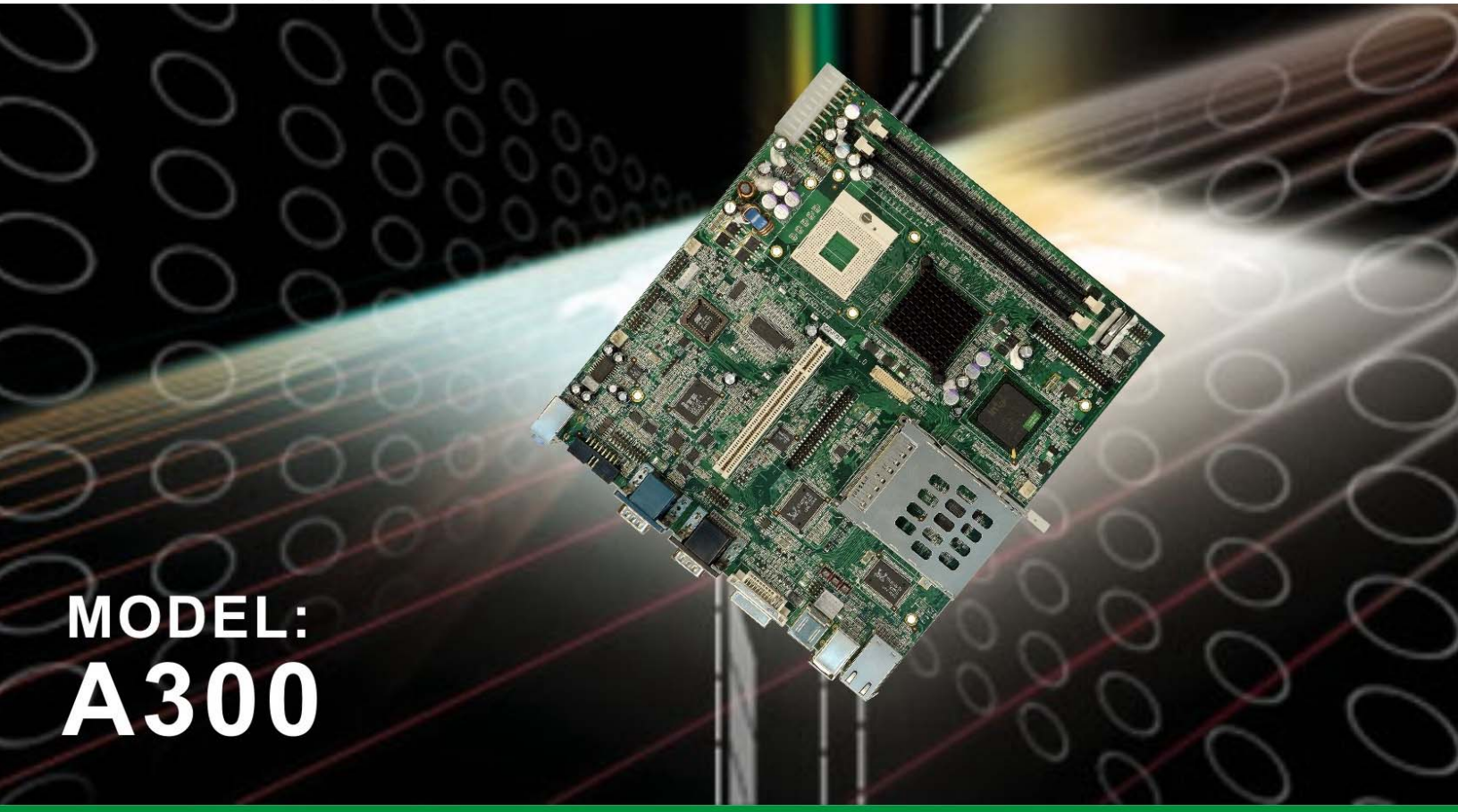
IEI Technology Corp.



MODEL:
A300

Intel® Pentium® M/Celeron® M LPX Motherboard
Socket 479, 400MHz FSB with Independent Dual Display

User Manual

Rev. 1.0 March 2007

RoHS Lead Free

Revision

MODEL	A300 Intel® Pentium® M/Celeron® M Motherboard	
Revision Number	**Description**	**Date of Issue**
1.0	Initial release	March 2007

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Packing List

NOTE:

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the A300 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the A300 package.

