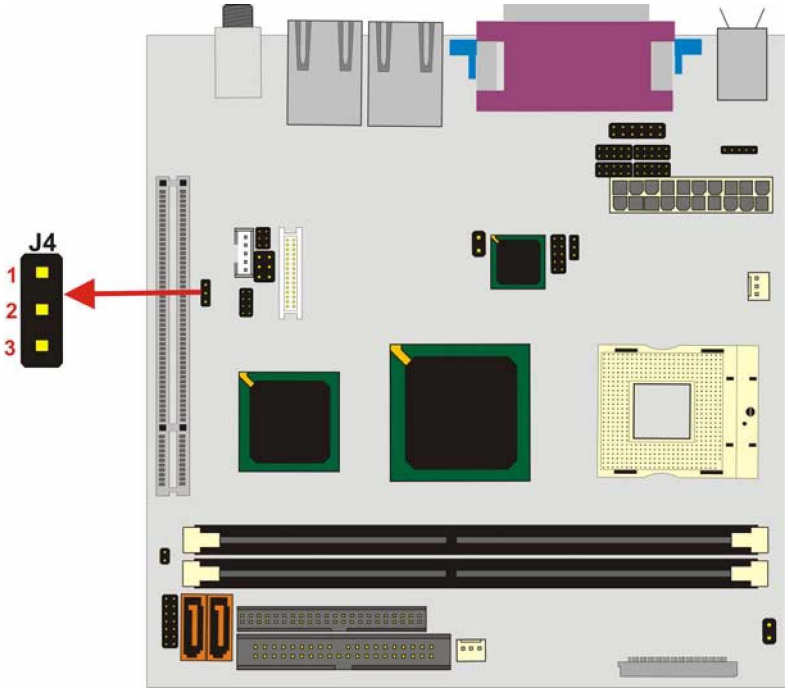


Figure 3-25: CLR_CMOS Pinout Locations

3.4.2 CPU FSB Settings Jumper

Jumper Label: **JP1**

Jumper Type: **2-pin header**

Jumper Settings: **See Table 3-28**

Jumper Location: **See Figure 3-25**

The CPU FSB Settings jumper allows the user to select the front side bus frequency between the CPU and the northbridge.

JP1	DESCRIPTION
OPEN (Default)	
CLOSE	FSB 533MHz

Table 3-29: FSB Selection Jumper Settings

The CPU FSB Settings jumper is location is shown in **Figure 3-25**.

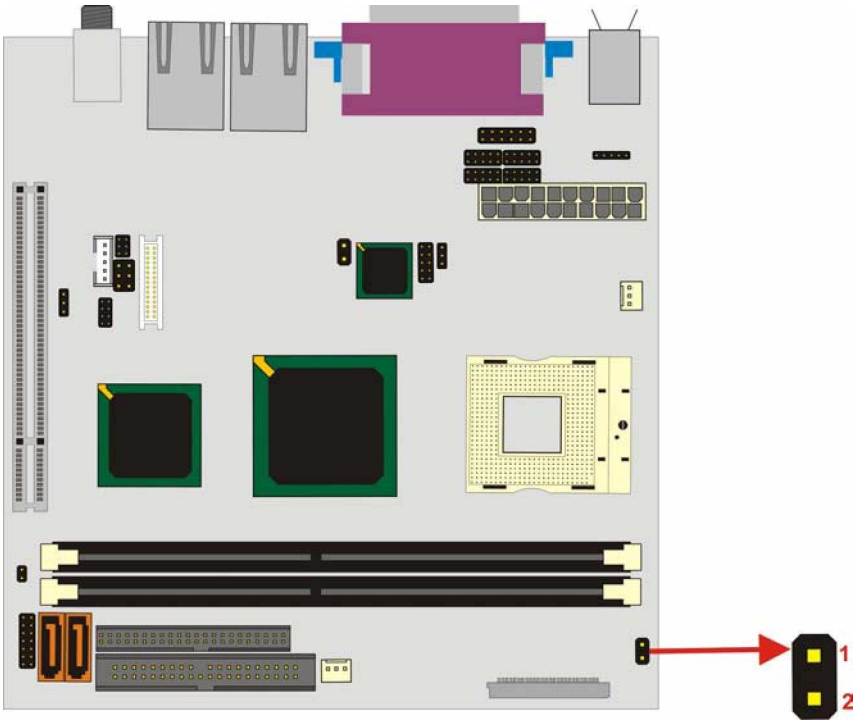


Figure 3-26: JP1 Location

3.4.3 CPU Frequency Setting Jumper

Jumper Label:	**JP2**
Jumper Type:	**2-pin header**
Jumper Settings:	**See Table 3-28**
Jumper Location:	**See Figure 3-25**

The CPU Frequency Setting jumper allows the user to select the CPU operating speed.

JP2	DESCRIPTION
OPEN (Default)	100MHz
CLOSE	133MHz

Table 3-30: FSB Selection Jumper Settings

The CPU Frequency Setting jumper is location is shown in **Figure 3-25**.

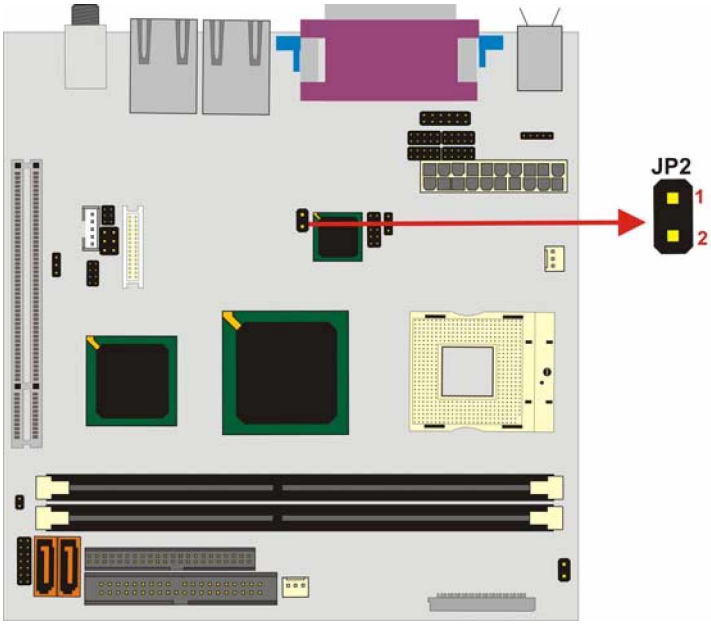


Figure 3-27: JP2 Location

3.4.4 CF Card Setup

Jumper Label: **JP5**

Jumper Type: **2-pin header**

Jumper Settings: **See**

Jumper Location: **See Figure 3-28**

The CF Card Setup jumper sets the compact flash card as either the slave device or the master device.

JP5	DESCRIPTION
OPEN (Default)	Slave
CLOSE	Master

Table 3-31: CF Card Setup Jumper Settings

The CF Card Setup jumper location is shown in **Figure 3-25**

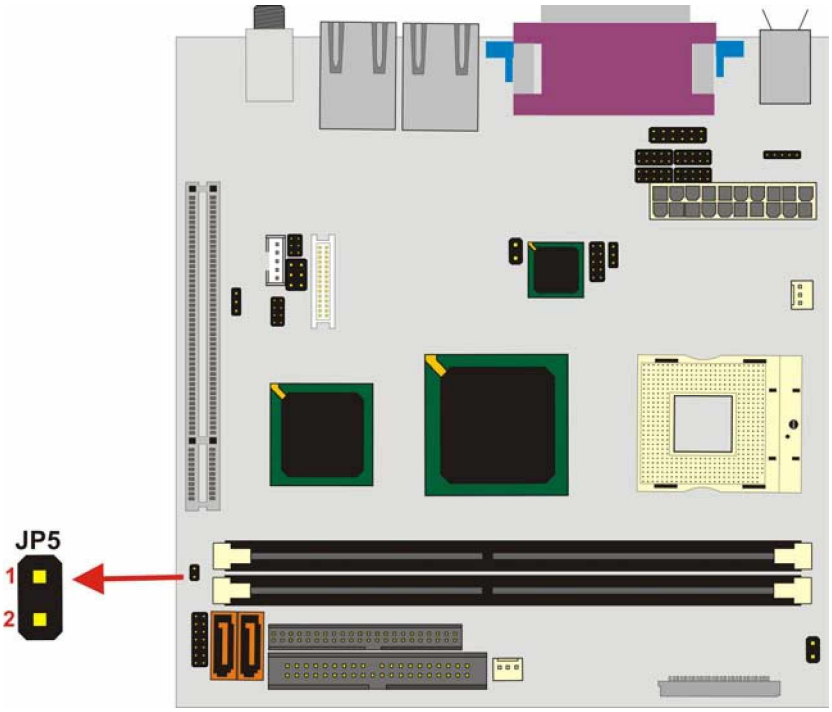


Figure 3-28: JP5 Pinout Locations

3.4.5 LCD Voltage Setup Jumper

WARNING:

Making the wrong setting on this jumper may cause irreparable damage to both the motherboard and the LCD screen connected to the onboard connector.

Jumper Label:	**JP3**
Jumper Type:	**6-pin header**
Jumper Settings:	**See Table 3-32**
Jumper Location:	**See Figure 3-29**

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

required voltage is known, make the necessary jumper setting in accordance with the settings shown in **Table 3-32**.

JP3	DESCRIPTION
Short 1-2	3V
Short 3-4 (Default)	5V
Short 5-6	12V

Table 3-32: JP3 Jumper Settings

The LCD Voltage Setup jumper location is shown in **Figure 3-29** below.

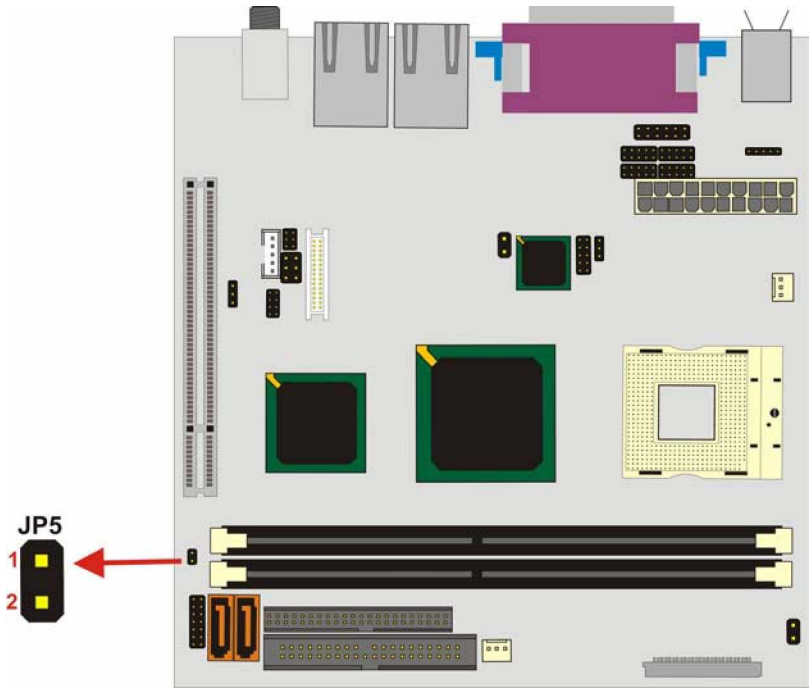


Figure 3-29: JP3 Pinout Locations

3.4.6 COM2 Setup Jumper

Jumper Label: **CON1**

Jumper Type: **2-pin header**

Jumper Settings: **See Table 3-32**

Jumper Location: **See Figure 3-29**

This jumper configures the COM2 connector as an RS-232 serial port or as an RS-484 serial port. The selection options are shown in **Table 3-32**.

CON1	DESCRIPTION
Short 1 – 2 (Default)	RS-232
Short 3 – 4	RS-484

Table 3-33: CON1 Jumper Settings

The COM2 Setup jumper location is shown in **Figure 3-29** below.

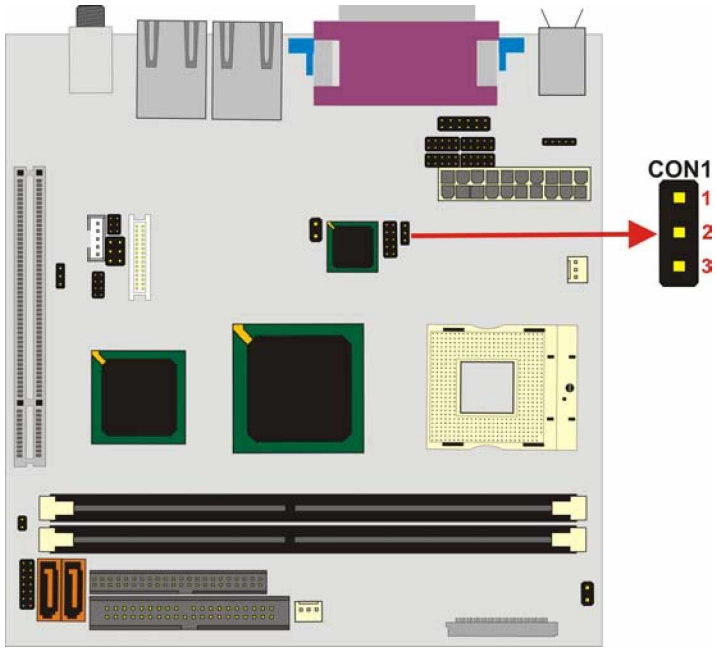


Figure 3-30: CON1 Pinout Locations

Chapter

4

4 Installation and Configuration

4.1 Installation Considerations

NOTE:

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

4.1.1 Installation Notices

Before and during the installation of the 2801250, please **do** the following:

- Read the user manual
  - The user manual provides a complete description of the 2801250, installation instructions and configuration options.
- Wear an electrostatic discharge cuff (ESD)
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the motherboard on an antistatic pad
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn off all power to the 2801250
  - When working with the motherboard, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the 2801250 **DO NOT:**

- remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- use the product before verifying all the cables and power connectors are

properly connected.

- allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.2 Unpacking

NOTE:

If any of the items listed below are missing when the 2801250 is unpacked, do not proceed with the installation and contact the 2801250 reseller or vendor.

4.2.1 Unpacking Precautions

Before installing the 2801250, unpack the motherboard. Some components on 2801250 are very sensitive to static electricity and can be damaged by a sudden rush of power. To protect it from being damaged, follow these precautions:

- The user should ground them self to remove any static charge before touching the 2801250. To do so wear a grounded wrist strap at all times or frequently touch any conducting materials that is connected to the ground.
- Handle the 2801250 by its edges. Do not touch the IC chips, leads or circuitry if not necessary.

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

4.2.2 Checklist

When unpacking the 2801250, please make sure that the package contains the following items.

- 1 x 2801250 single board computer

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

If one or more of these items are missing, please contact the reseller or vendor the 2801250 was purchased from and do not proceed any further with the installation.

4.3 2801250Motherboard Installation

WARNING!

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

WARNING!

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

WARNING!

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

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

NOTE:

Some 2801250 models already have preinstalled CPUs. If the motherboard has a preinstalled CPU then the following section on CPU installation can be skipped.

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

4.3.1 CPU Installation

WARNING!

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

To install an Intel 479-pin CPU onto the motherboard, follow the steps below:

Step 1: **Is the CPU retention screw in an unlocked position?** When shipped, the

retention screw of the CPU socket should be in the unlocked position. If it is not in the unlocked position, use a screwdriver to position it in an unlocked position. (See **Figure 4-1**)

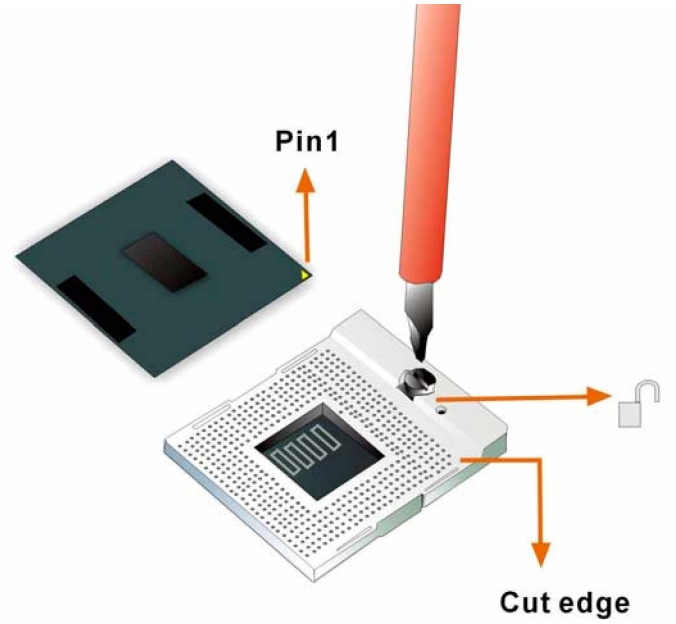


Figure 4-1: Make sure the CPU socket retention screw is unlocked

Step 2: **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 3: **Correctly position the CPU.** Make sure the pin 1 mark matches the cut edge on the CPU socket. Carefully place the CPU on top of the socket. When properly placed, the CPU should be easily inserted into the socket.

Step 4: **Insert the CPU.** To insert the CPU into the socket, hold the CPU by its edges and follow the instructions below:

a. Correctly orientate the CPU with the IHS (Integrated Heat Sink) side facing upward.

b. Locate the pin 1 mark on the CPU.

c. Gently insert the CPU into the socket.

d. Rotate the retention screw into the locked position. (See **Figure 4-2**)

Step 0:

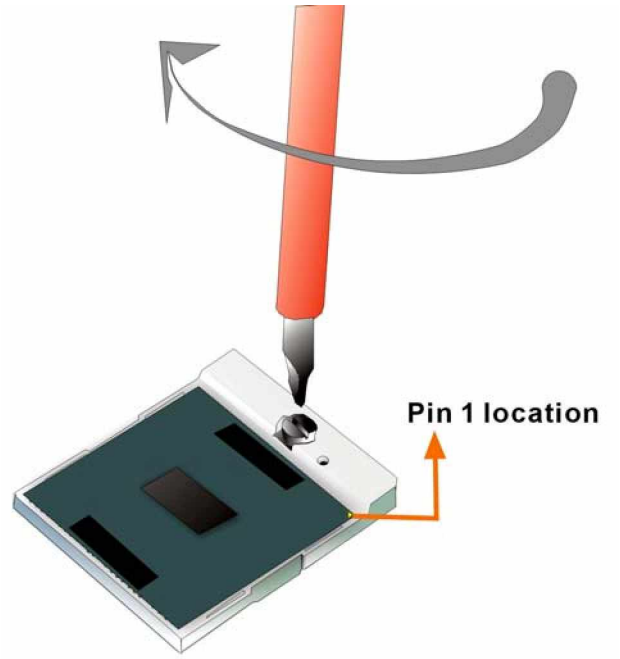


Figure 4-2: Lock the CPU Socket Retention Screw

4.3.2 Cooling Kit Installation

Figure 4-3: Cooling Kit

The cooling kit designed for socket 479 CPUs. (See **Figure 4-3**) The cooling kit is comprised of a CPU heatsink and a cooling fan.

NOTE:

The heatsink comes with a sprayed layer of thermal paste. Make sure the paste is not accidentally wiped during the unpacking or installation of the heatsink. Thermal paste between the CPU and the heatsink is important for optimum heat dissipation.

To install the CF-518 cooling kit, please follow the steps below.

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

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

Step 3: **Secure the cooling kit**. From the solder side of the PCB, align the provided nut caps to the heatsink screw threads that protrude through the PCB holes. Without over tightening the nut caps, insert them onto the protruding screw threads to secure the cooling kit to the PCB board. (See **Figure 4-4**)

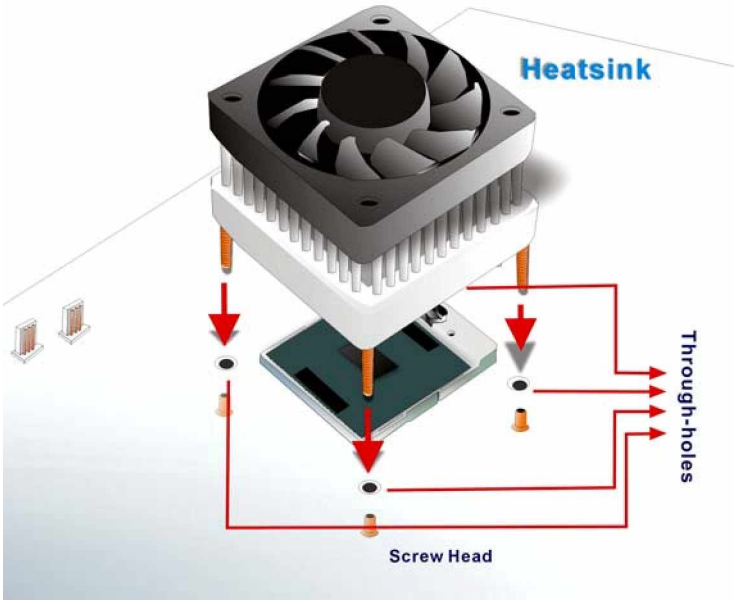


Figure 4-4: Securing the Cooling Kit

Step 4: **Connect the fan cable**. Connect the cooling kit fan cable to the FAN2 connector on the motherboard. Carefully route the cable and avoid heat generating chips and fan blades. (See **Figure 4-5**) **Step 0:**

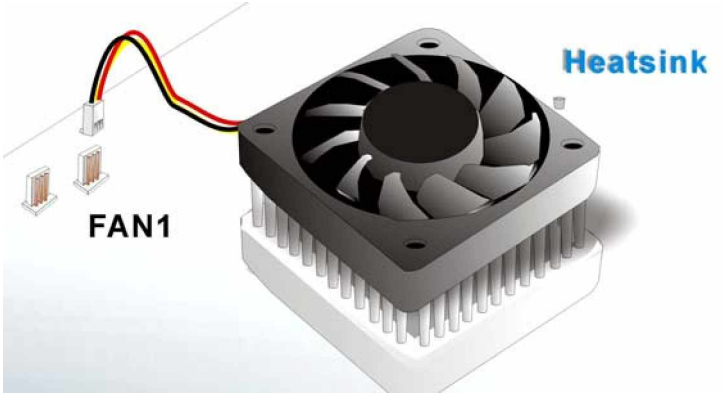


Figure 4-5: Connect the cooling fan cable

4.3.3 DIMM Module Installation

4.3.3.1 Purchasing the Memory Module

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

- The DIMM module can support a memory chip with a maximum size of 1GB
- The DIMM module supports SDRAM DIMM speeds of 333MHz and 400MHz

4.3.3.2 DIMM Module Installation

The 2801250 motherboard has two DDR SDRAM DIMM sockets. To install the DIMM modules, follow the instructions below and refer to ***Figure 4-6***.

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

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

Step 3: Insert the DIMM module slowly. Once it is correctly inserted, push down firmly.

The white handles on either side of the socket move back up and lock the module into the socket. **Step 0:**

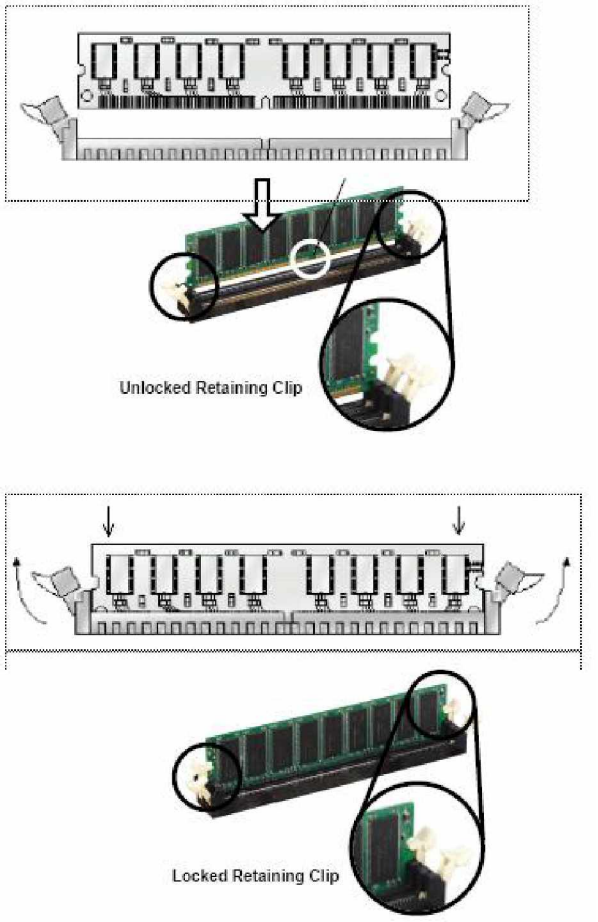


Figure 4-6: DIMM Module Installation

4.3.4 Peripheral Device Connection

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

Quantity	pe
1	ATA 66/100 flat cable
2	SATA cables
1	SATA power cable
1	RS-232 cable
1	USB cable

Table 4-1: Provided Cables

4.3.4.1 IDE Disk Drive Connector (IDE1)

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

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

Step 2: Connect one end of the cable to the PIDE1 connector on the motherboard. A keyed pin on the IDE connectors prevents it from being connected incorrectly.

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

Step 4: Connect the other side of the cable to the HDD making sure that the pin 1 cable corresponds to pin 1 on the connector.**Step 0:**

NOTE:

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

4.4 Chassis Installation

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

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

4.5 Rear Panel Connectors

4.5.1 LCD Panel Connection

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

4.5.2 Ethernet Connection

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

4.5.3 USB Connection

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

4.5.4 Keyboard and Mouse Connection

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

Chapter

5

5 AMI BIOS Setup

5.1 Introduction

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

5.1.1 Starting Setup

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

1. Press the **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen. 0.

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

5.1.2 Using Setup

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

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

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

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

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

5.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter **Chapter 3**, **Section 3.4.1**.

5.1.5 BIOS Menu Bar

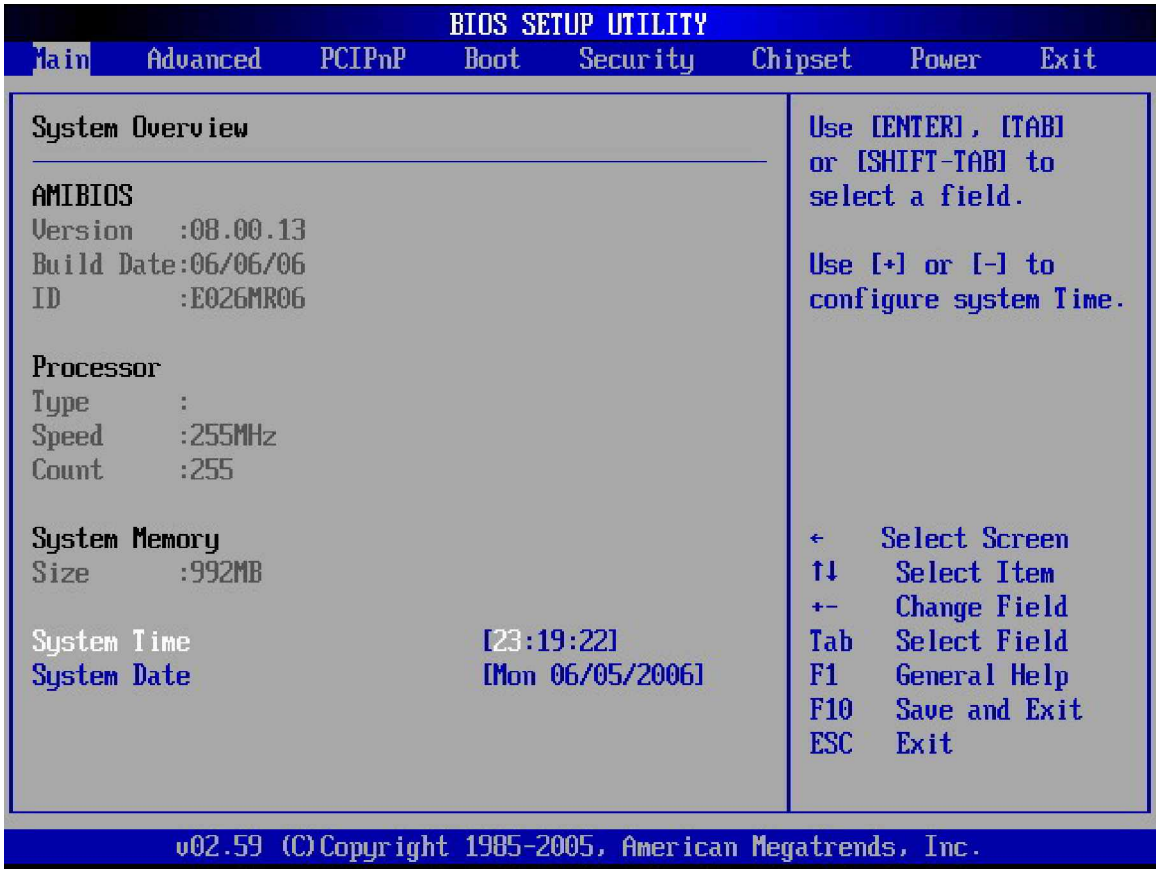
The **menu bar** on top of the BIOS screen has the following main items:

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

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

5.2 Main

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



BIOS Menu 1: Main

System Overview

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

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

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

ƒ **System Memory**: Displays the auto-detected system memory.

- **Size**: Lists memory size

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

ƒ **System Time [xx:xx:xx]**: The system time is set here.

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

5.3 Advanced

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

WARNING:

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

ƒ CPU Configuration (see Section 5.3.1)

ƒ IDE Configuration (see Section 5.3.2)

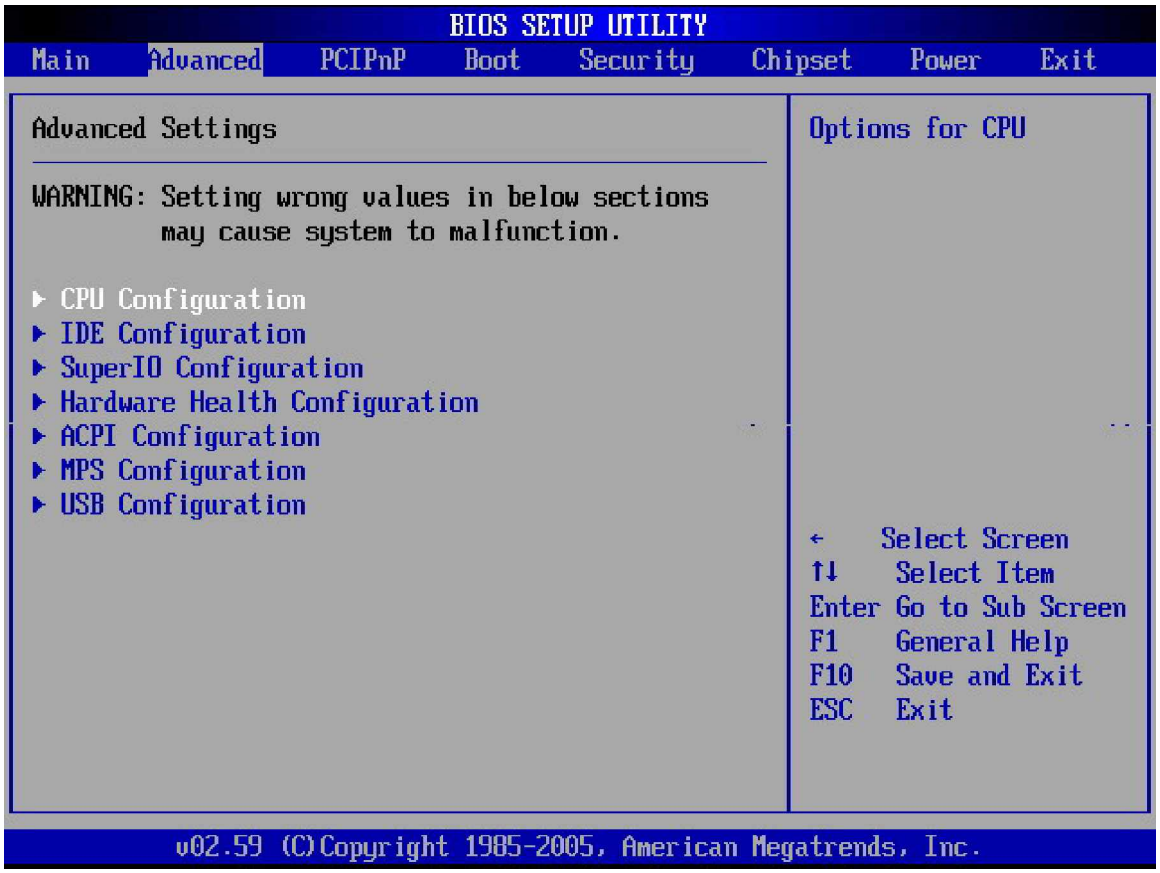
ƒ SuperIO Configuration (see Section 5.3.3)

ƒ Hardware Health Configuration (see Section)

ACPI Configuration (see Section 5.3.5)

MPS Configuration (see Section 5.3.6)

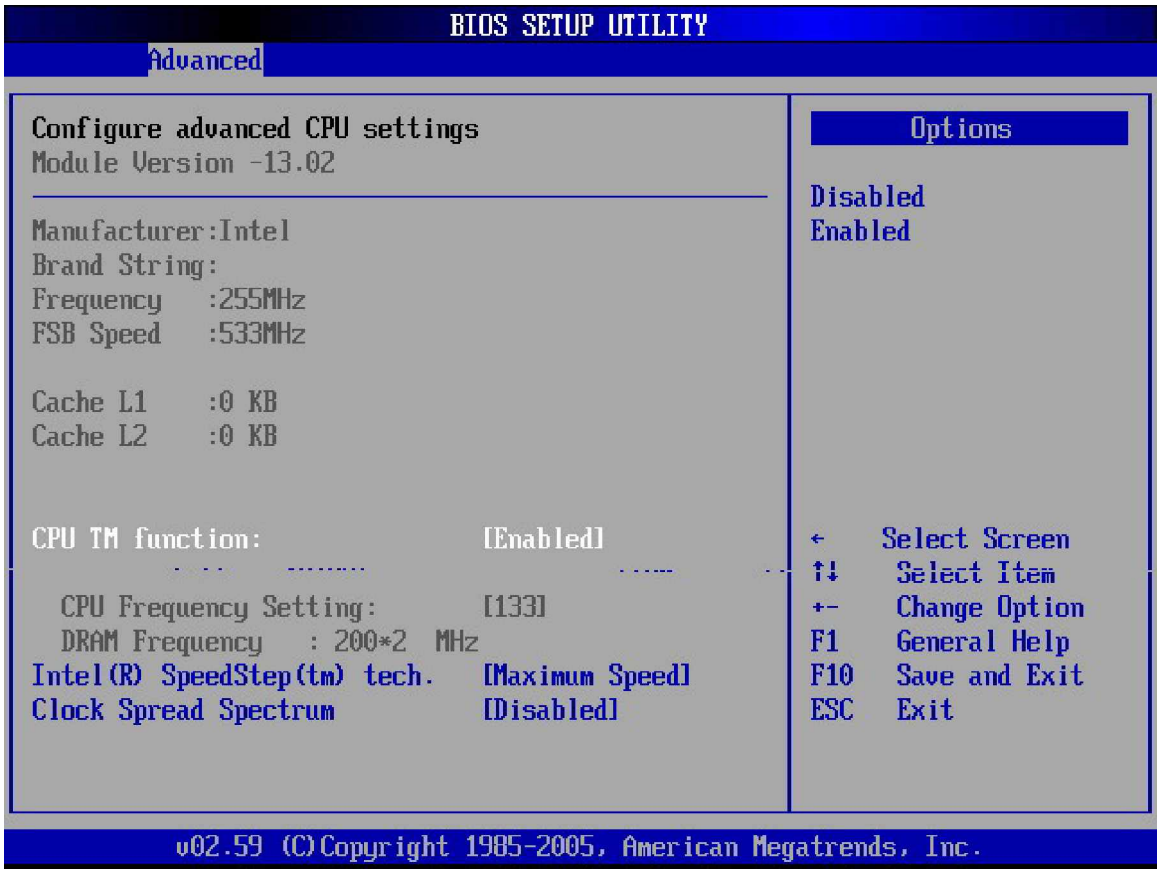
USB Configuration (see Section 5.3.7)



BIOS Menu 2: Advanced

5.3.1 CPU Configuration

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



BIOS Menu 3: CPU Configuration

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

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

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

- CPU TM Function
- Intel ® SpeedStep ™ tech.

  Clock Spread Spectrum

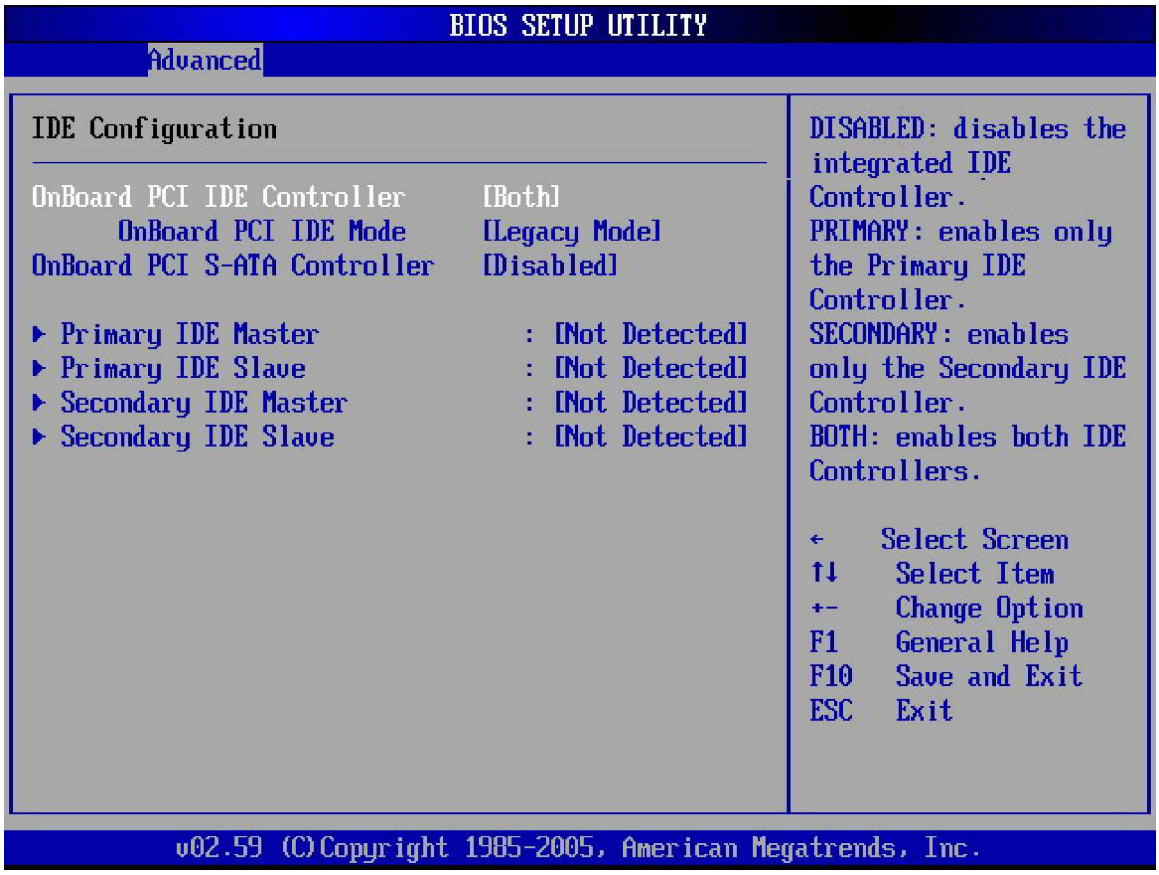
Clock Spread Spectrum [Disabled]

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

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

5.3.2 IDE Configuration

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for 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		Prevents the system from using the onboard IDE controller
Primary		Only allows the system to detect the Primary IDE channel, including both the Primary Master and Primary Slave)
Secondary		Only allows the system to detect the Secondary IDE channel, including both the Secondary Master and Secondary Slave)
Both	(Default)	Allows the system to detect both the Primary and Secondary IDE channels including the Primary Master, Primary Slave, Secondary Master and Secondary Slave.

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

The **Onboard PCI IDE Mode** BIOS option sets the running mode for the PCI IDE.

Legacy Mode	(Default)	The PCI IDE mode is the same as the IDE mode
Native Mode		The PCI IDE mode is the native mode

- **Onboard PCI S-ATA Controller**

The **Onboard PCI S-ATA Controller** option sets the onboard SATA controller. If the RAID function is going to be used (see **Appendix E**) this option must be set in the **RAID** mode.

Disabled	(Default)	The onboard PCI SATA controller is disabled
Native Mode		The SATA controller is set as an IDE device with ID at 0181h

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

- **IDE Master and IDE Slave**

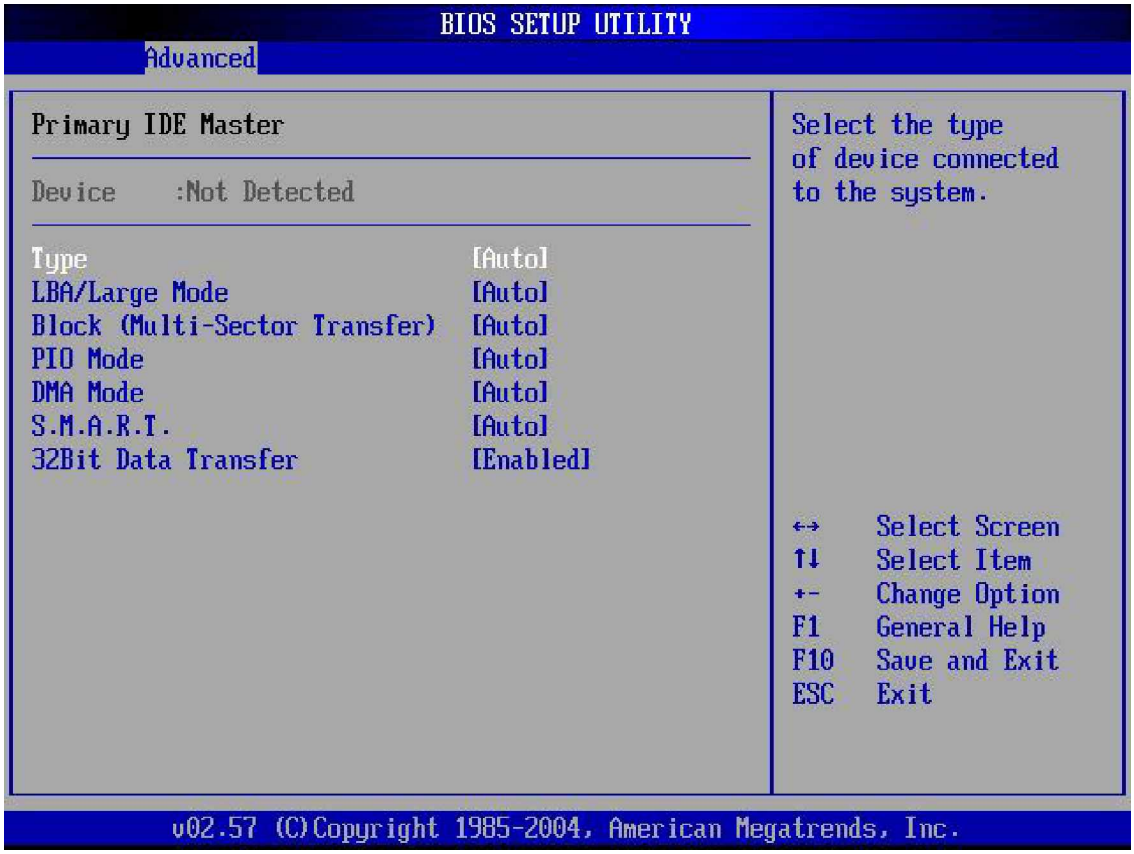
When entering setup, BIOS auto detects the presence of IDE devices. This displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

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

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

5.3.2.1 IDE Master, IDE Slave

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



BIOS Menu 5: IDE Master and IDE Slave Configuration

Auto-Detected Drive Parameters

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

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

to 64 KB per interrupt.

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

Type [Auto]

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

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

- **LBA/Large Mode [Auto]**

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

  - **Disabled** This selection prevents the BIOS from using the LBA mode control on the specified channel.
  - **Auto** (Default) This option allows the BIOS to auto detect the LBA mode control on the specified channel.

- **Block (Multi Sector Transfer) [Auto]**
  - **Disabled** Selecting this option prevents the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.
  - **Auto** (Default) Selecting this value to allows the BIOS to auto detect the device support for Multi-Sector Transfers on the specified channel. If supported. Select this value to allow the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to the memory. The data transfer to and from the device occurs multiple sectors at a time.