- 1 x A300 single board computer
- 1 x IDE flat cable 44p/40p/40p
- 1 x IDE flat cable 44p/44p
- 2 x Single port RS-232 cable
- 1 x RS-232/422/485 cable
- 1 x Mini jumper pack
- 1 x Utility CD
- 1 x QIG (quick installation guide)

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

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BIOS Menus

Glossary

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

Chapter

1

Introduction

1.1 A300 Overview

The A300 is a multimedia Pentium® Mobile processor-based motherboard that powers a Point-of-Care terminal or panel PC for varied purposes. To facilitate multimedia performance, the A300 can connect to slim Combo CD/DVD-ROM, a PCMCIA card socket, and the multimedia and wireless 802.11g functionality. The A300 also comes with an expansion PCI slot which allows flexible implementations making it the perfect platform for comprehensive lifestyle computing applications.

1.1.1 A300 Applications

The A300 is designed for applications in the following areas:

- Surveillance
  - Digital surveillance
  - X-ray imaging terminal
  - Bedside entertainment
  - Multimedia advertising platform
- General Computing
  - Computer-based testing center
  - General purpose information system
  - Mobile nursing station
  - Interactive education uses
- Automation & Control
  - Plant environment monitoring
  - Factory automation HMI terminal
  - Shop-floor/MES control
- Self-service Kiosk
  - Full-service receptionist kiosk
  - Hospital self-registering terminal
  - Interactive photo kiosk
  - Video rental kiosk
  - Self-service POS terminal

1.1.2 A300 Benefits

Some of the A300 benefits include:

- Clinical Information System (CIS) integration
- Filmless solution by PACS
- Reduced maintenance costs
- Client crash prevention
- Central resource control

1.1.3 A300 Features

Some of the A300 features are listed below:

- LPX form factor
- RoHS compliant
- Intel Pentium M / Celeron M processor supported
- Digital dual-independent display functionality
- Low power consumption
- Two high performance gigabit Ethernet controllers on-board
- Medical power input fully supported
- CompactFlash® card and PCMCIA socket solutions
- Integrated audio