- **PIO Mode [Auto]**

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

  - **Auto** (Default) This setting allows the BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.
  - **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps

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

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

- **DMA Mode [Auto]**

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

- **Auto** (Default) The BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps
- **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps
- **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps
- **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps
- **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps
- **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps
- **UDMA1** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps

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

- **S.M.A.R.T [Auto]**

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

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

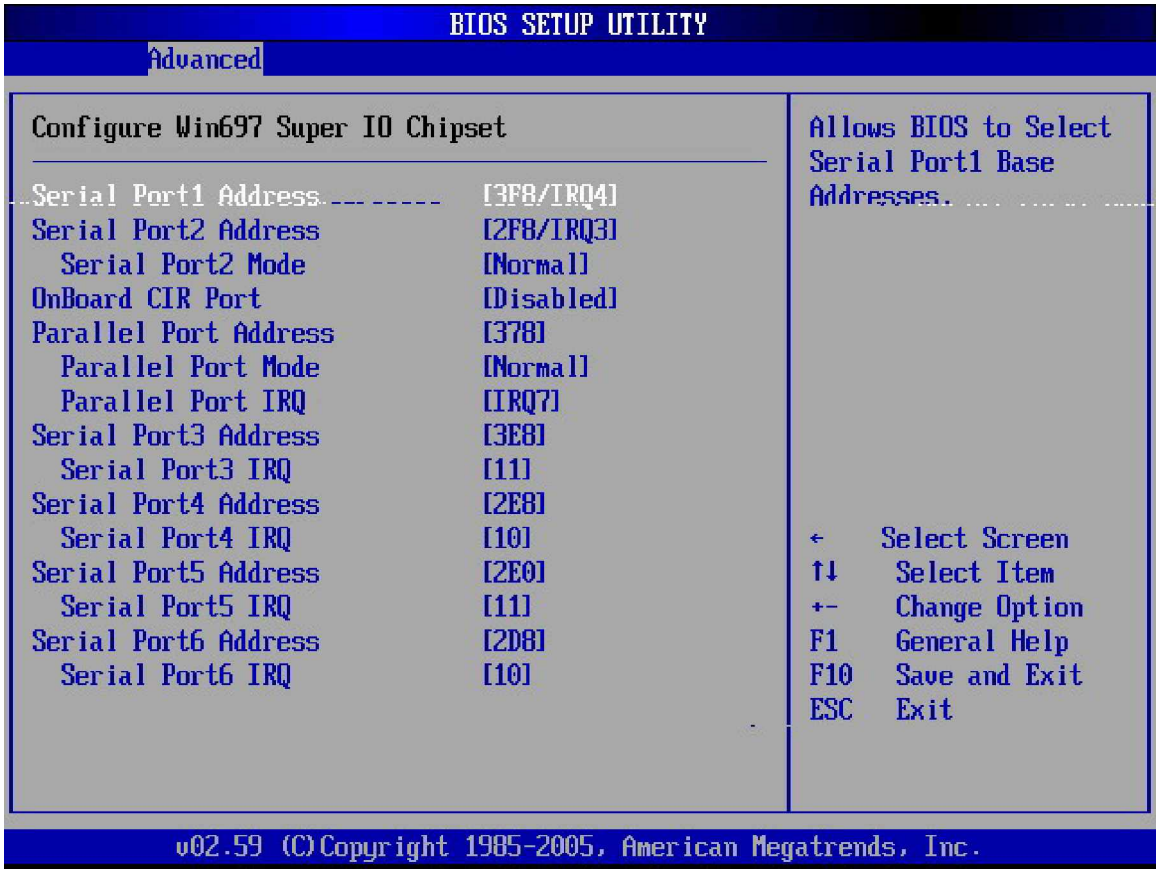
- **32Bit Data Transfer [Enabled]**

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

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

5.3.3 Super IO Configuration

The **Super IO Configuration** menu (**BIOS Menu 6**) sets or changes the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 6: Super IO Configuration

- **Serial Port1 Address [3F8/IRQ4]**

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

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

- **Serial Port2 Address [2F8/IRQ3]**

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

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

- **Serial Port2 Mode [Normal]**

Allows BIOS to select the mode for Serial Port 2

- **Normal** (Default) Serial Port 1 mode is normal
- **IrDA** Serial Port 1 mode is IrDA
- **ASK IR** Serial Port 1 mode is ASK IR

- **Onboard CIR Port [Disabled]**

This option allows BIOS to select the base addresses for CIR.

- **Disabled** (Default) No base address is assigned to CIR
- **3E0** CIR base address is 3E0
- **2E0** CIR base address is 2E0

- **Parallel Port Address [Disabled]**

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

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

- **Parallel Port Mode [Normal]**

The **Parallel Port Mode** selection selects the mode the parallel port operates in.

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

supports bi-directional communication between the system and the parallel port device and the transmission rates between the two are much faster than the Normal mode

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

- **Parallel Port IRQ [IRQ7]**

The **Parallel Port IRQ** selection sets the parallel port interrupt address.

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

- **Serial Port3 Address [3E8]**

This option allows BIOS 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
- **2E0** Serial port 3 I/O port address is 2E0

- **Serial Port3 IRQ [11]**

The **Serial Port3 IRQ** selection sets the interrupt address for serial port 3.

- **10** Serial port 3 IRQ address is 10
- **11** (DEFAULT) Serial port 3 IRQ address is 11

- **Serial Port4 Address [2E8]**

This option allows BIOS to select the base addresses 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
- **2E0** Serial port 4 I/O port address is 2E0

- **Serial Port4 IRQ [10]**

The **Serial Port3 IRQ** selection sets the interrupt address for serial port 4.

- **10** (DEFAULT) Serial port 4 IRQ address is 10
- **11** Serial port 4 IRQ address is 11

- **Serial Port5 Address [2E0]**

This option allows BIOS to select the base addresses for serial port 5.

- **Disabled** No base address is assigned to serial port 3
- **3E8** Serial port 5 I/O port address is 3E8
- **2E8** Serial port 5 I/O port address is 2E8
- **2E0** (Default) Serial port 5 I/O port address is 2E0
- **2D0** Serial port 5 I/O port address is 2D0

- **Serial Port5 IRQ [11]**

The **Serial Port5 IRQ** selection sets the interrupt address for serial port 5.

- **10** Serial port 5 IRQ address is 10
- **11** (DEFAULT) Serial port 5 IRQ address is 11

- **Serial Port6 Address [2D8]**

This option allows BIOS to select the base addresses for serial port 6.

- **Disabled** No base address is assigned to serial port 3
- **3E8** Serial port 6 I/O port address is 3E8
- **2E8** Serial port 6 I/O port address is 2E8
- **2E0** Serial port 6I/O port address is 2E0
- **2D8** (Default) Serial port 6 I/O port address is 2D8

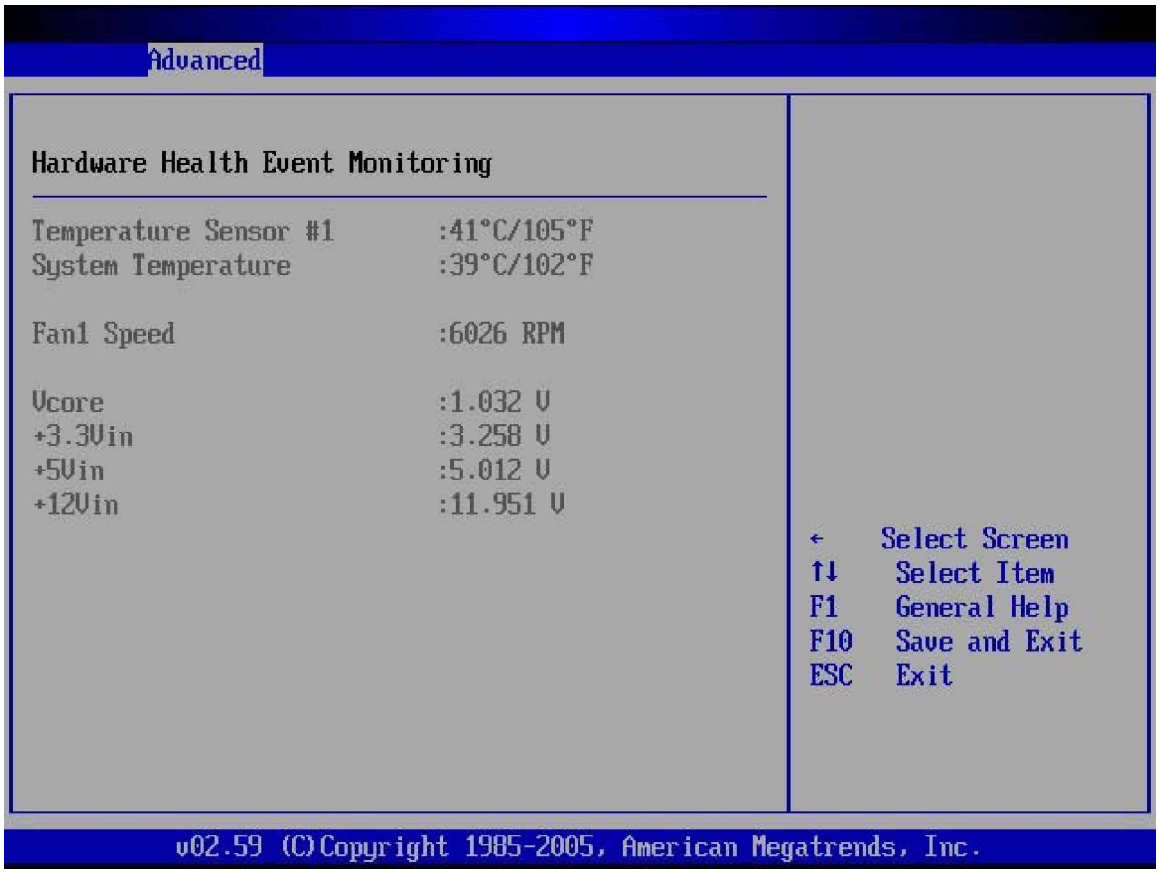
- **Serial Port6 IRQ [10]**

The **Serial Port6 IRQ** selection sets the interrupt address for serial port 6.

- **10** (DEFAULT) Serial port 6 IRQ address is 10
- **11** Serial port 6 IRQ address is 11

5.3.4 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

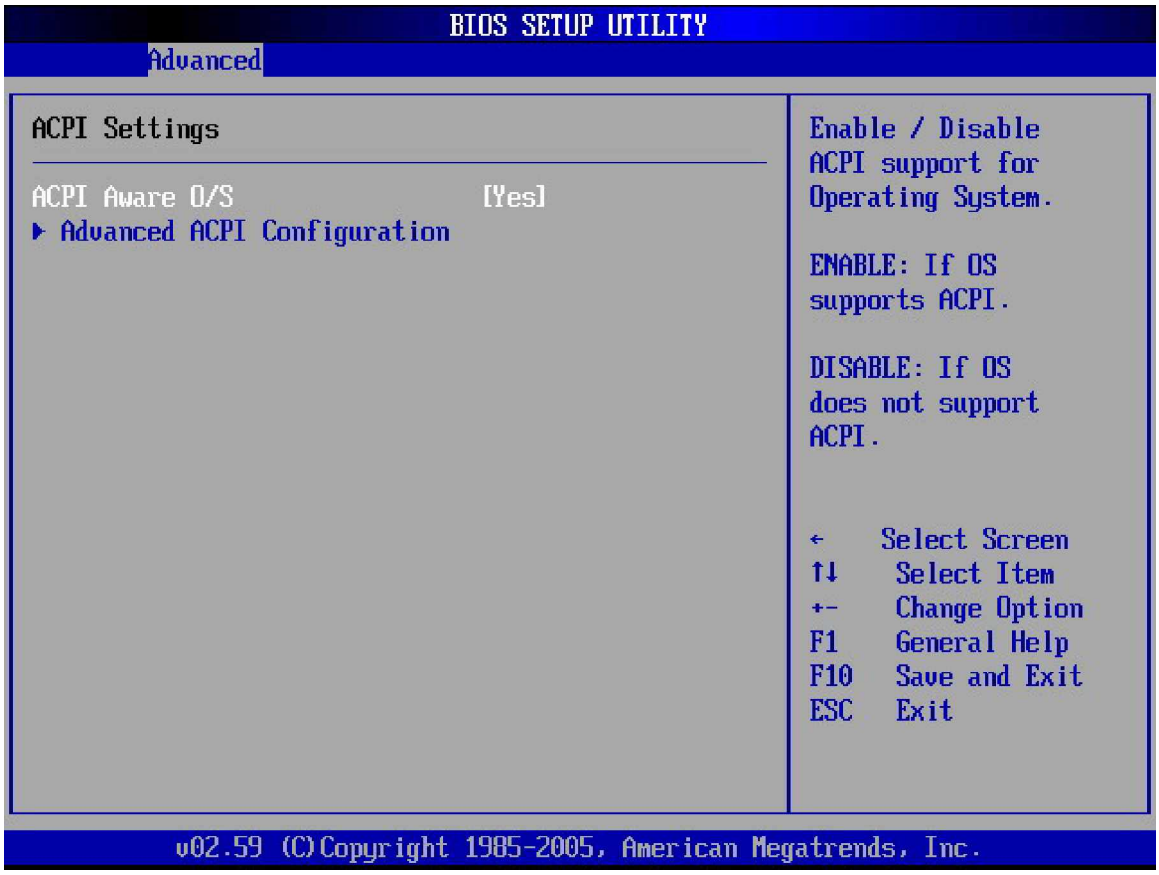
The following system parameters and values are shown. The system parameters that are monitored are:

- **System Temperatures**: The following system temperatures are monitored
  - Temperature Sensor #1
  - System Temperature
  -
- **Fan Speeds**: The CPU cooling fan speed is monitored.
  - Fan1 Speed
  -
- **Voltages**: The following system voltages are monitored
  - Vcore
  - +3.30Vin
  - +5.00Vin

- +12Vin

5.3.5 ACPI Configuration

The **ACPI Configuration** menu (**BIOS Menu 8**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.



BIOS Menu 8: ACPI Configuration

- **ACPI Aware O/S [Yes]**

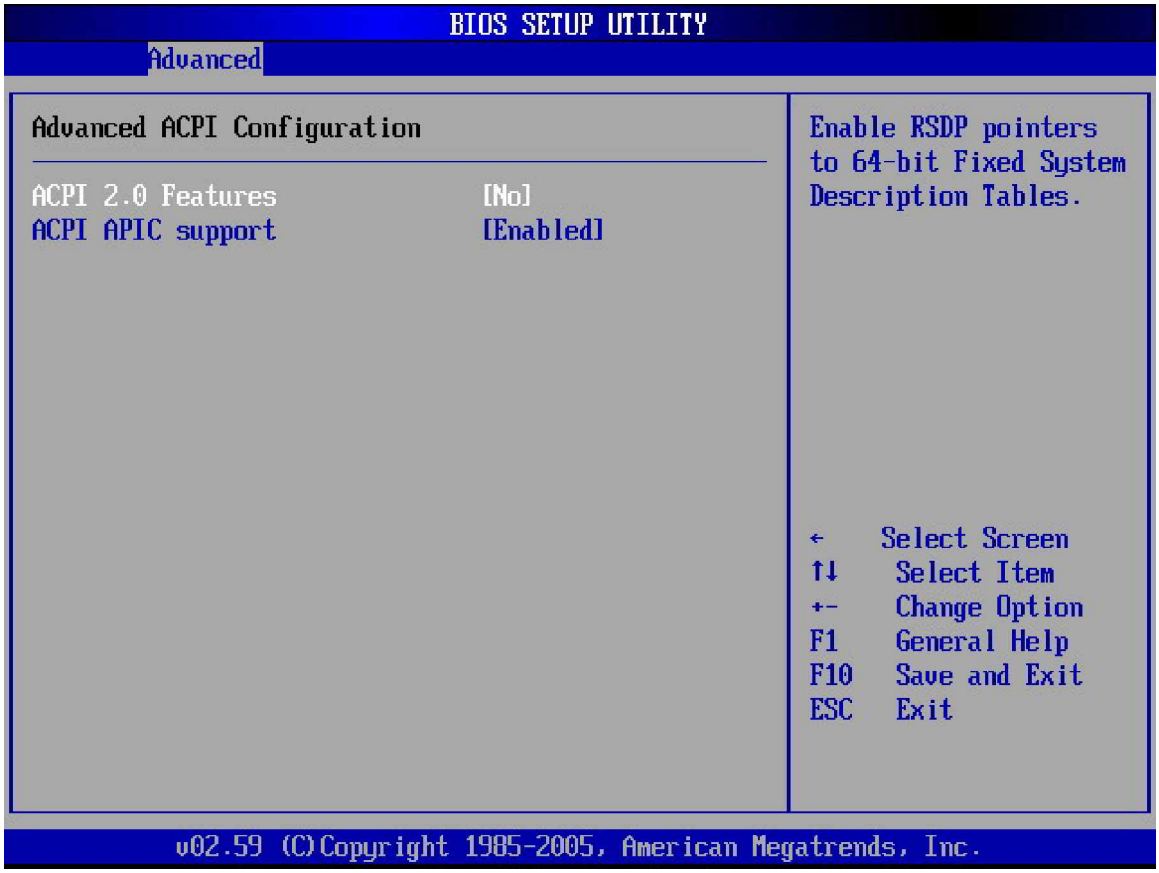
ACPI Aware O/S can only be configured if the OS complies with the ACPI standard. Windows 98, Windows 2000, and Windows XP all comply with ACPI.

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

Yes (Default) Enables the ACPI support for the operating system. This selection should be enabled if the OS does support ACPI

5.3.5.1 Advanced ACPI Configuration

The **Advanced ACPI Configuration** menu (**BIOS Menu 9**) selects the ACPI state when the system is suspended.



BIOS Menu 9: General ACPI Configuration

ACPI 2.0 Features

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

- **No** (Default) RSDP pointers to 64-bit fixed systems are not provided to the system
- **Yes** RSDP pointers to 64-bit fixed systems are provided to the system

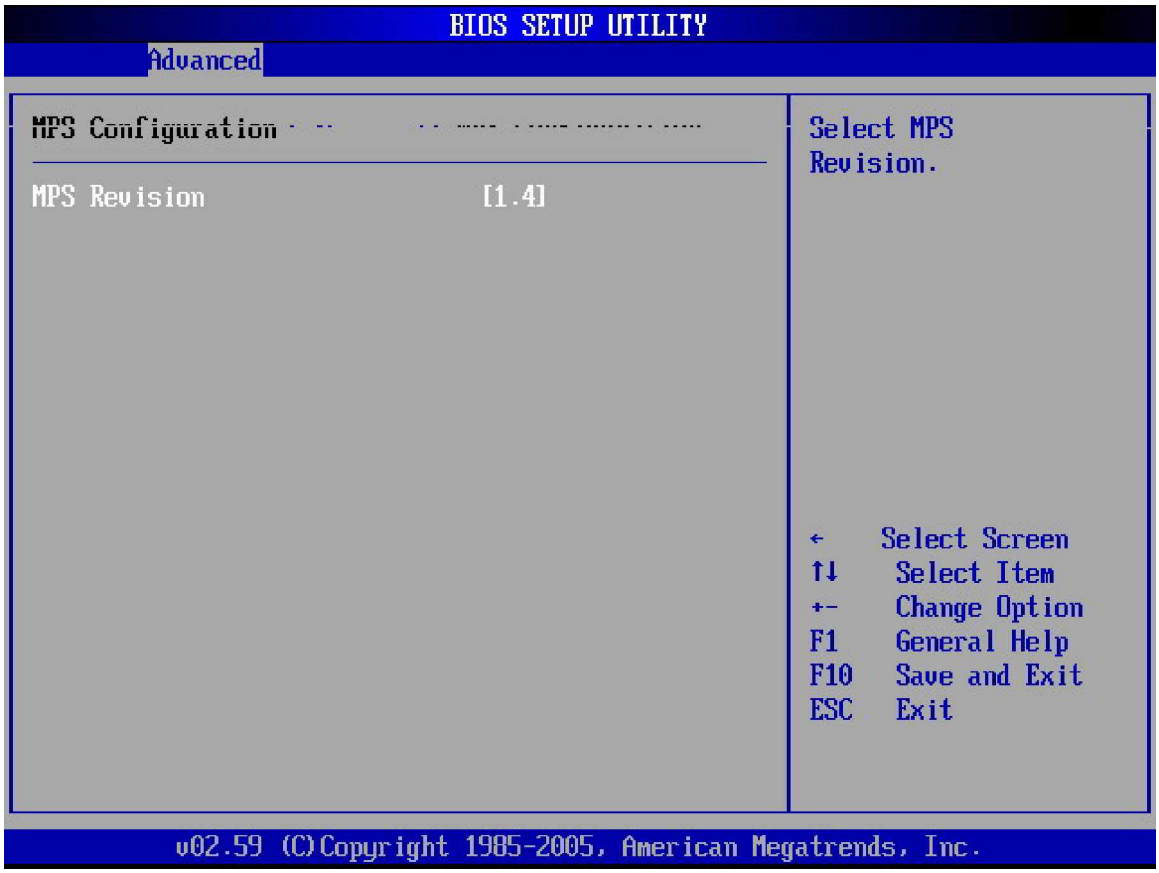
- **ACPI APIC Support [Enabled]**

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

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

5.3.6 MPS Configuration

The **MPS Configuration** menu (**BIOS Menu 10**) configures the multi-processor table.



BIOS Menu 10: MPS Configuration

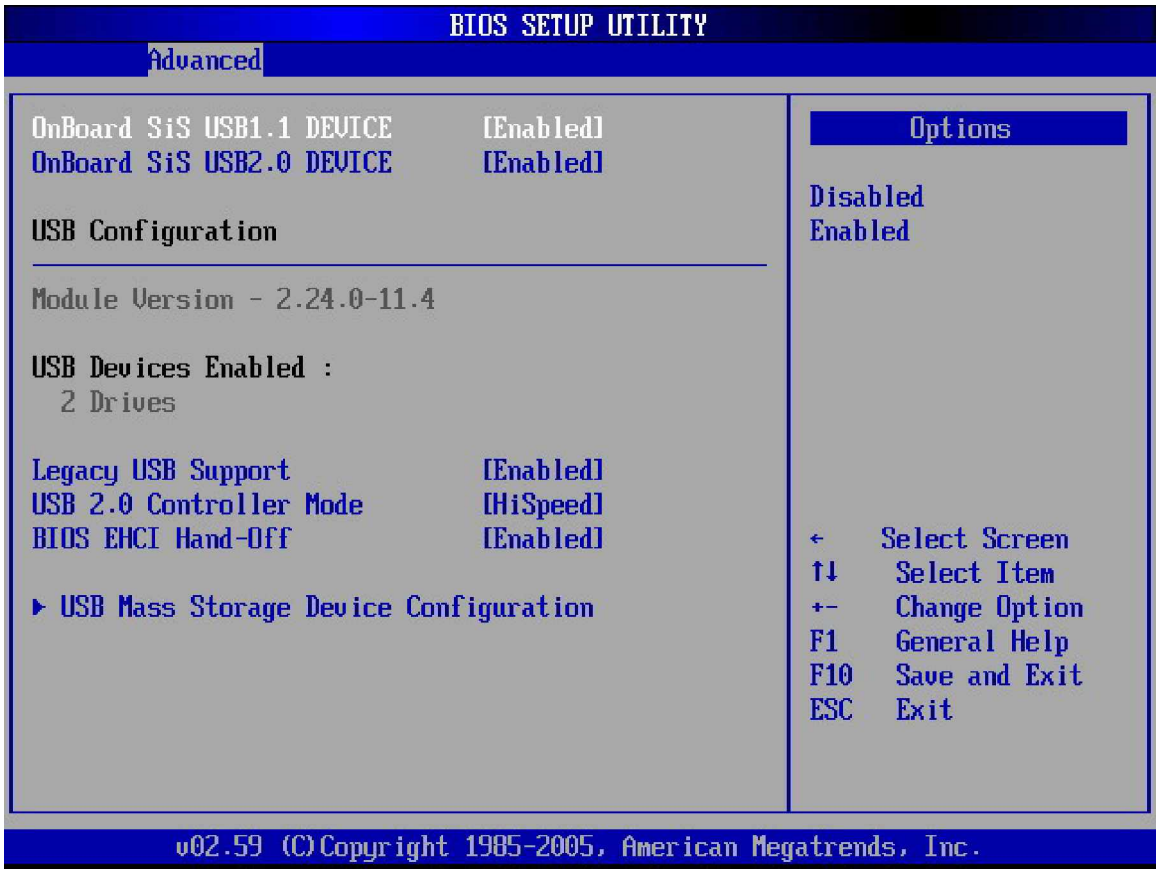
- **MPS Revision [1.1]**

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

  - **1.1** (Default) MPS version 1.1 is used
  - **1.4** MPS version 1.4 is used

5.3.7 USB Configuration

The **USB Configuration** menu (**BIOS Menu 11**) gives USB configuration information and configures some USB features.



BIOS Menu 11: 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.

  - **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.

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

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

- **USB Configuration**

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

- Module Version: x.xxxxx.xxxxx

- **USB Devices Enabled:**

Lists the USB devices that are enabled on the system

- **Legacy USB Support [Enabled]**

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

- **Disabled** Legacy USB support disabled
- **Enabled** (Default) Legacy USB support enabled

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

The **USB2.0 Controller Mode** BIOS option sets the speed of the USB2.0 controller.

- **FullSpeed** The controller is capable of operating at full speed (12Mbits/second)
- **HiSpeed** (Default) The controller is capable of operating at high speed (480Mbits/second)

- **BIOS EHCI Handoff**

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

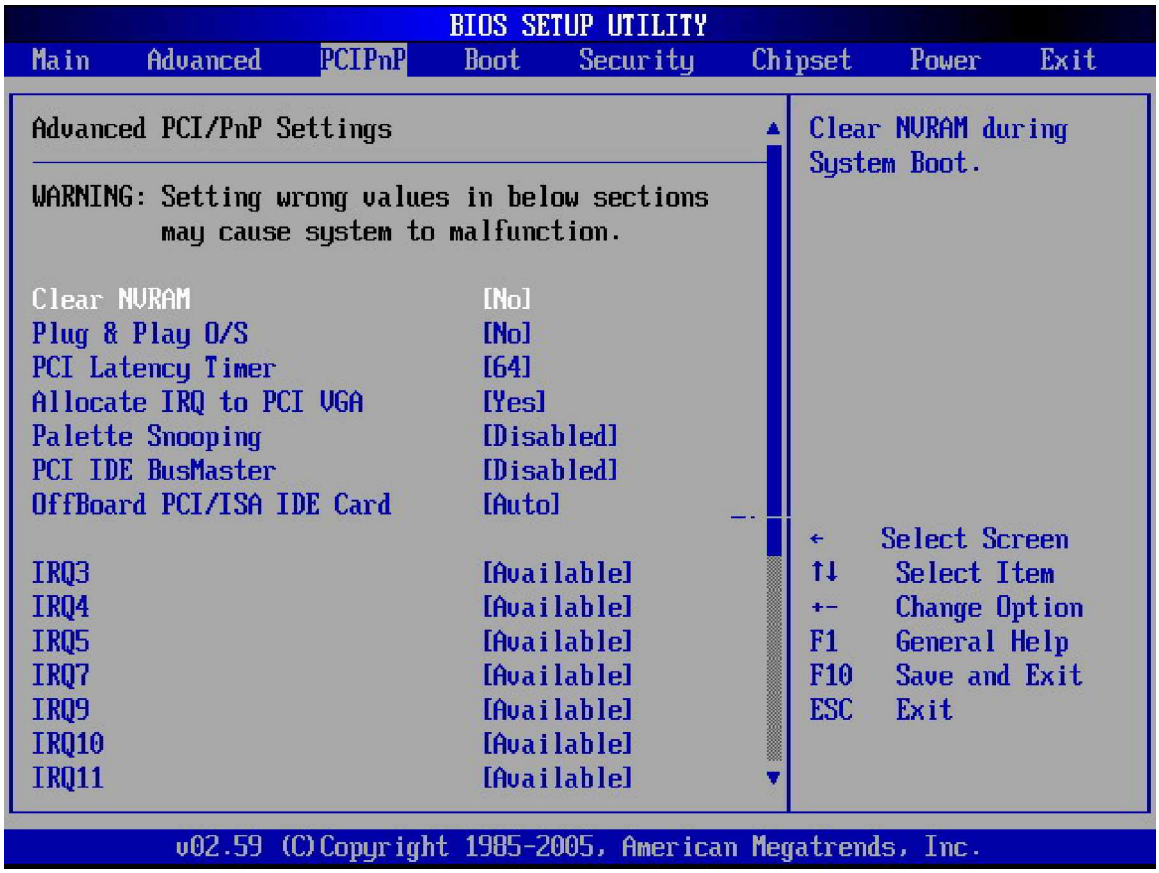
Disabled		Systems with OSes that do not support EHCI can use the EHCI handoff functionality.
Enabled	(Default)	Systems with OSes that do not support EHCI cannot use the EHCI handoff functionality.

5.4 PCI/PnP

The **PCI/PnP** menu (**BIOS Menu 11**) configures 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 12: PCI/PnP Configuration

- **Clear NVRAM [No]**

  The **Clear NVRAM** option specifies whether the contents of the NVRAM (Non-Volatile RAM) when the power is turned off.

  - **No** (Default) System does not clear NVRAM during system boot
  - **Yes** System clears NVRAM during system boot

- **Plug & Play O/S [No]**

  The **Plug & Play O/S** BIOS option determines whether the Plug and Play devices connected to the system is configured by the operating system or the BIOS.

  - **No** (Default) If the operating system does not meet the Plug and Play

specifications, this option allows the BIOS to configure all the devices in the system.

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

- **PCI Latency Timer [64]**

The values stipulated in the PCI Latency Timer are in units of PCI clock cycles for the PCI device latency timer register. Configuration options are:

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

- **Allocate IRQ to PCI VGA [Yes]**

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

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

- **Palette Snooping [Disabled]**

The **Palette Snooping** BIOS option enables or disables the palette snooping function.

- **Disabled** (Default) Unless the VGA card manufacturer requires palette snooping to be enabled, this option should be disabled.

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

- **PCI IDE BusMaster [Disabled]**

  The **PCI IDE BusMaster** BIOS option enables or prevents the use of PCI IDE busmastering. The Optimal and

  - **Disabled** (Default) Busmastering is prevented
  - **No** IDE controller on the PCI local bus has mastering capabilities

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

  The **OffBoard PCI/ISA IDE Card** BIOS option selects the OffBoard PCI/ISA IDE Card.

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

adapter card is installed in PCI Slot 3.

- **PCI Slot 4** PCI Slot 4 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 4.
- **PCI Slot 5** PCI Slot 5 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 5.
- **PCI Slot 6** PCI Slot 6 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 6.

IRQ# [Available]

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

Available IRQ addresses are:

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

DMA Channel# [Available]

- **Available** (Default) The specified DMA is available to be used by

PCI/PnP devices

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

Available DMA Channels are:

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

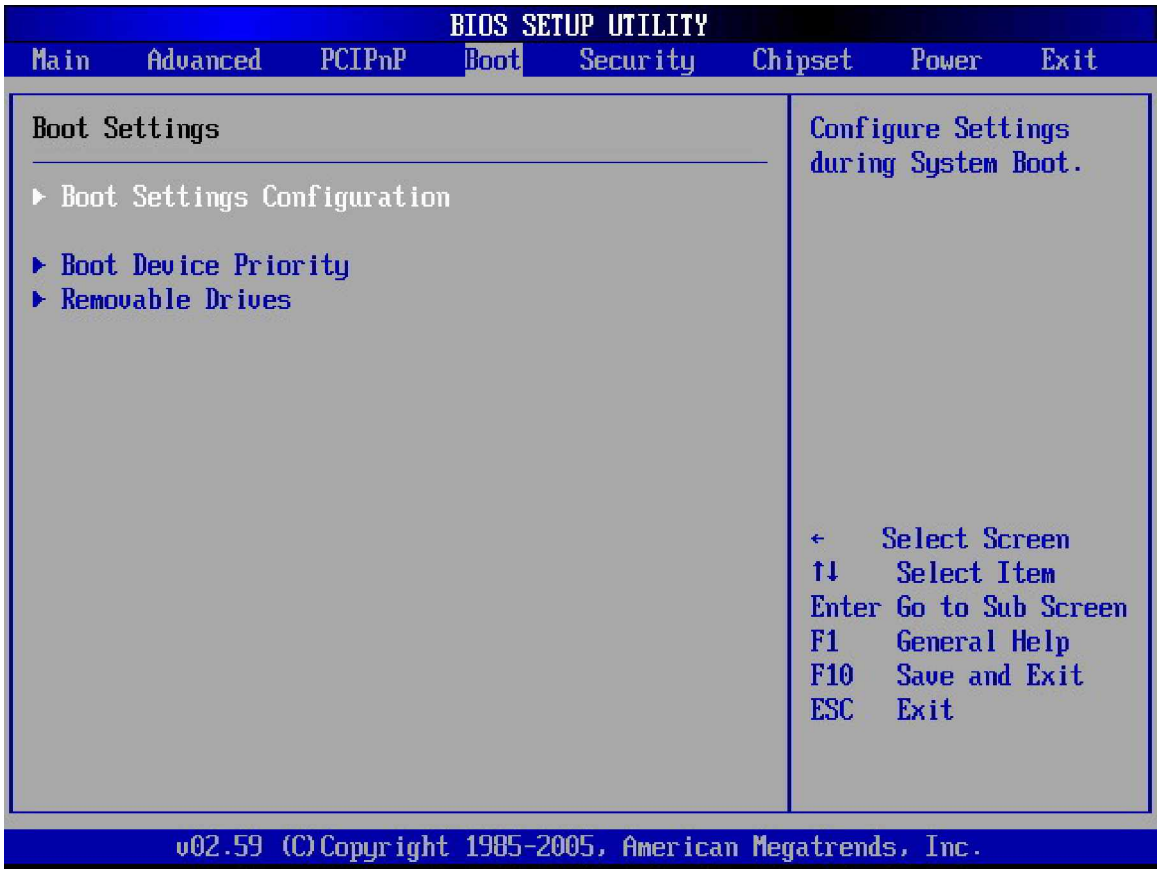
- **Reserved Memory Size [Disabled]**

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

- **Disabled** (Default) — No memory block reserved for legacy ISA devices
- **16K** — 16KB reserved for legacy ISA devices
- **32K** — 32KB reserved for legacy ISA devices
- **64K** — 54KB reserved for legacy ISA devices

5.5 Boot

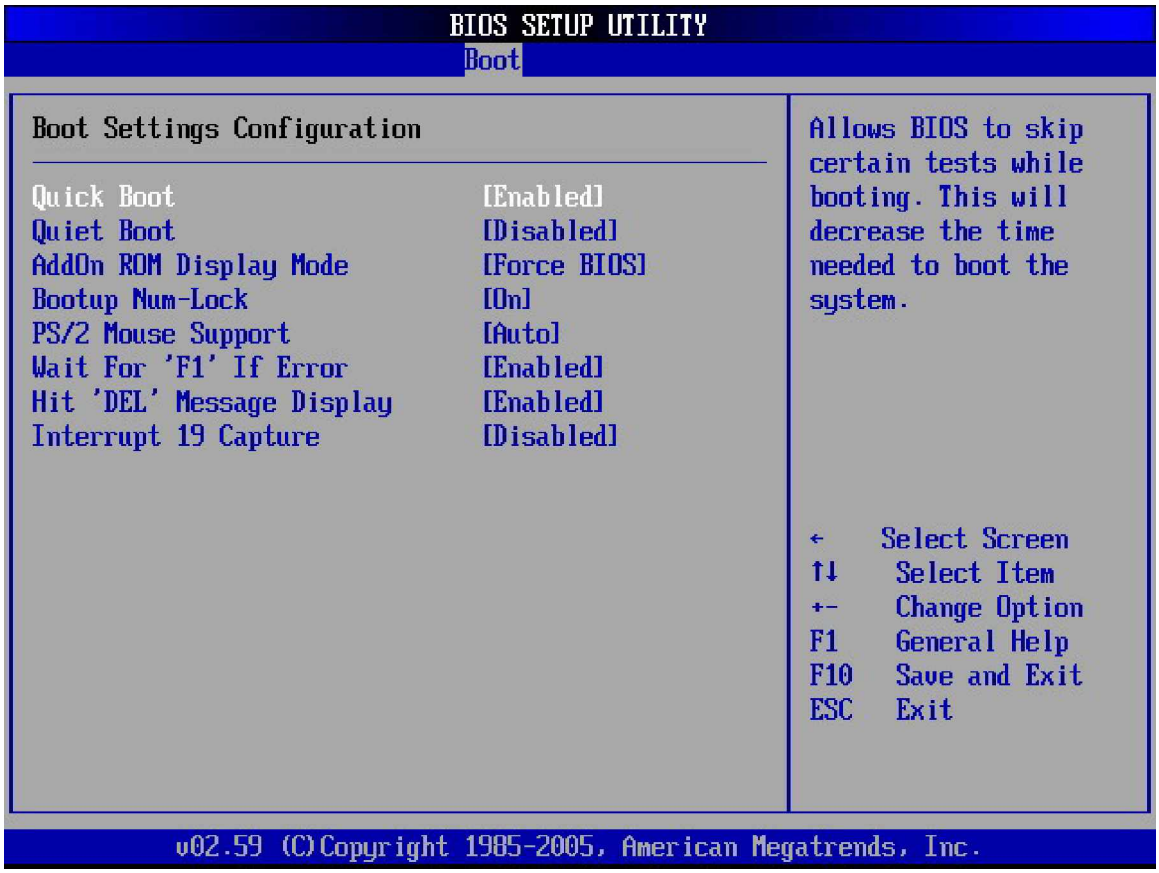
The Boot menu (BIOS Menu 13) configures system boot options.



BIOS Menu 13: Boot

5.5.1 Boot Settings Configuration

The Boot Settings Configuration menu (BIOS Menu 13) configures advanced system boot options.



BIOS Menu 14: Boot Settings Configuration

- **Quick Boot [Enabled]**

The **Quick Boot** BIOS option makes the computer speed up the boot process.

- **Disabled** System does not skip any POST procedures
- **Enabled** (Default) Allows system to skip some POST procedures to decrease the system boot time

- **Quiet Boot [Disabled]**

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

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

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

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

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

- **Force BIOS** (Default) Allows the computer system to force a third party BIOS to display during system boot.
- **Keep Current** Allows the computer system to display the information during system boot.

- **Bootup Num-Lock [On]**

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

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

- **PS/2 Mouse Support [Enabled]**

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

- **Disabled** Disables PS/2 mouse support and prevents the PS/2

mouse port from using system resources.

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

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

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

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

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

- **Hit 'DEL' Message Display**

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

- **Disabled** No message displayed during POST

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

- **Interrupt 19 Capture [Disabled]**

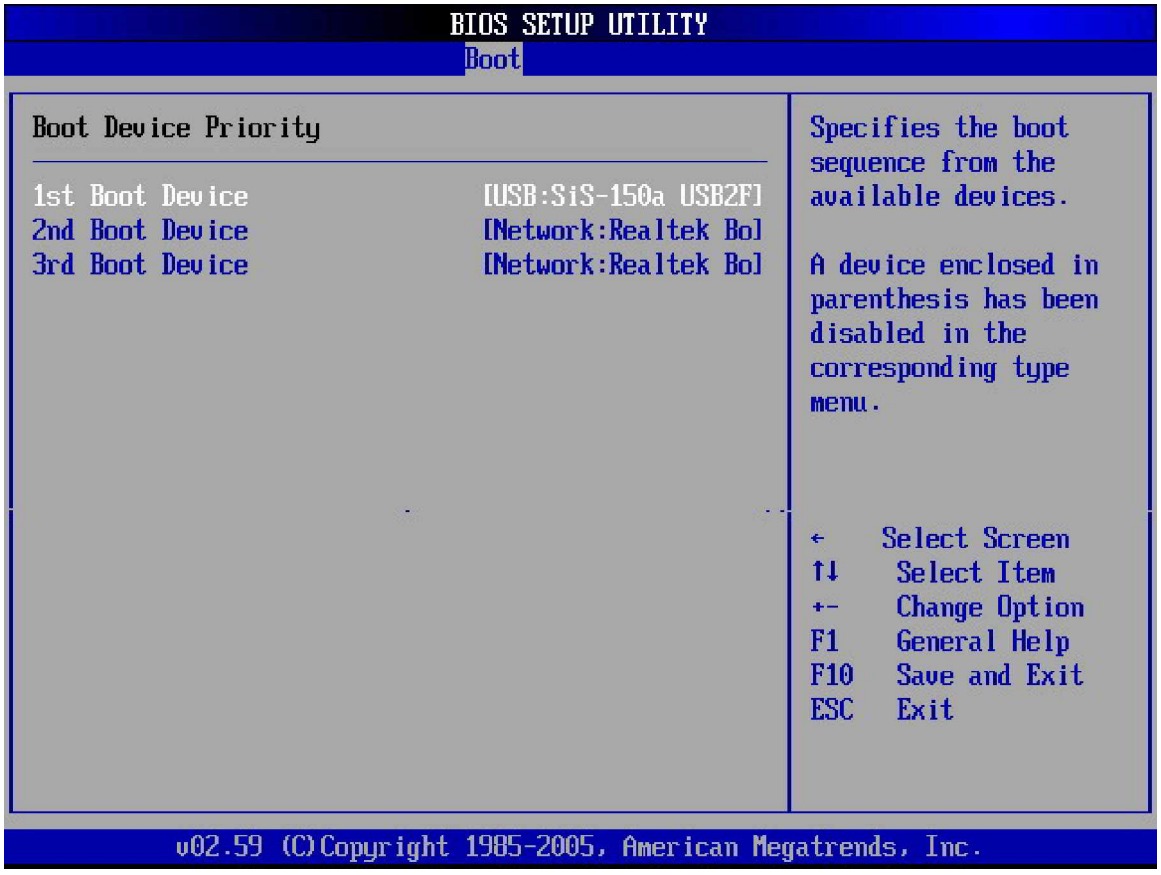
The **Interrupt 19 Capture** ROM BIOS option allows optional ROMs such as network controllers to trap BIOS interrupt 19.

Disabled	(Default)	Does not allow optional ROM to trap interrupt 19
Enabled		Allows optional ROM to trap interrupt 19

5.5.2 Boot Device Priority

The **Boot Device Priority** menu (**BIOS Menu 15**) specifies the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD



BIOS Menu 15: Boot Device Priority Settings

5.5.3 Hard Disk Drives

The **Hard Disk Drives** menu is similar to the **Removable Drives BIOS Menu 16** and it specifies the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

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

NOTE:

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

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

5.5.4 Removable Drives

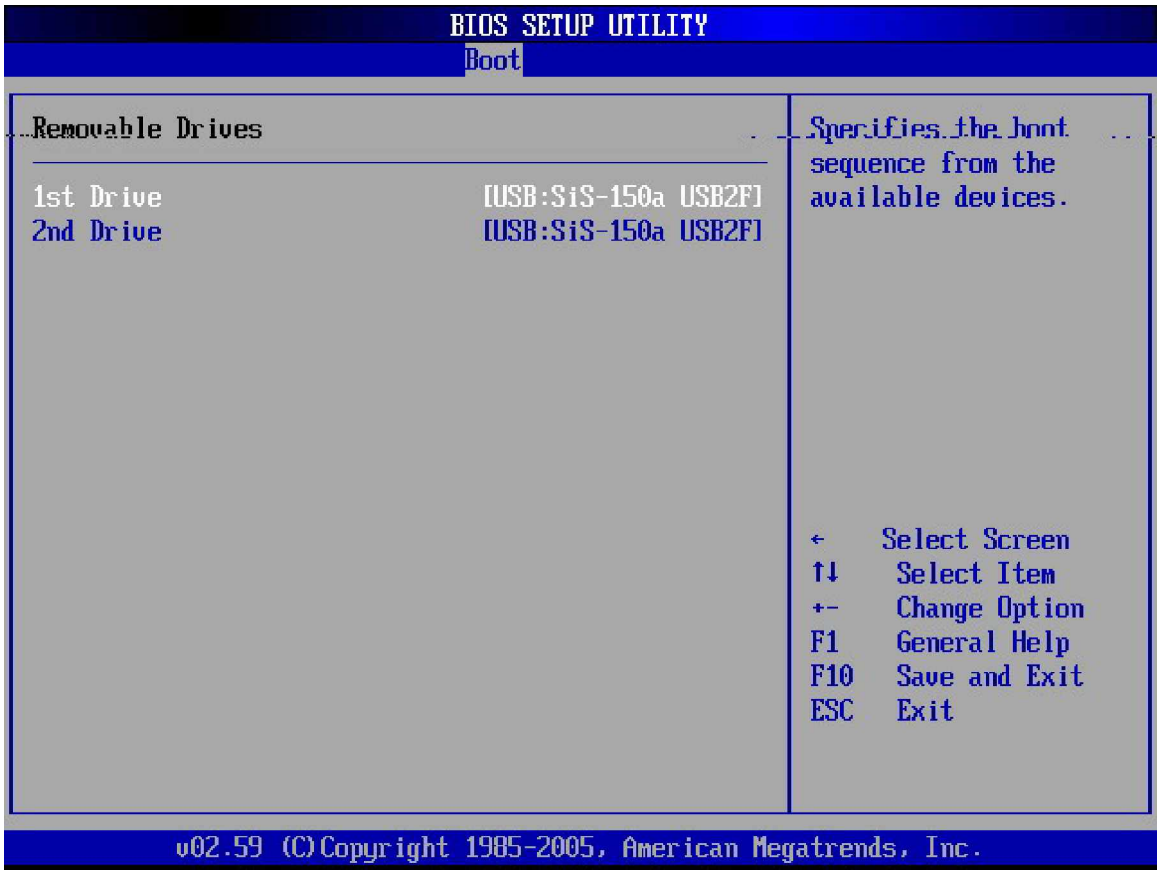
The **Removable Drives** menu (**BIOS Menu 16**) specifies the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

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

NOTE:

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

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



BIOS Menu 16: Removable Drives

5.5.5 CD/DVD Drives

The **CD/DVD Drives** menu is similar to the **Removable Drives BIOS Menu 16** and it specifies the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

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

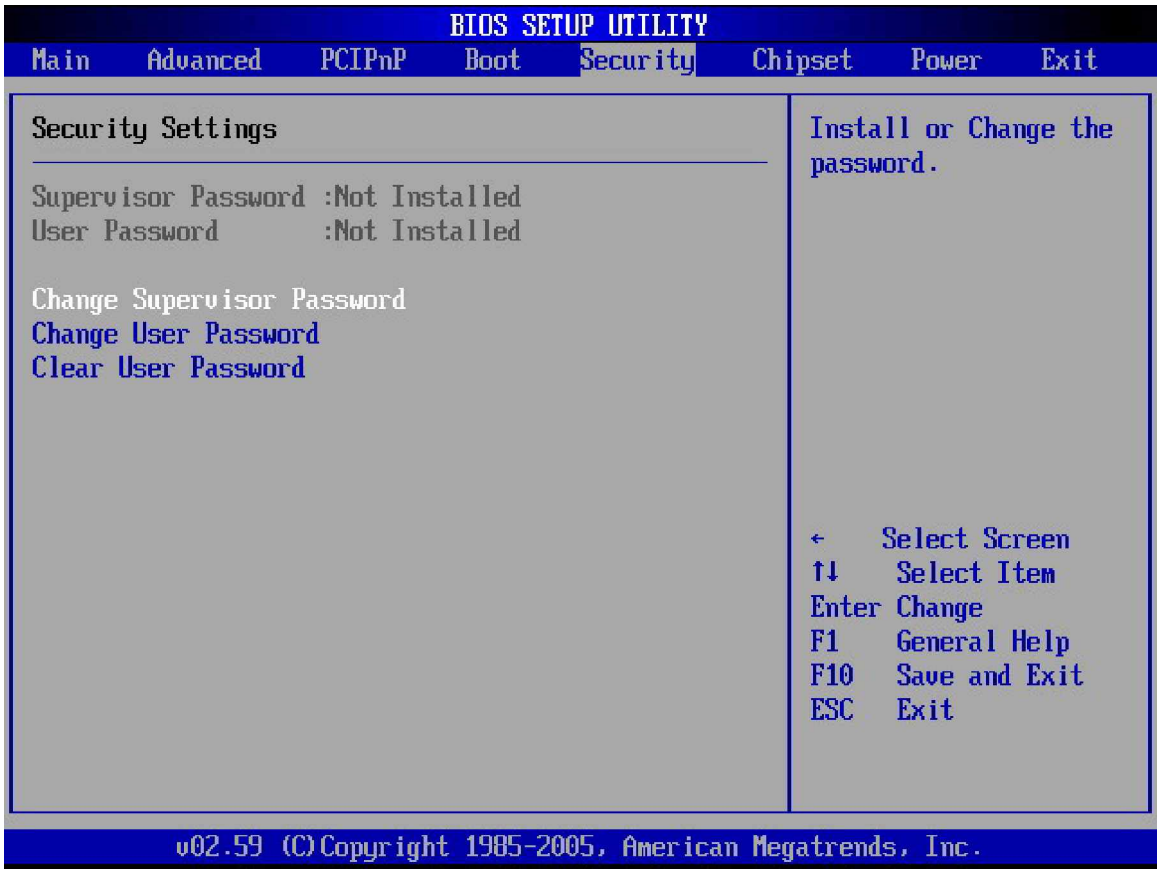
NOTE:

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

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

5.6 Security

The **Security** menu (**BIOS Menu 17**) allows system security settings including passwords to be configured.



BIOS Menu 17: Security

- **Change Supervisor Password**

The default setting for the **Change Supervisor Password** 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**

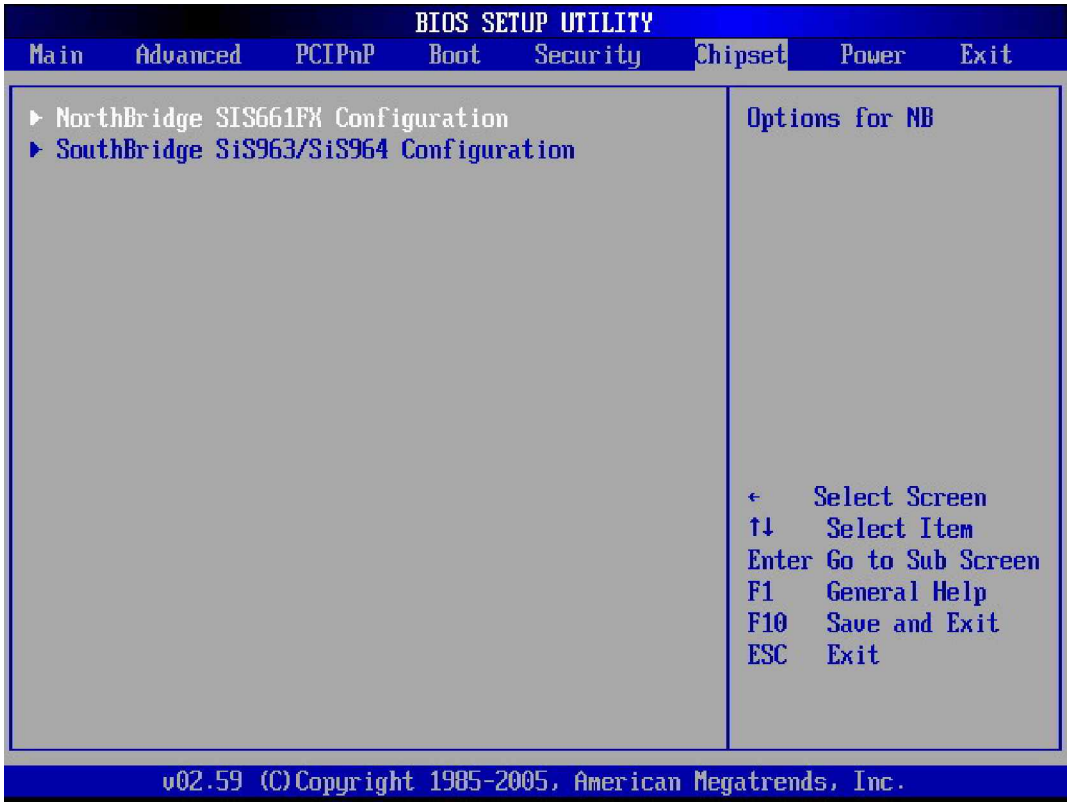
The default setting for the **Change User Password** is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

The Chipset menu (**BIOS Menu 18**) has two sub-menus, NorthBridge SIS661CX Configuration and SouthBridge SiS964 Configuration. The NorthBridge SIS661CX Configuration menu configures the northbridge chipset and the SouthBridge SiS964 Configuration menu configures the southbridge chipset.

WARNING!

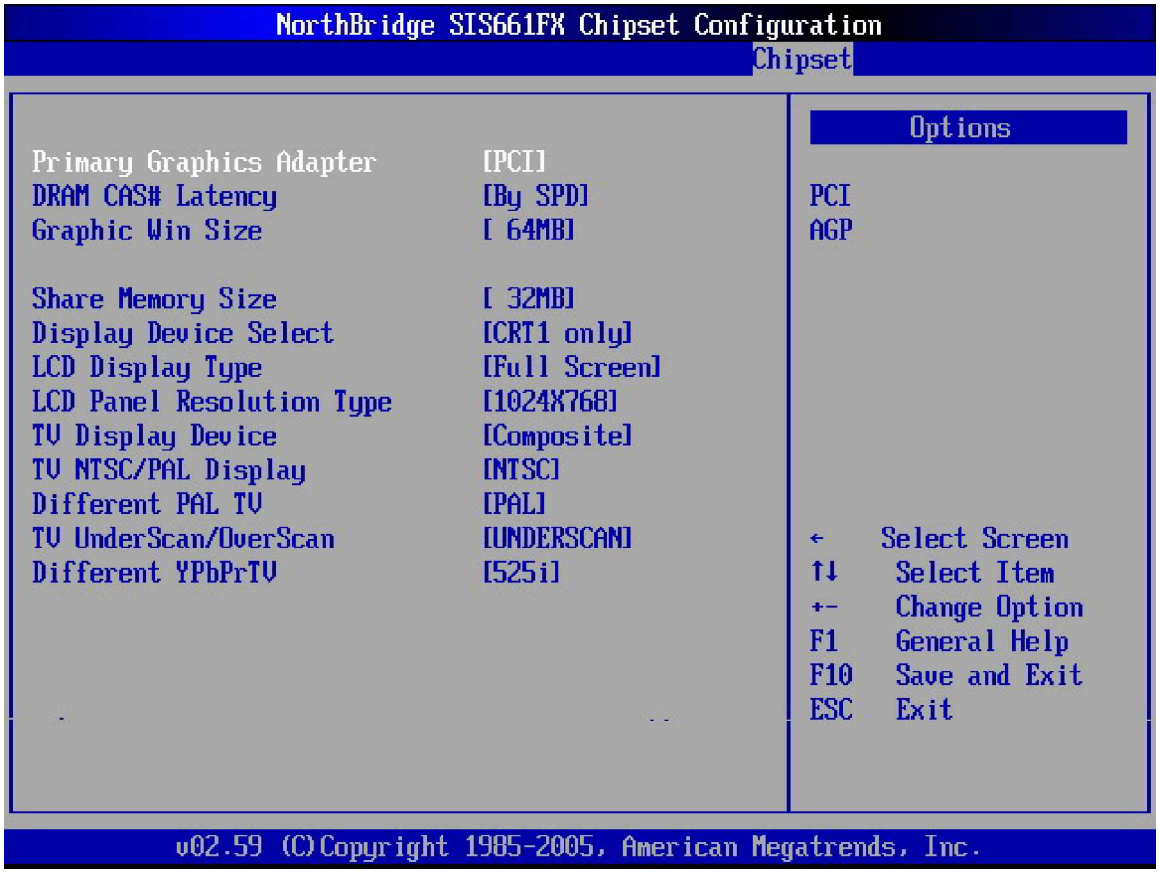
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 18: Chipset

5.7.1 NorthBridge SIS661CX Configuration

The NorthBridge SIS661CX Configuration menu (BIOS Menu 18) allows the northbridge chipset to be configured.



BIOS Menu 19:NorthBridge Chipset Configuration

- **Primary Graphics Adapter [PCI]**

The **Primary Graphics Adapter** option selects the graphics adapter the system uses.

- **PCI** (Default) PCI graphics adapter is used
- **AGP** AGP graphics adapter is used

DRAM CAS# Latency [By SPD]

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

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

Graphic Win Size [64MB]

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

- 32MB
- 64MB
- 128MB

Share Memory Size [32MB]

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

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

Display Device Select [CRT1 only]

The **Display Device Select** BIOS feature determines what displays are used. Dual display functionality is enabled here. Dual display configuration options are listed below:

- CTR1 only (Default)
- CRT1 + LCD
- CRT1 + TV
- CRT1 + CRT2

LCD Display Type [Full Screen]

The **LCD Display Type** BIOS determines the screen display type. Configuration options are listed below:

- Full Screen (Default)
- Center Screen

LCD Panel Resolution Type

The **LCD Panel Resolution Type** determines the LCD panel resolution. Configuration options are listed below:

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

TV Display Device [Composite]

The **LCD Display Device** determines the TV display device connected to the system. Configuration options are listed below:

- Composite (Default)
- S-Video
- SCART
- Hi-Vision

- YPbPr
- Composite and +SVideo

TV NTSC/PAL Display [NTSC]

The **TV NTSC/PAL Display** specifies what TV format is used:

- NTSC (Default)
- PAL

Different PAL TV [PAL]

The **Different PAL TV** specifies the PAL format of the TV graphics card use. Configuration options are listed below.

- PAL
- PAL-M
- PAL-N

TV UnderScan/OverScan

The **TV UnderScan/OverScan** specifies whether overscan or underscan functionalities are enabled on the system. Configuration options are listed below.

- UNDERSCAN
- OVERSCAN

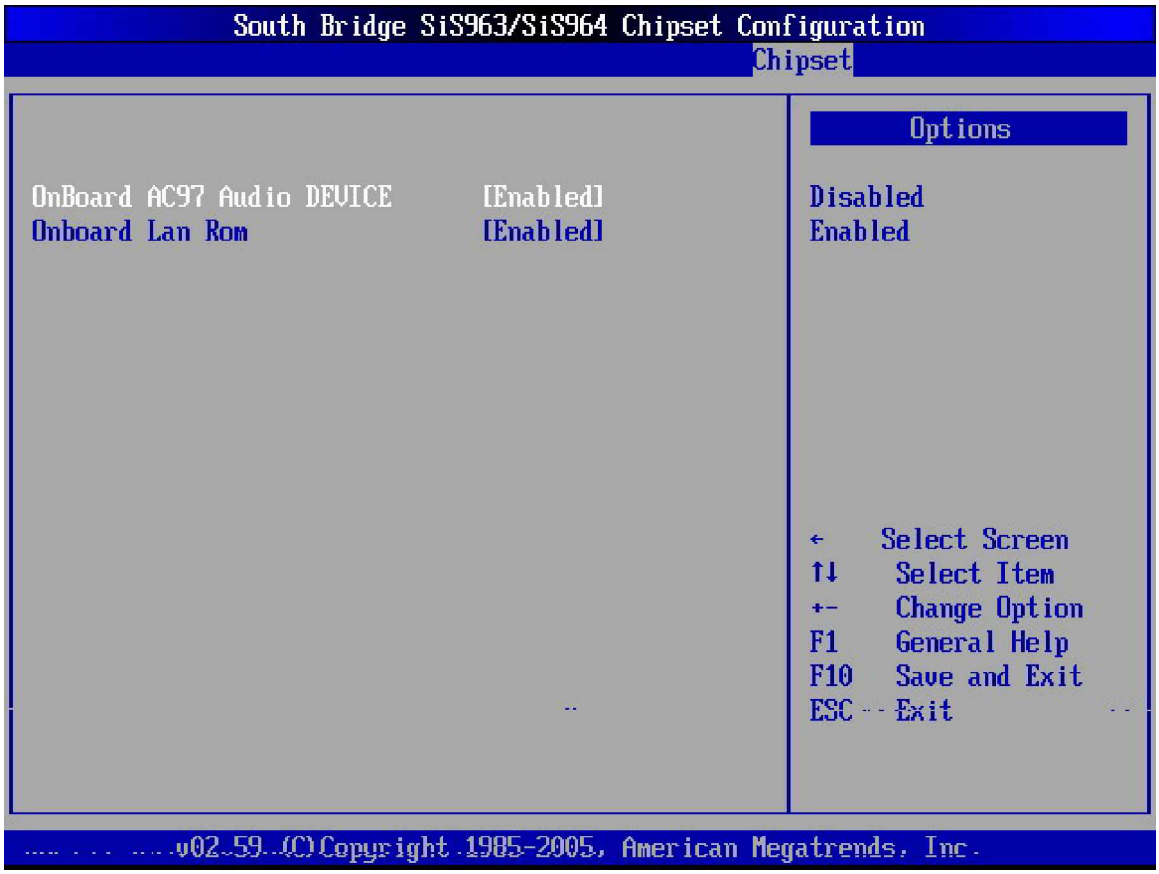
Different YPbPrTV

The **Different YPbPrTV** specifies YPbPr TV settings. Configuration options are listed below.

- 515i
- 525p
- 750p
- 1080i

5.7.2 SouthBridge SiS964 Configuration

The **SouthBridge SiS964 Configuration** menu (BIOS Menu 20) the southbridge chipset to be configured.



BIOS Menu 20:SouthBridge Chipset Configuration

- **OnBoard AC97 Audio DEVICE**

The **OnBoard AC97 Audio DEVICE** option enables or disables the AC'97 CODEC.

- **Disabled** The onboard AC'97 is disabled
- **Auto** (Default) The onboard AC'97 automatically detected and enabled

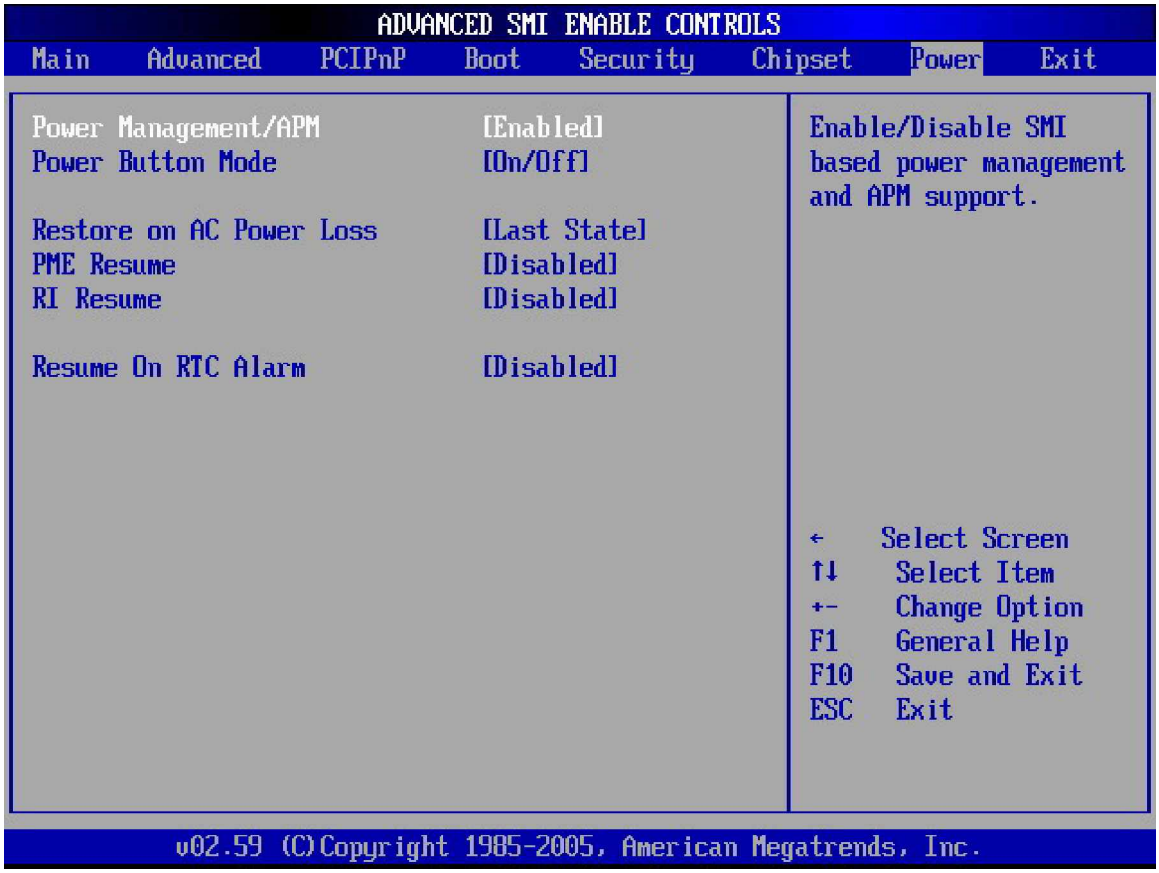
- **OnBoard Lan ROM [Enabled]**

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

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

5.8 Power Key

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



BIOS Menu 21:Power

- **Power Management/APM [Enabled]**

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

- **Disabled** Disables the Advanced Power Management (APM) feature
- **Enabled** (Default) Enables the APM feature

- **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

- **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.

- **PME Resume [Disabled]**

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

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

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

- **RI Resume [Disabled]**

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

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

- **Resume On RTC Alarm [Disabled]**

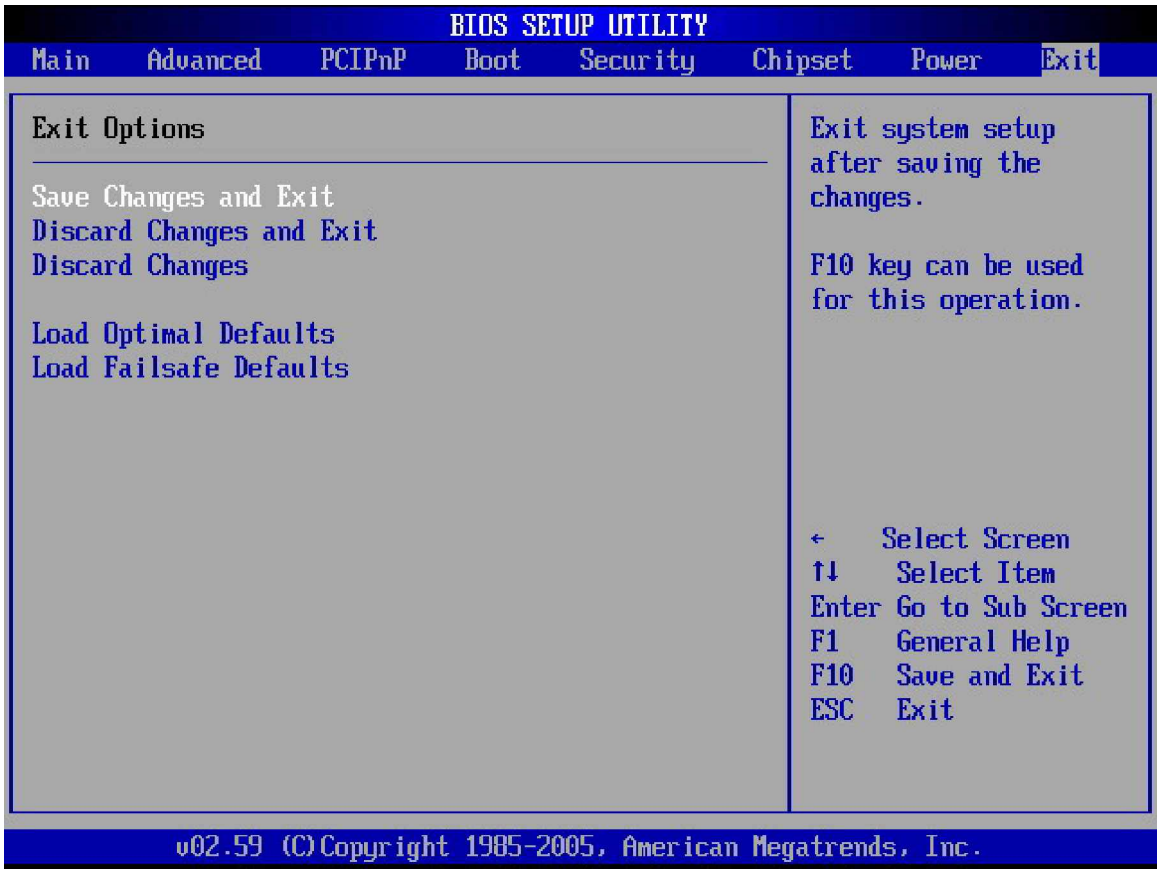
The **Resume On RTC Alarm** determines when the computer is roused from a suspended state.

- **Disabled** (Default) The real time clock (RTC) cannot generate a wake event
- **Enabled** If selected, the following appears with values that can be selected:
  - **RTC Alarm Date (Days)**
  - **System Time**

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

5.9 Exit

The **Exit** menu (**BIOS Menu 22**) loads default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 22:Exit

- **Save Changes and Exit**

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

- **Discard Changes and Exit**

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

- **Discard Changes**

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

- **Load Optimal Defaults**

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

- **Load Failsafe Defaults**

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

Chapter

6

6 Software Drivers

6.1 Available Software Drivers

NOTE:

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

The 2801250 motherboard has six software drivers:

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

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

6.2 AGP Driver Installation

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

Step 1: Insert the CD into the system that contains the 2801250. Open the **AGP 121** directory and locate the icon for the **Setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

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

Figure 6-1: StartingInstallShield Wizard Screen

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

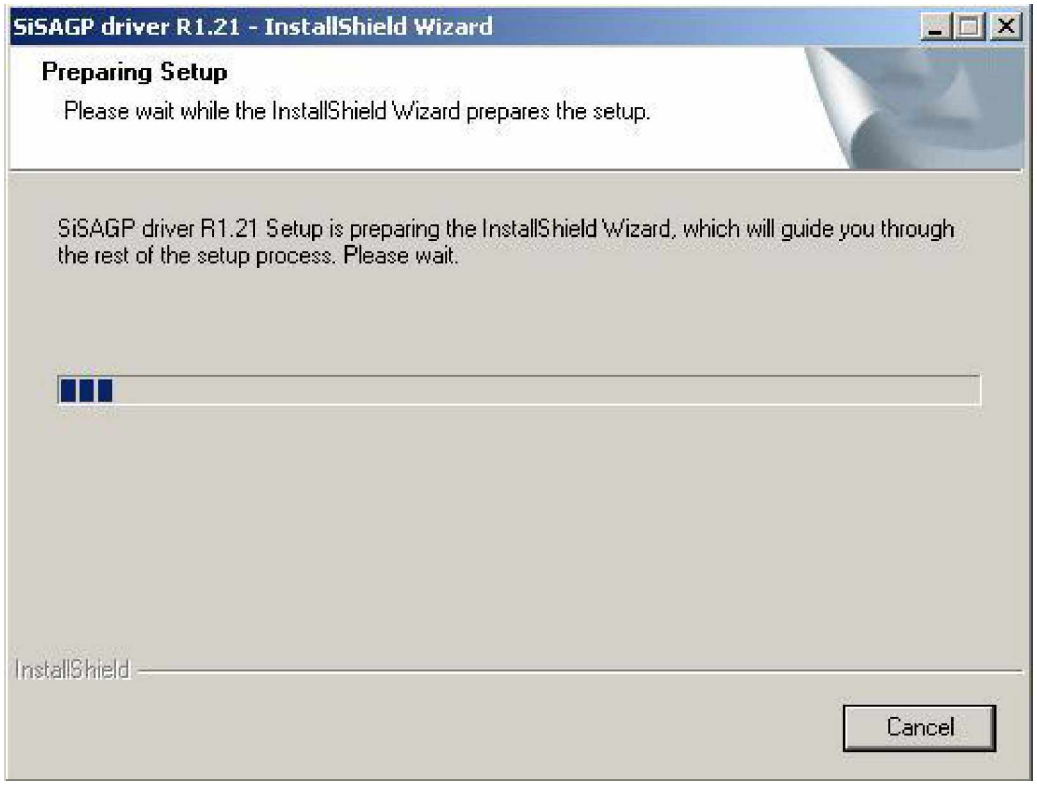


Figure 6-2: Preparing Setup Screen

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

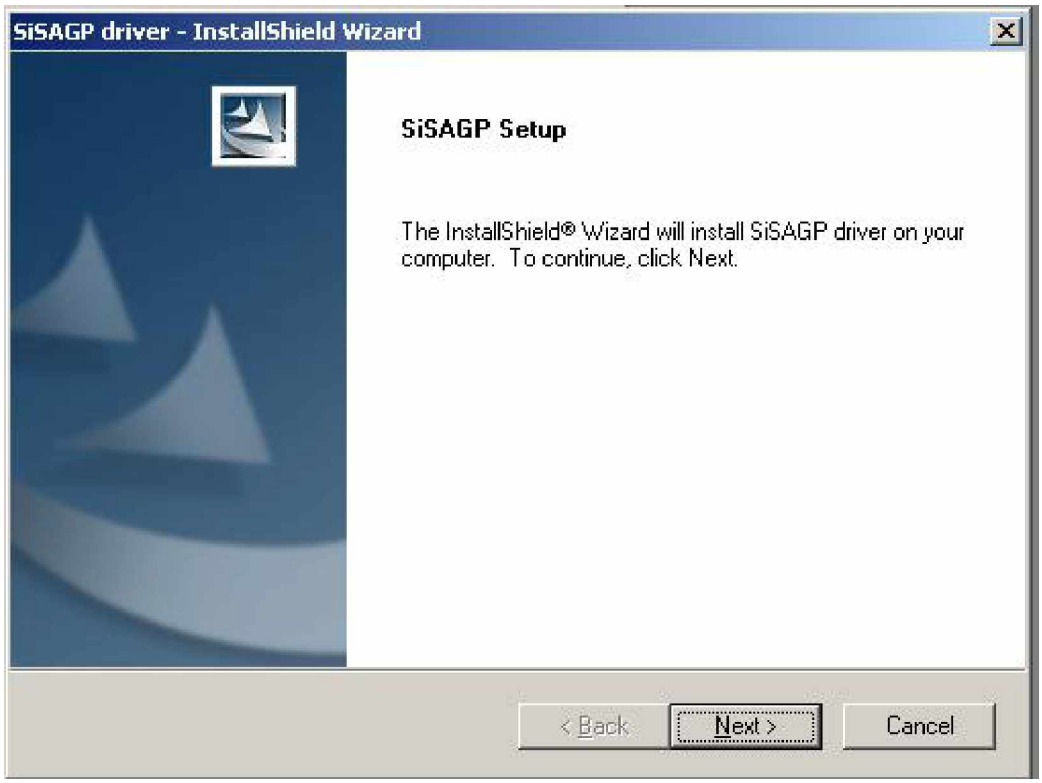


Figure 6-3: Install Shield Screen

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

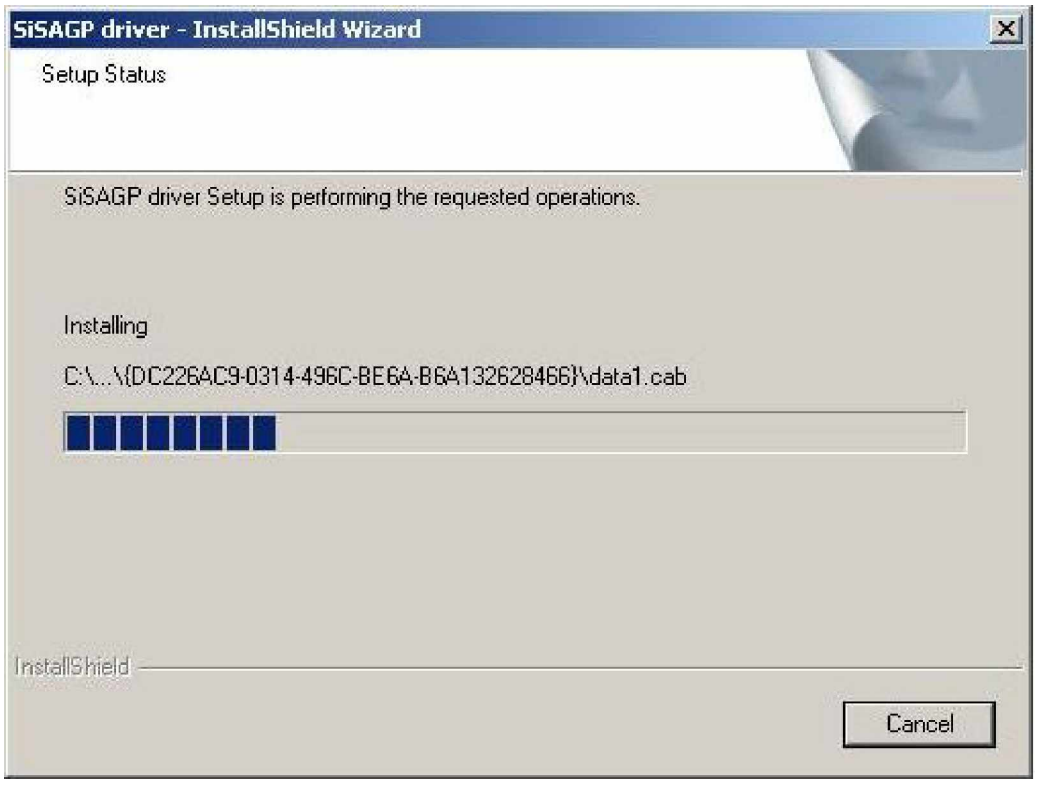


Figure 6-4: Installing Screen

Step 6: Once the installation process is complete, the computer may be restarted now or in the future. (See **Figure 6-19**). Select the preferred option and click "**FINISH**" to complete the installation process. **Step 0:**

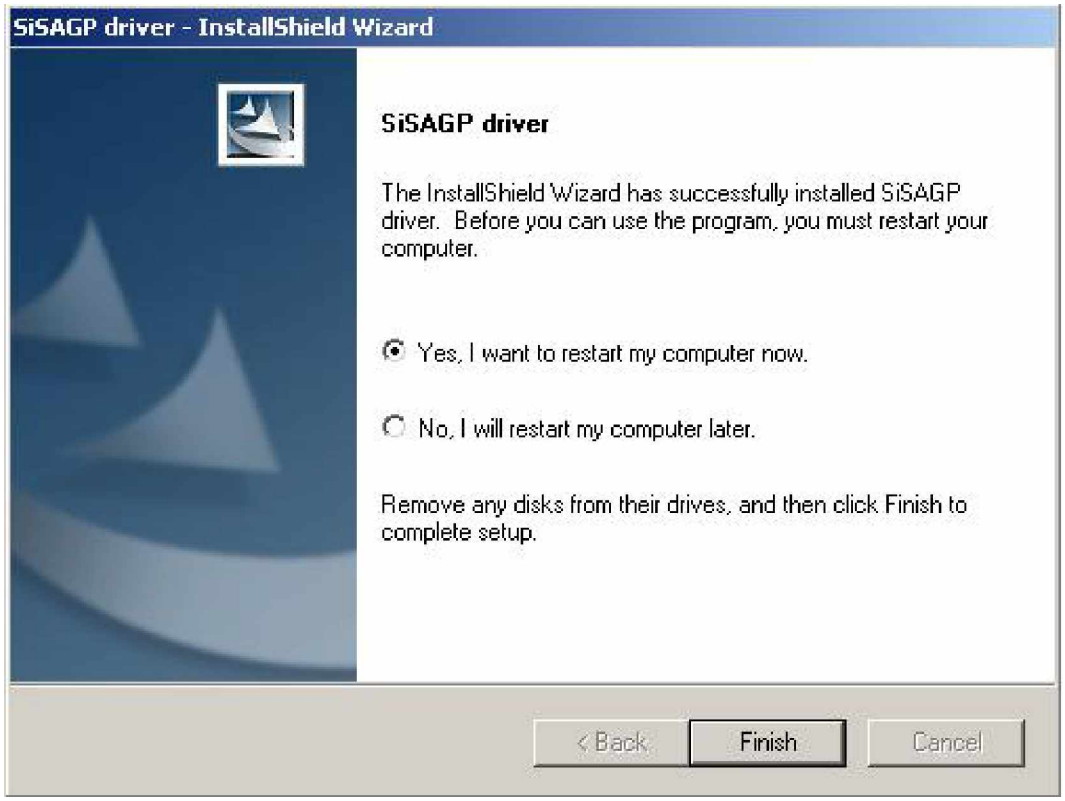


Figure 6-5: Restart the Computer

6.3 RealTek Audio Driver Installation

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

Step 1: Insert the CD into the system that contains the 2801250. Open the CD folder and locate the **AUDIO DRIVER A3.79** directory. Open the directory and look for icon for the **setup.exe** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

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

Figure 6-6: Audio Driver Install Shield Wizard Starting

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

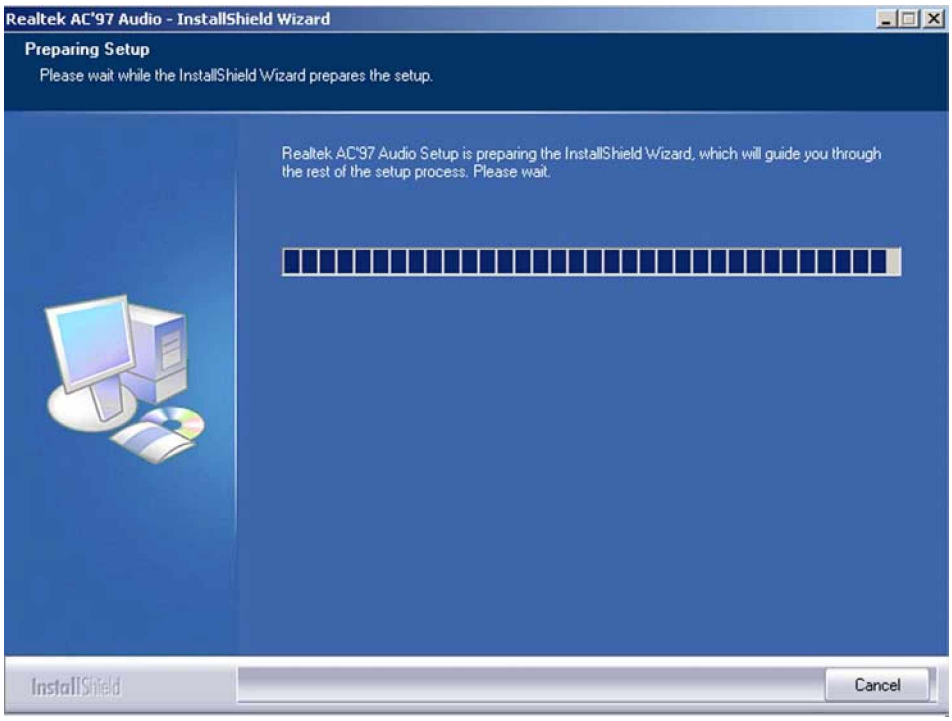


Figure 6-7: Audio Driver Setup Prerparation

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

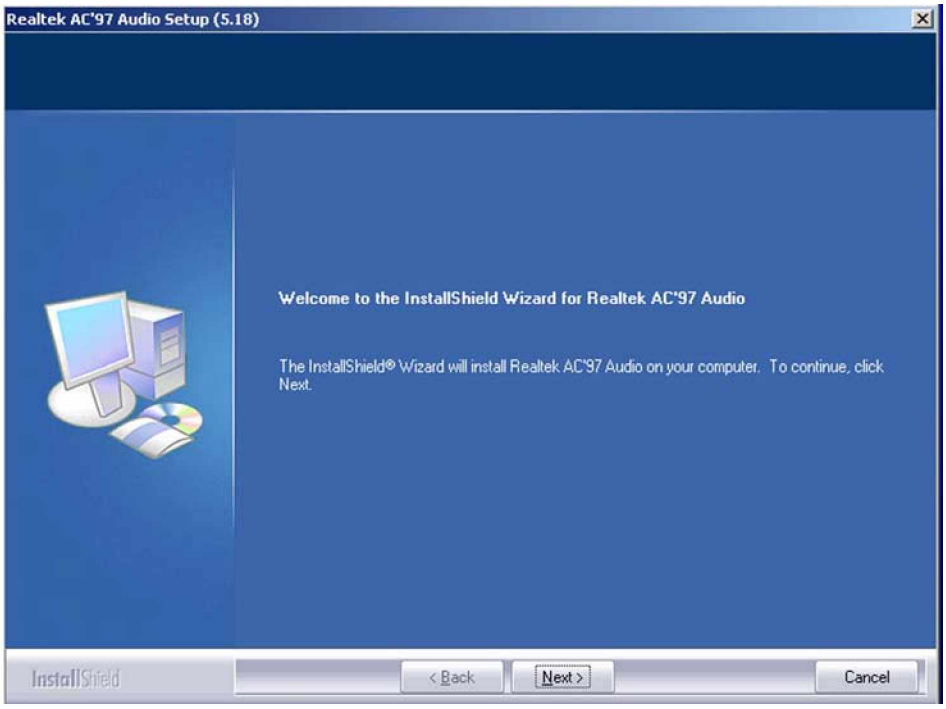


Figure 6-8: Audio Driver Welcome Screen

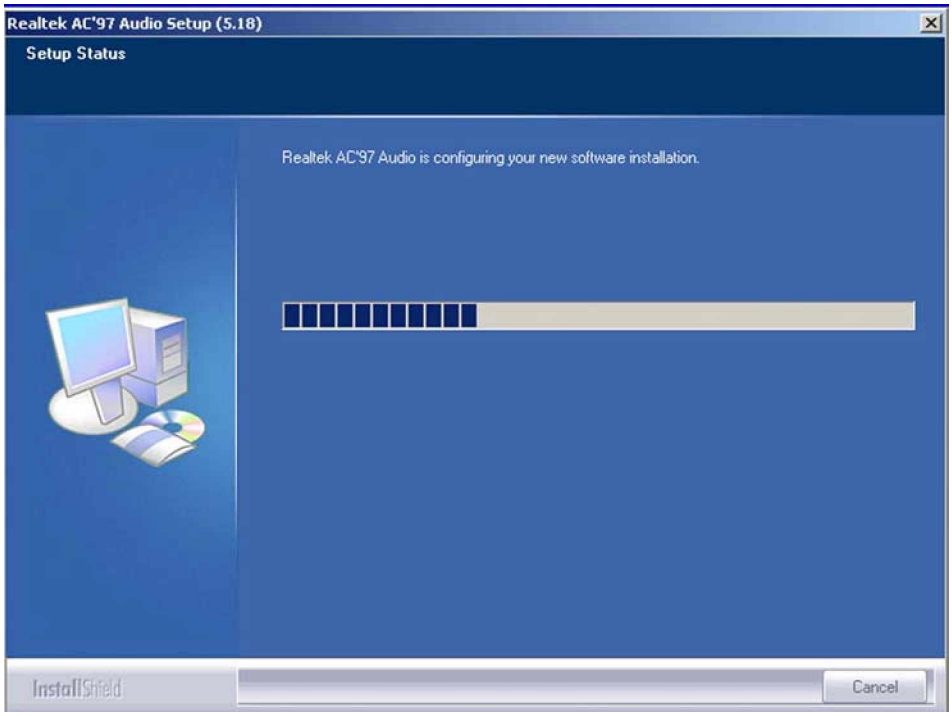


Figure 6-9: Audio Driver Software Configuration

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

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

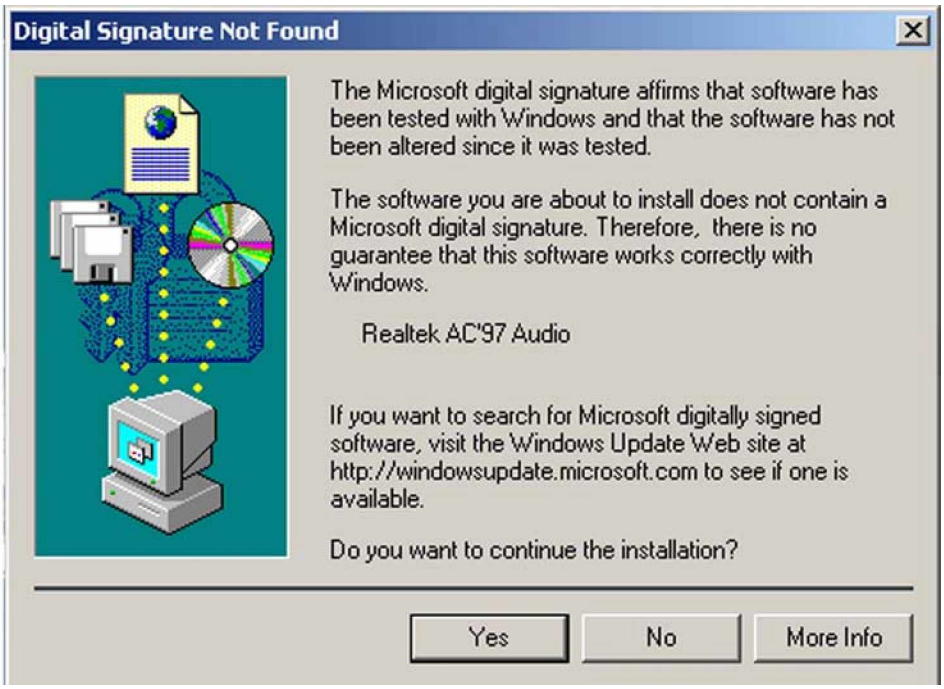


Figure 6-10: Audio Driver Digital Signal

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

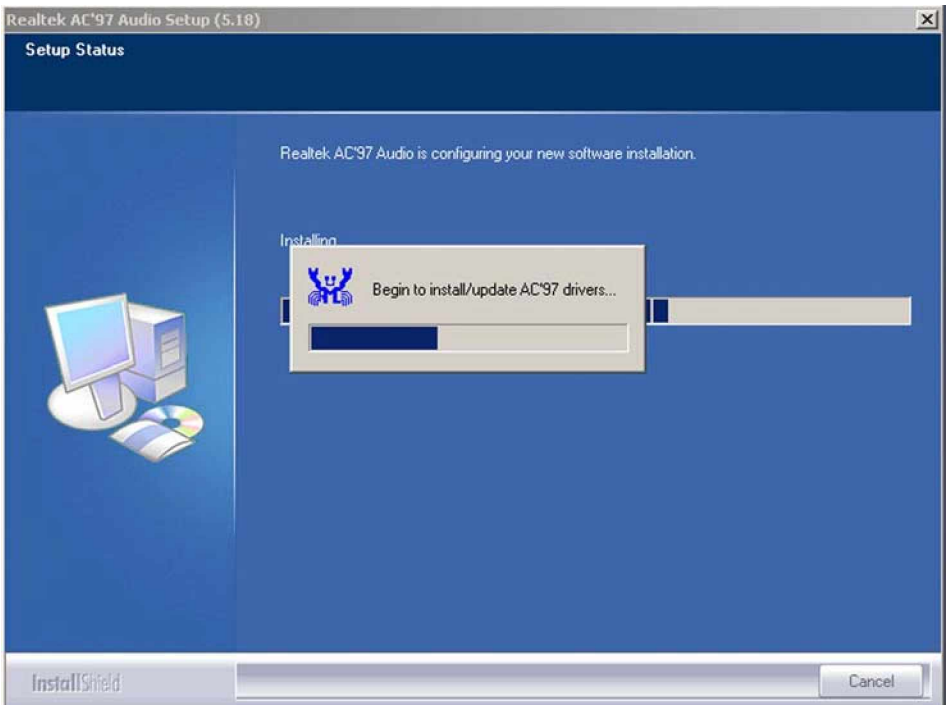


Figure 6-11: Audio Driver Installation Begins

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

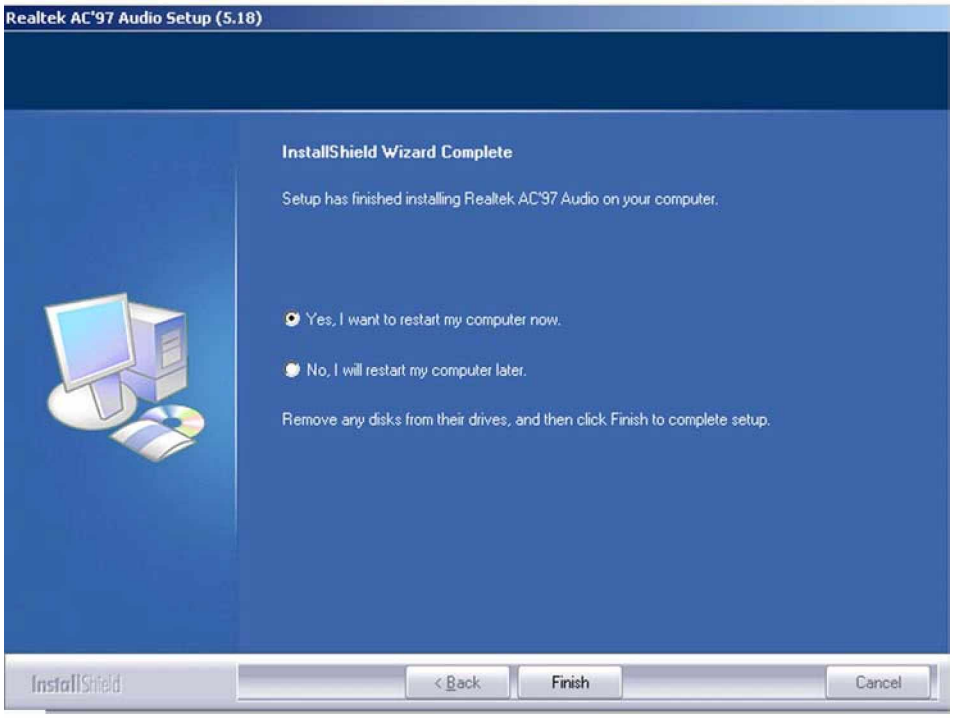


Figure 6-12: Audio Driver Installation Complete

Step 8: The confirmation screen shown in **Figure 6-12** allows the computer to be restarted immediately after the installation is complete or at a later time. For the settings to take effect the computer must be restarted. Decide when to restart the computer and click the "**FINISH**" button. **Step 0:**

6.4 SiS VGA Utilities Driver

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

Step 1: Insert the CD into the system that contains the 2801250. Open the **Chipset_VGA 3.72logo** directory and locate the icon for the **setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

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

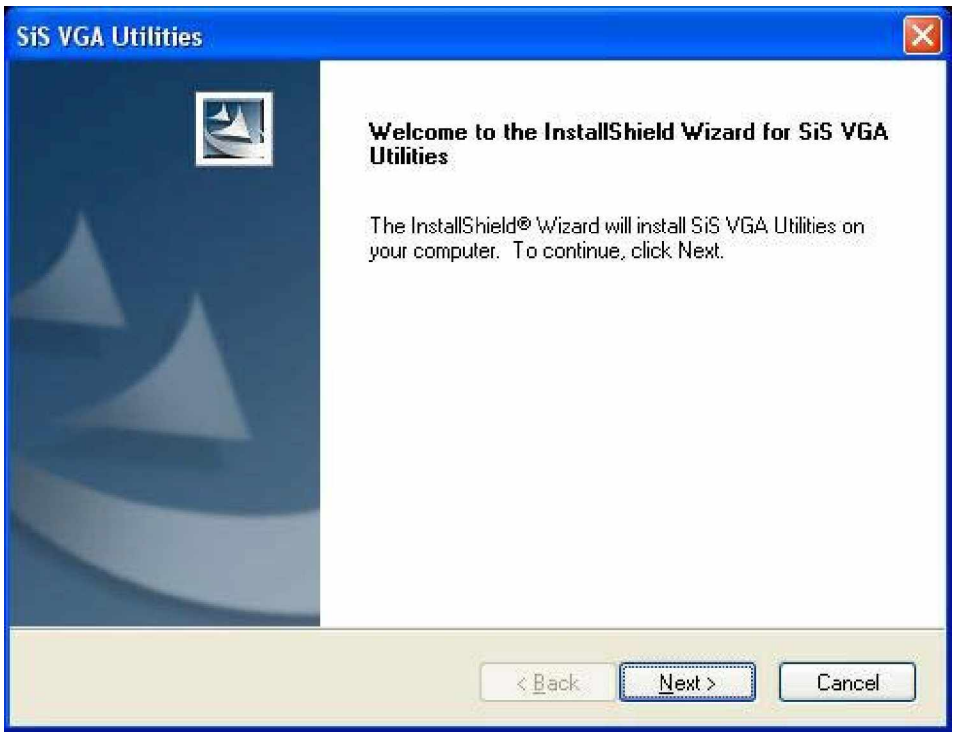


Figure 6-13: VGA Utilities Welcome Screen

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

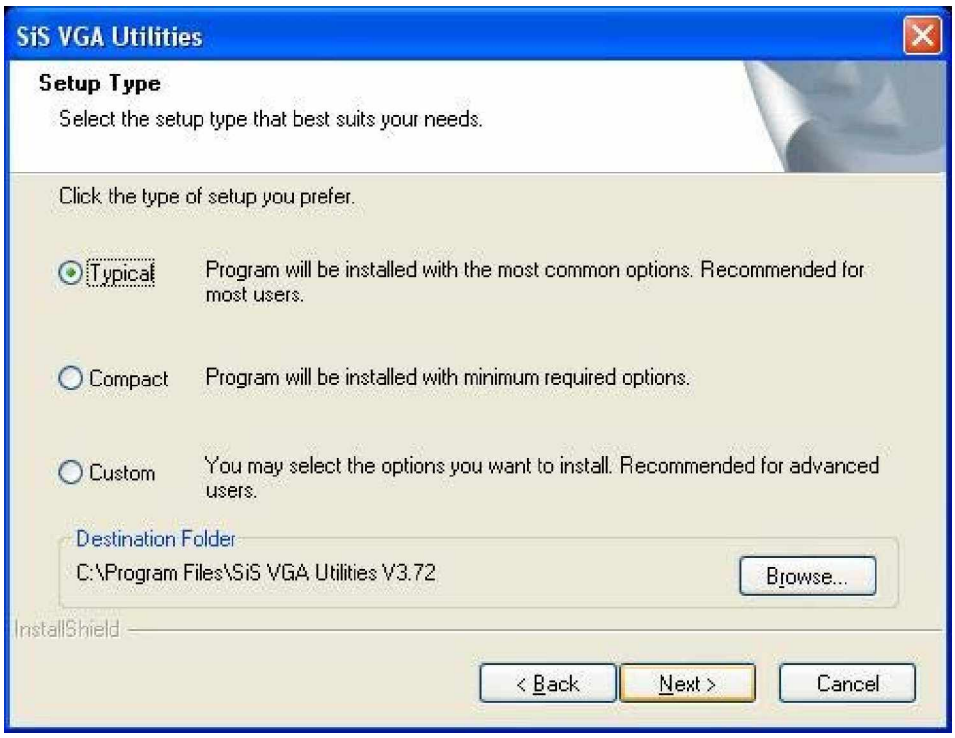


Figure 6-14: Select Setup Installation Type

Step 4: Select a folder to copy the files in (see **Figure 6-15**). Once the setup type is selected, click on the **NEXT** button.

Figure 6-15: Select Folders to Copy Files

Step 5: Before the files are copied, review the selected settings (see **Figure 6-16**). To continue, click the **NEXT** button.

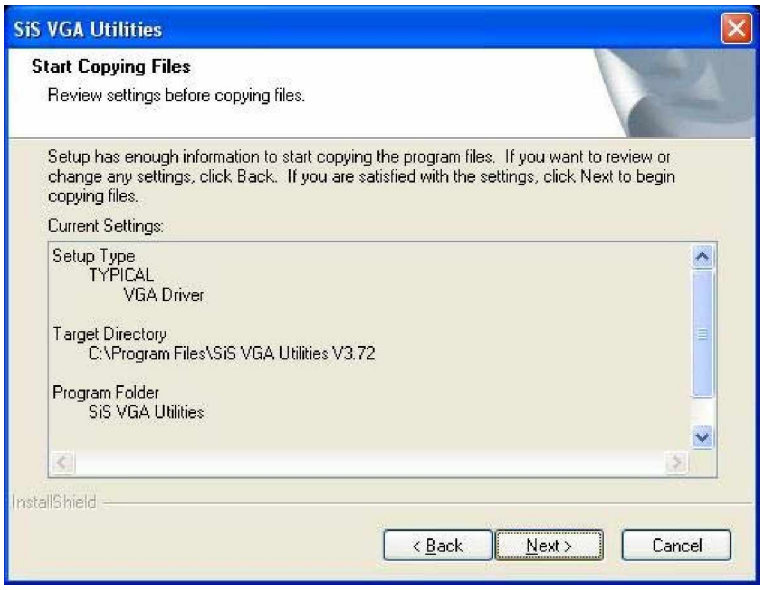


Figure 6-16: Review Settings

Step 6: The driver installation starts.

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

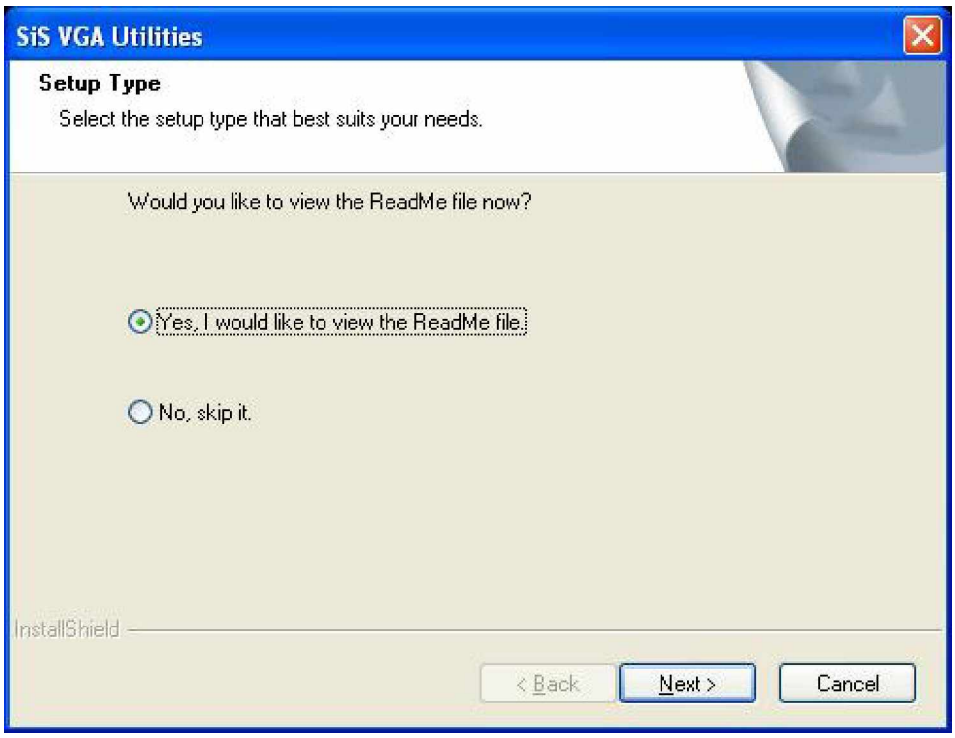


Figure 6-17: Read ReadMe File

Step 8: The user is prompted to restart the computer. Select yes or no.

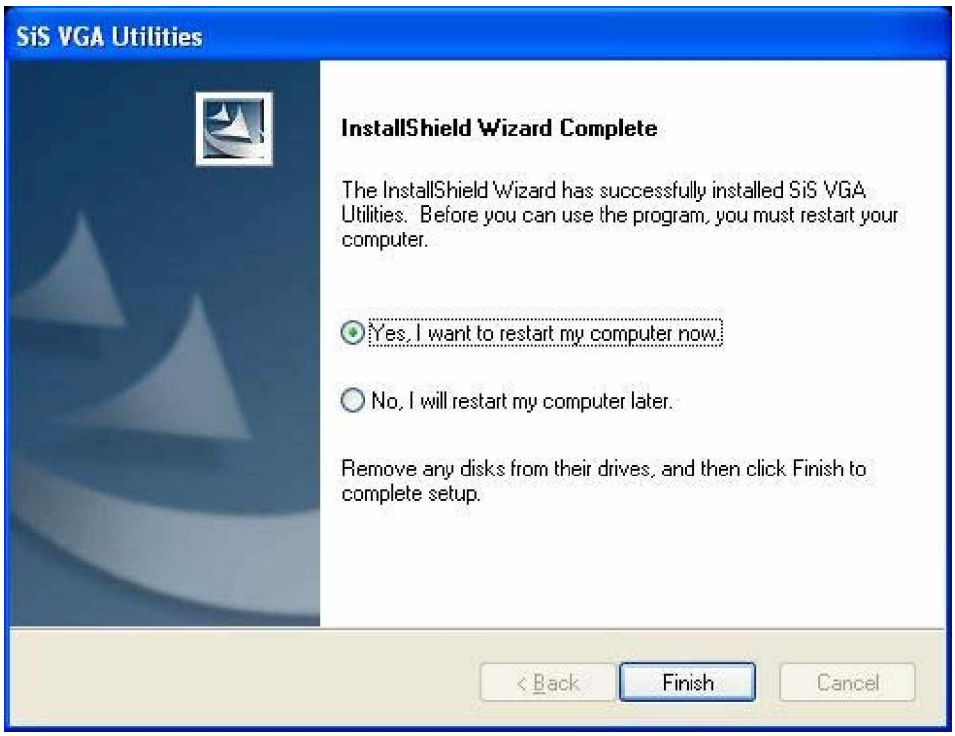


Figure 6-18: Restart the Computer

6.5 SiS IDE Driver Installation

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

Step 9: Insert the CD into the system that contains the 2801250. Open the **IDE R204a** and locate the icon for the **setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 10: Once the **setup** icon is double clicked, select a language. (See **Figure 6-19**).

Figure 6-19: Select a Language

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

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

Figure 6-20: Welcome Screen

Step 12: Select an OS. (See **Figure 6-21**.)

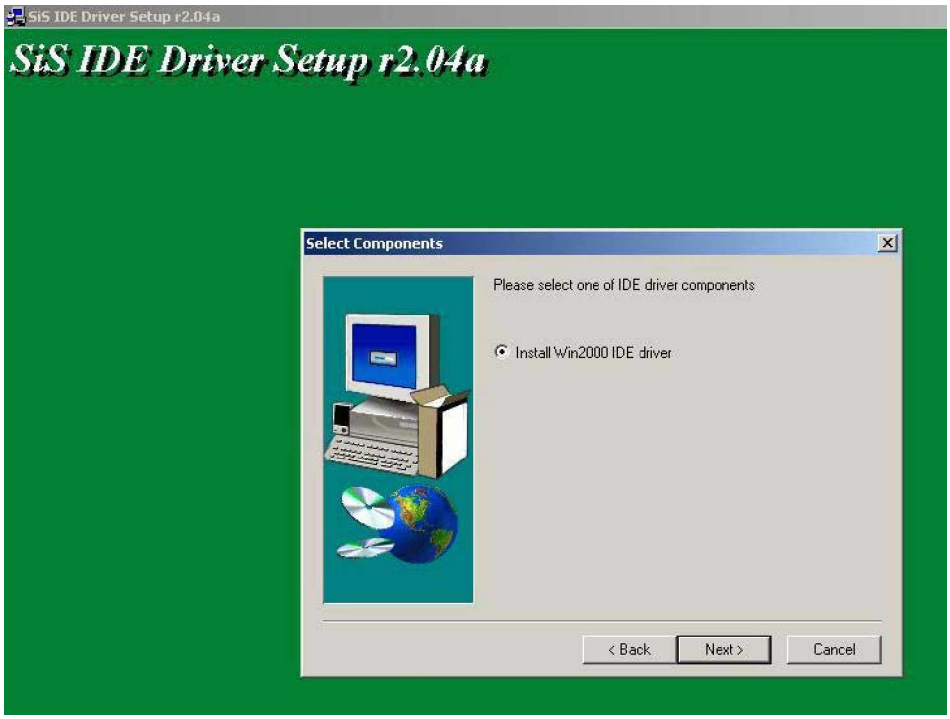


Figure 6-21: Chipset Driver Readme File Information

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

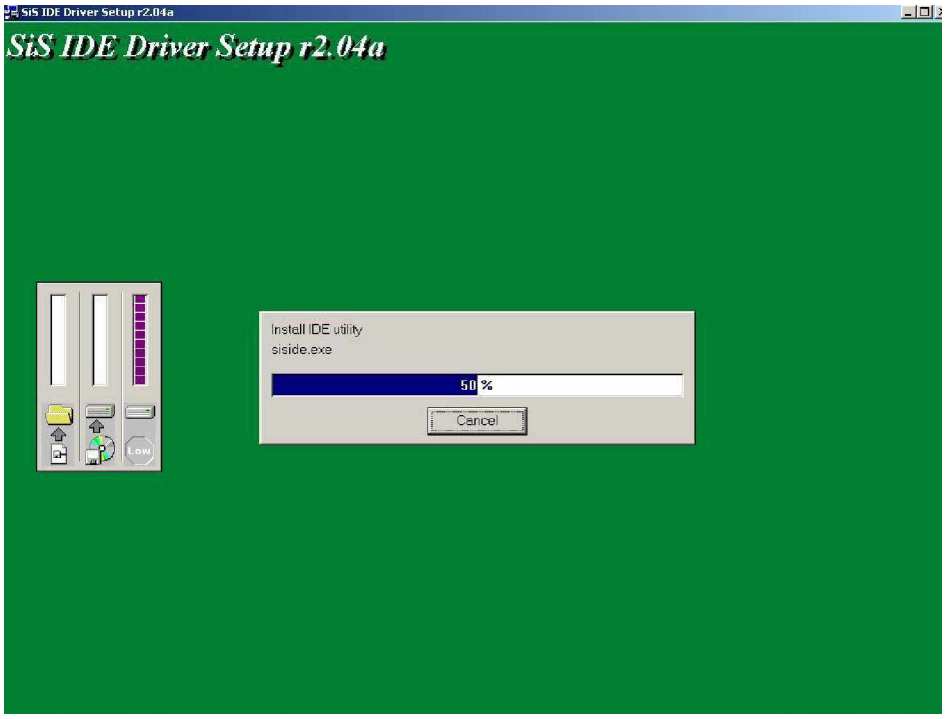


Figure 6-22: Chipset Driver Installation Complete

Step 14: After the installation is complete the user is prompted to restart the computer now or later. **Step 0:**

6.6 LAN Driver Installation

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

Step 1: Insert the CD into the system that contains the 2801250driver. Open the **lan\RTL81698169S(B)8110S(B)\LanSetup_v1.80.635.051018** directory and locate the icon for the **Setup** installation file. Once located, use the mouse to move the cursor over the icon and double click the mouse button.

Step 2: Once the **Setup** icon is double clicked, a **Welcome** screen shown in **Figure 6-24** appears.

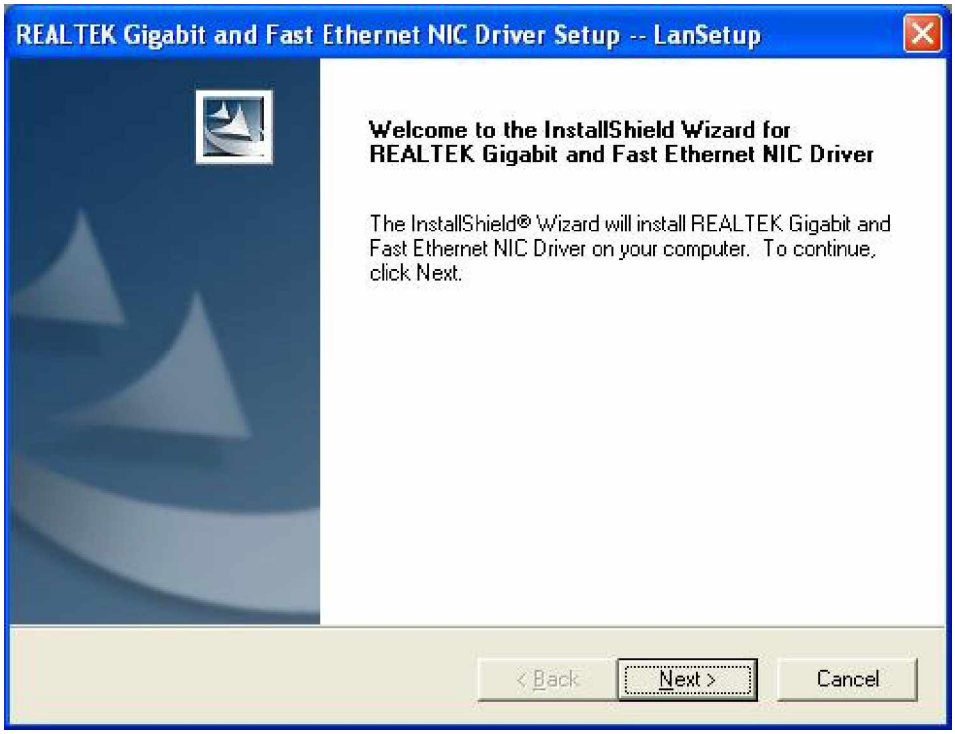


Figure 6-23: LAN Driver Welcome Screen

Step 3: To continue installing click "**Next.**" The driver is installed and a confirmation screen at the end of the installation appears. (See **Figure 6-24**) **Step 0:**

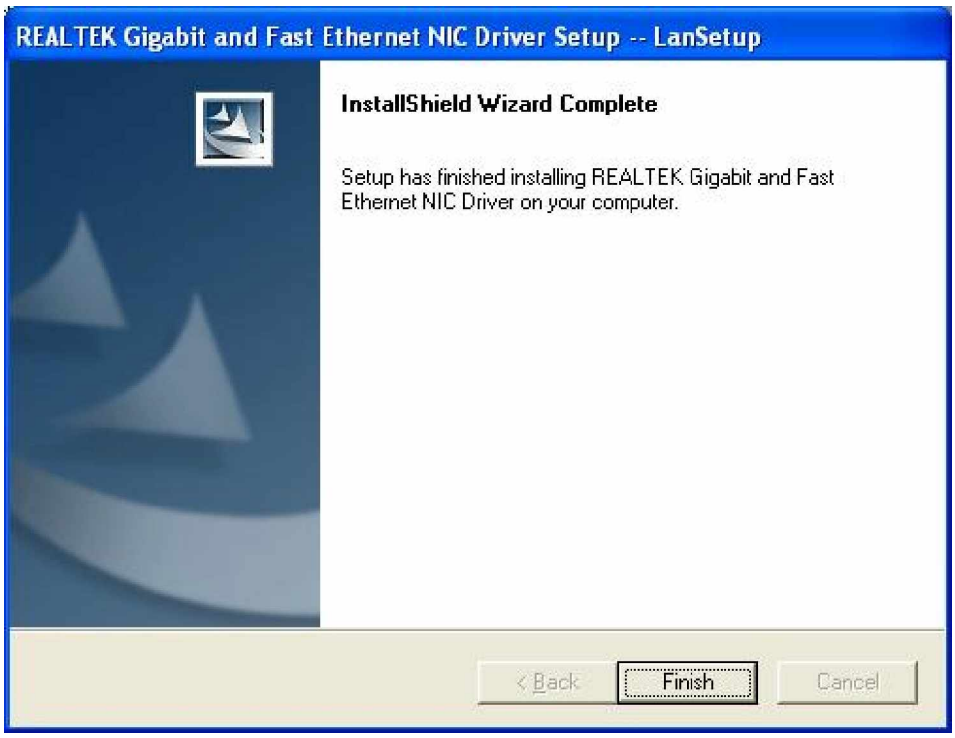


Figure 6-24: LAN Driver Installation Complete

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Appendix

A

A BIOS Configuration Options

A.1 BIOS Configuration Options

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

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Appendix

B

B Watchdog Timer

NOTE:

The following discussion applies to DOS environment. Visit the GAI website for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

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

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

INT 15H:

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

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

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

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

NOTE:

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

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

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

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

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Appendix

C

C Address Mapping

C.1 IO Address Map

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

Table C-1: IO Address Map

C.2 1st MB Memory Address Map

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

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

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

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

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

Table C-4: IRQ Mapping Table

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Appendix

D

D External AC'97 Audio CODEC

D.1 Introduction

The motherboard comes with an onboard Realtek ALC655 CODEC. Realtek ALC655 is a 16-bit, full duplex AC'97 Rev. 2.3 compatible audio CODECwith a sampling rate of 48KHz.

D.1.1 Accessing the AC'97 CODEC

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

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

D.1.2 Driver Installation

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

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

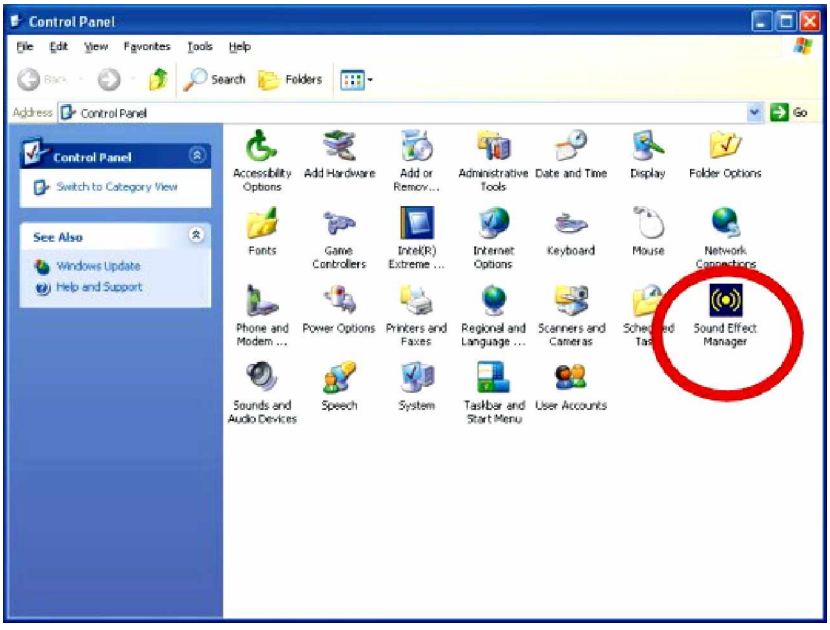

Figure D-1: Sound Effect Manager con

D.2 Sound Effect Configuration

D.2.1 Accessing the Sound Effects Manager

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

Step 1: Install the audio CODEC driver.

Step 2: Click either:

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

o

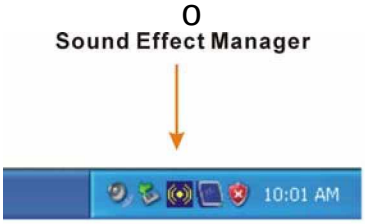

Figure D-2: Sound Effect Manager Icon [Task Bar]

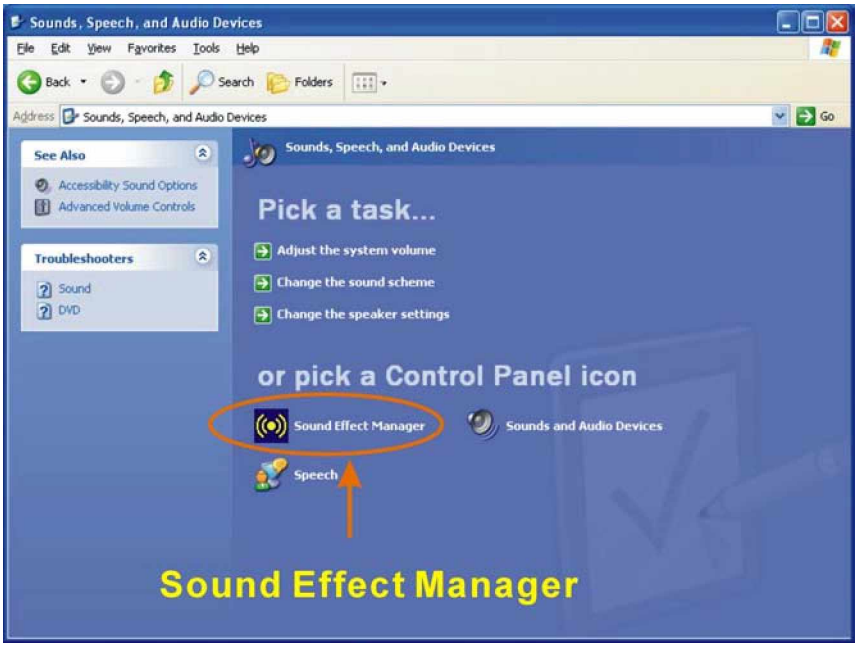

Figure D-3: Sound Effect Manager Icon [Control Panel]

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

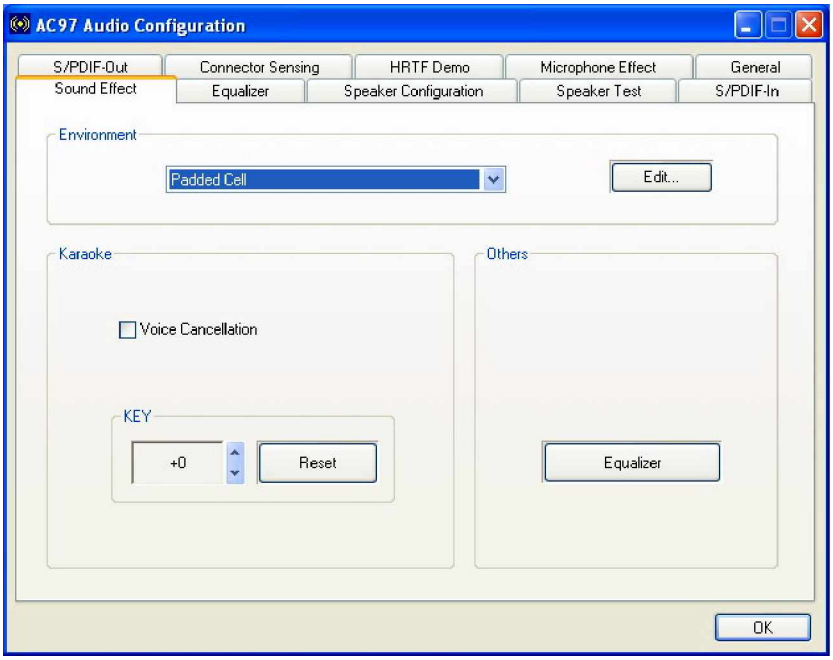

Figure D-4: Sound Effects Manager (ALC655)

NOTE:

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

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

D.2.2 Sound Effect Manager Configuration Options

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

NOTE:

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

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

NOTE:

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

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

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

users to define a key that fits a certain vocal range.

- ***Equalizer Selection***:- Preset equalizer settings enable easy audio range settings. Ten frequency bands can be configured.

- ***Speaker Configuration***:- Multi-channel speaker settings are configured in this menu. Configurable options include:
  - Headphone
  - Channel mode for stereo speaker output
  - Channel mode for 4 speaker output
  - Channel mode for 5.1 speaker output
  - Synchronize the phonejack switch with speakers settings

- ***Speaker Test*:-** Each speaker connected to the system is tested individually to see if the 4-channel or 6-channel audio operates properly.

- ***S/PDIF-In & S/PDIF-Out***:- These functions are currently not supported.

- ***Connector Sensing***:- Realtek ALC655 detects if an audio device is plugged into the wrong connector. If an incorrect device is plugged in a warning message appears.

- ***HRTF Demo***:- Adjust HRTF (Head Related Transfer Functions) 3D positional audio here before running 3D applications.

- ***Microphone Effect***:- Microphone noise suppression is enabled in this menu.

- ***General***:- General information about the installed AC'97 audio configuration utility is listed here.

Appendix

E

E RAID Setup

E.1 Introduction

E.1.1 RAID Support

The SiS964 southbridge chipset integrated controller supports the following three SATA RAID levels:

- JBOD
- RAID0
- RAID1

E.1.2 What is RAID

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

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

E.2 RAID Setup

E.2.1 Introduction

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

Step 4: Two SATA drives must be installed onto the system.

Step 5: The RAID BIOS must be configured.

Step 6: RAID drivers must be copied onto a floppy disk.**Step 0:**

E.2.2 Copy the RAID Driver

Before configuring the RAID on the system, copy the RAID driver from the driver CD that came with the system onto a floppy disk. To do this, follow the steps below.

Step 1: Insert the CD into a computer.

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

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

Figure E-1: RAID 304C Subdirectory

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

Figure E-2: RAID 304C Subdirectory

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

- Srv2003
- Win2000
- Winxp
- WS03XP64

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

Step 6: These directories all contain drivers compatible with different OSes. Select the directory for the OS used on the system and copy all the files onto a separate floppy disk drive. **Step 0:**

E.2.3 Install SATA Drives

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

E.2.4 Configure the SATA Controller in BIOS

To configure the RAID BIOS, follow the steps below:

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

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

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

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

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

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

Step 7: When the **Exit** menu appears, select the "**Save Changes and Exit**" menu option. **Step 0:**

E.2.5 Configure the RAID BIOS

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

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

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

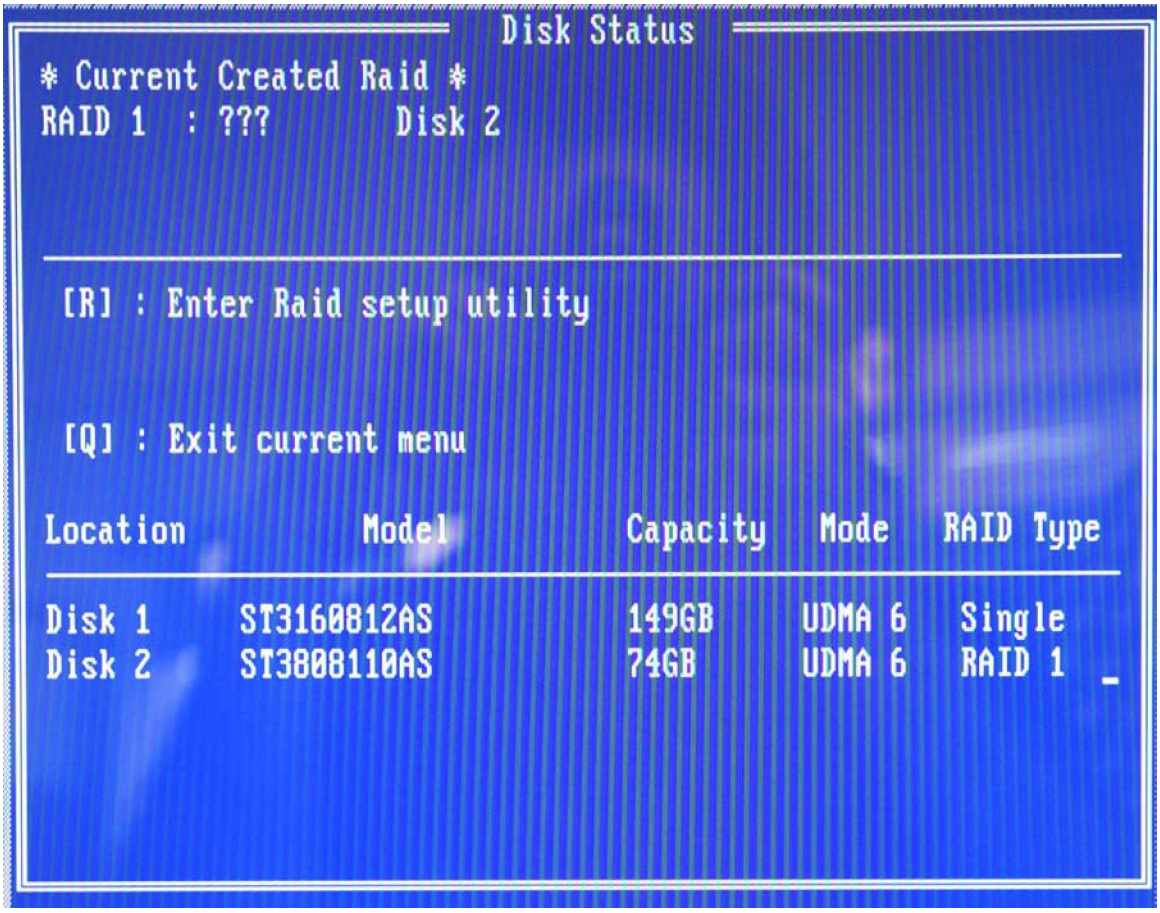

Figure E-4: BIOS RAID Utility

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

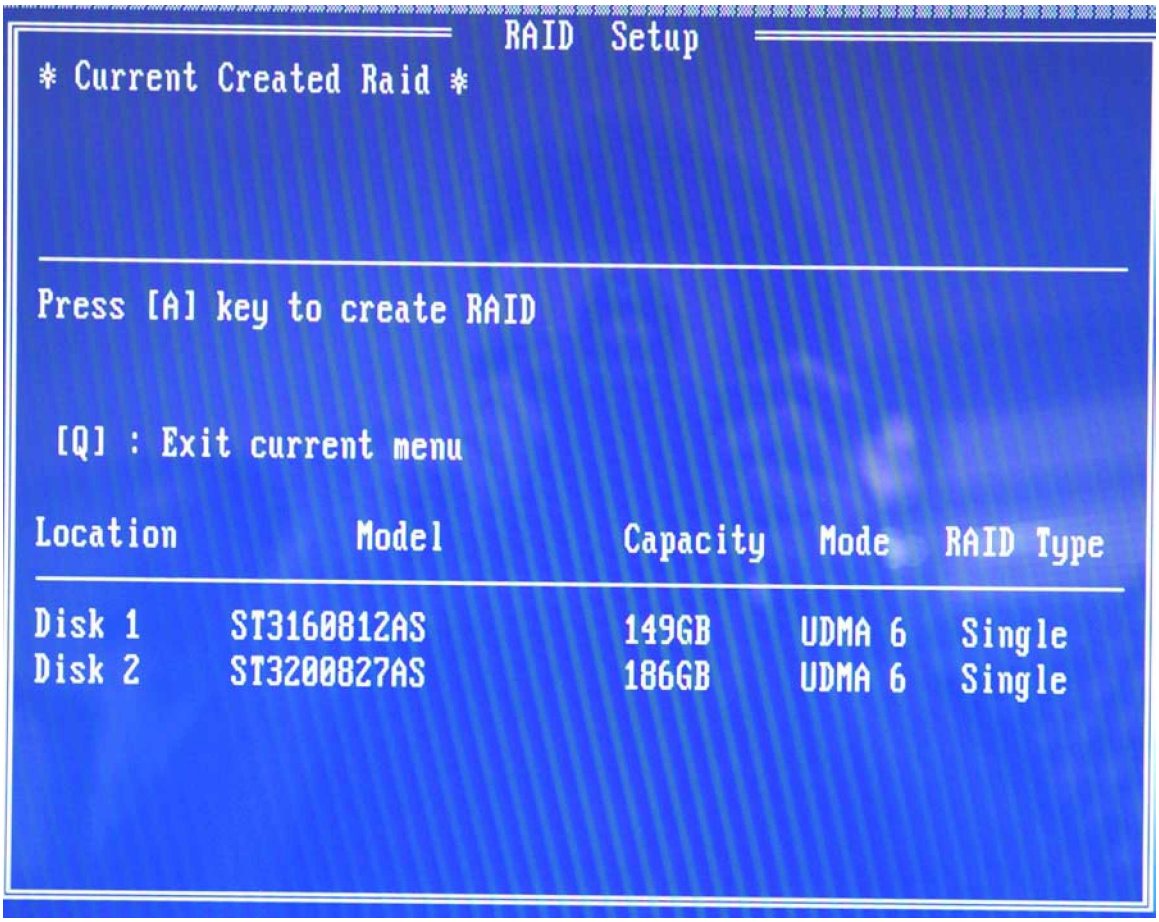

Figure E-5: Create RAID

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

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

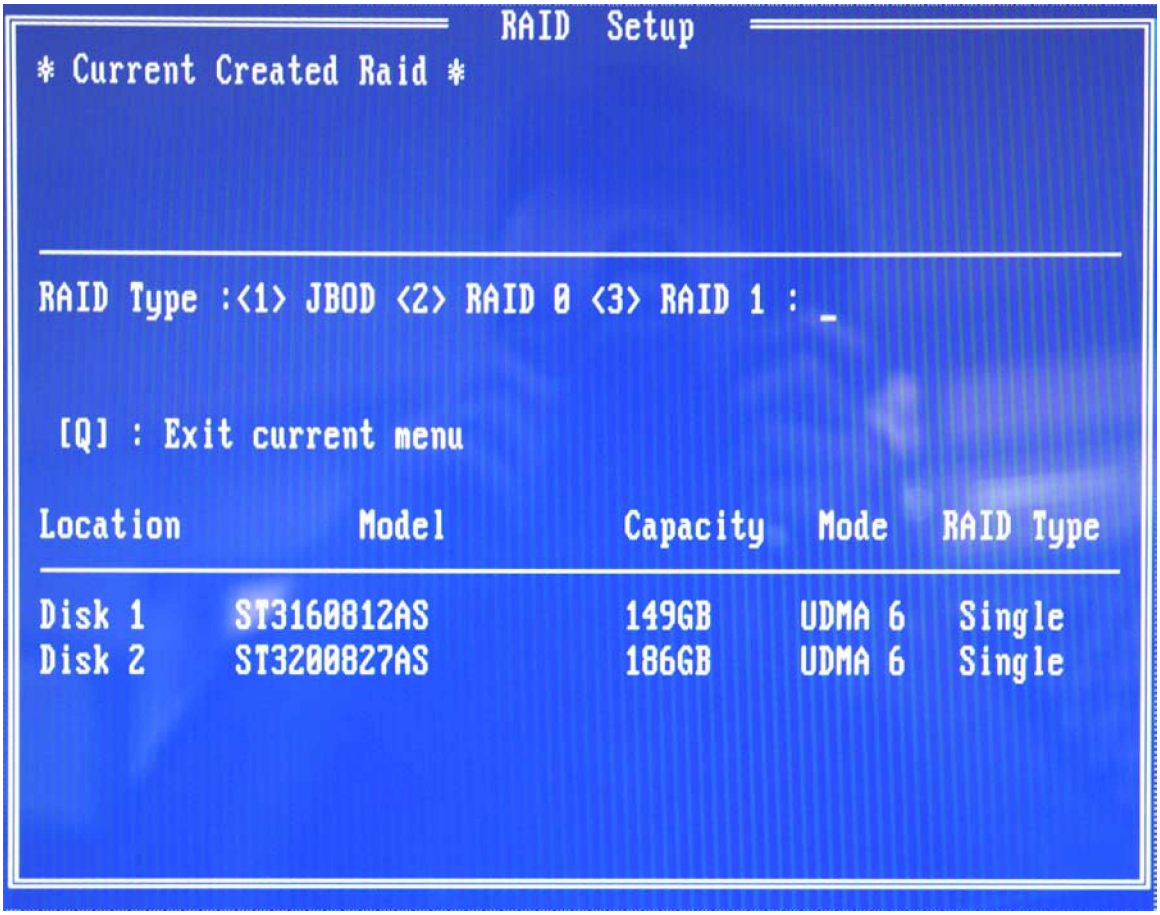

Figure E-6: Create RAID

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

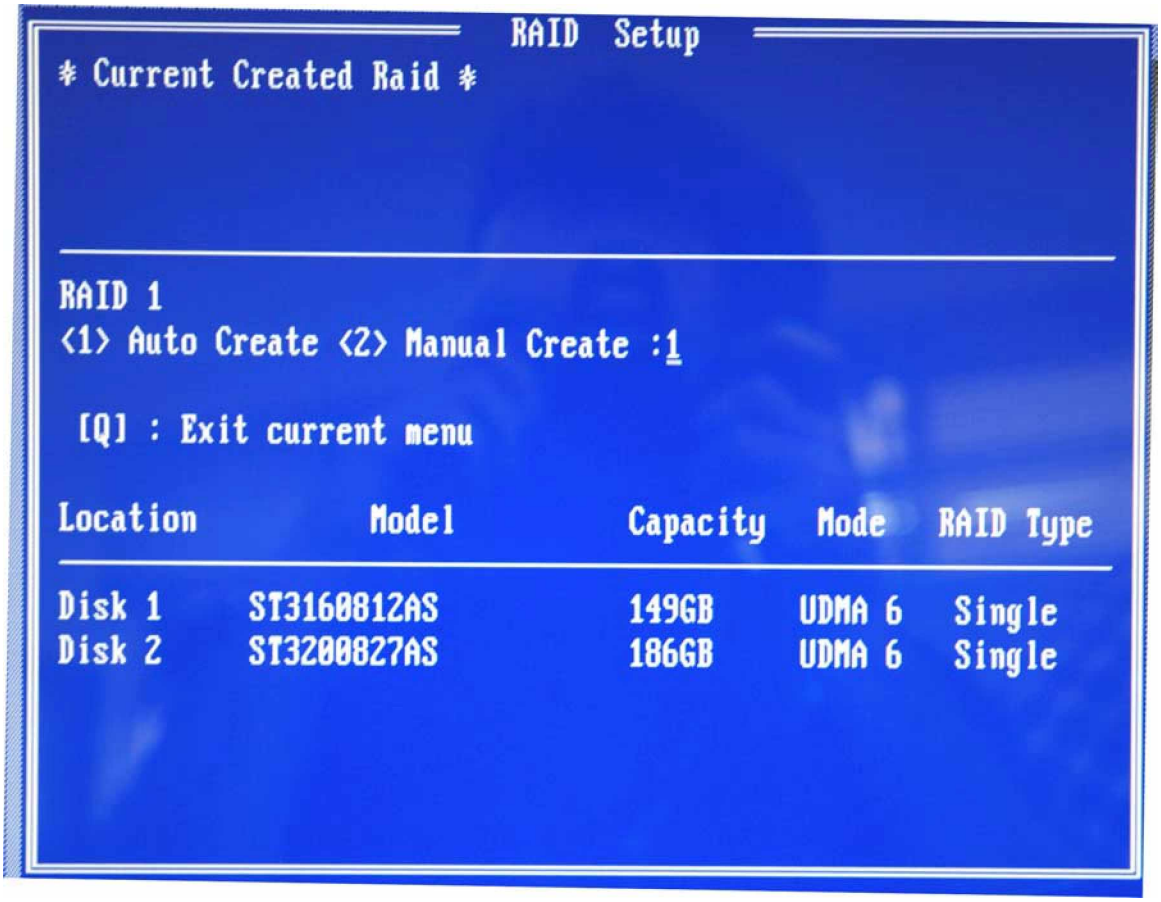

Figure E-7: Select "Auto"

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

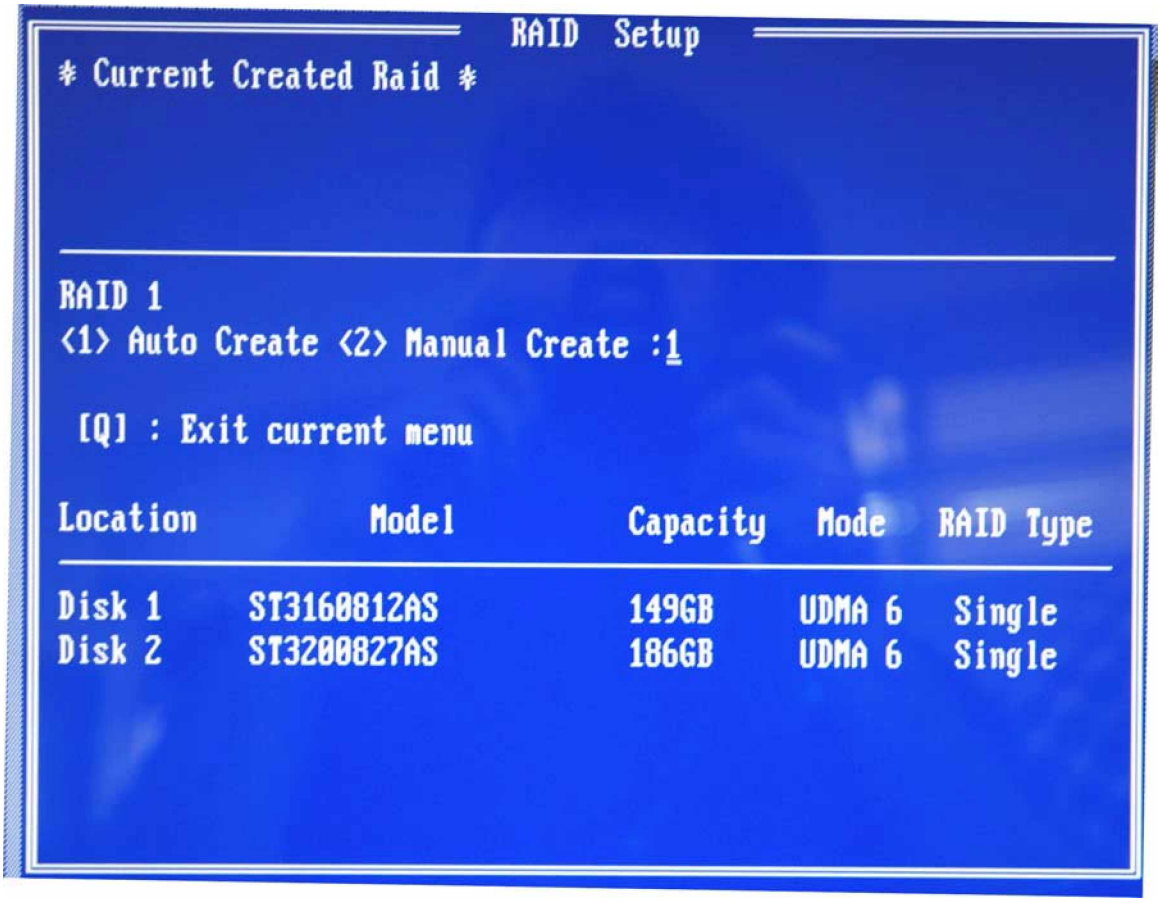

Figure E-8: Select "Auto"

Step 8: After the RAID configuration is complete, save the changes and exit the RAID configuration utility. **Step 0:**

E.2.6 Install the OS

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

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

Step 2: Restart the system.

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

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

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

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

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

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

F Index

Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business

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