1.2 A300 Board Overview

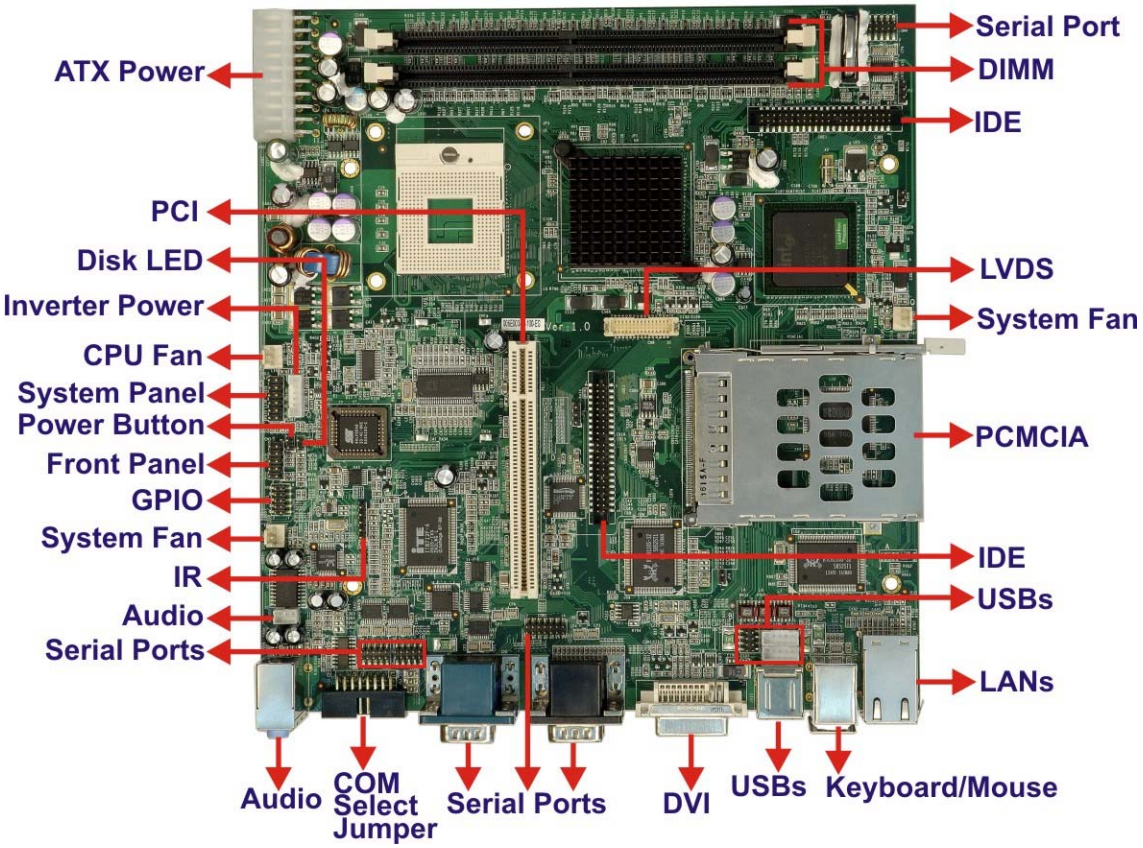


Figure 1-1: A300 Overview

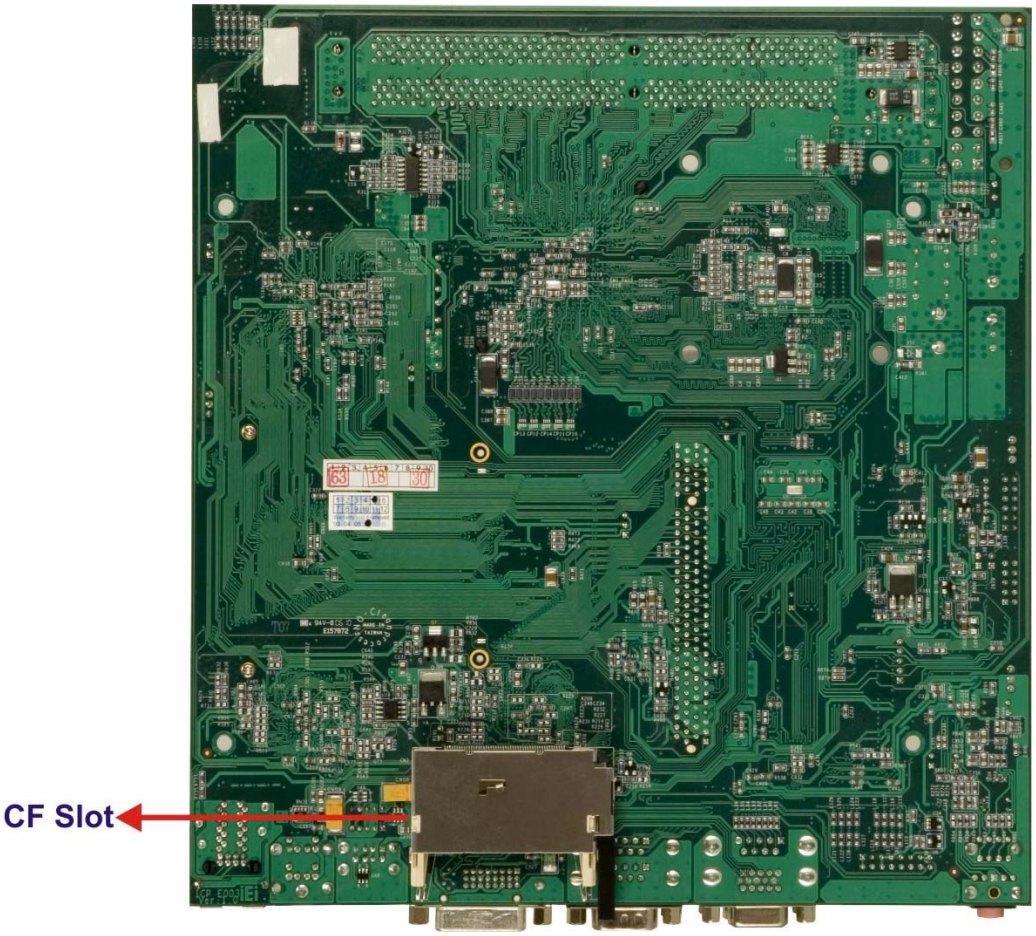


Figure 1-2: A300 Solder Side Overview

1.2.1 A300 Connectors

The A300 has the following connectors on-board:

- 1 x ATX power connector
- 1 x Audio connector
- 1 x CompactFlash® card socket
- 3 x Cooling fan connectors
- 1 x Front panel connector
- 1 x 8 bits GPIO connector
- 2 x 44-pin IDE connectors
- 1 x Inverter connector
- 1 x IR interface connector

- 1 x Disk LED connector
- 1 x PCMCIA slot
- 1 x Power button connector
- 3 x RS-232 serial port connectors
- 1 x RS-422/485 serial port connector
- 1 x System panel connector
- 1 x LCD LVDS connector
- 3 x USB2.0 connectors

The A300 has the following connectors on the board rear panel:

- 1 x Audio connector
- 1 x COM port jumper
- 1 x DVI-I connector
- 3 x Serial port connectors
- 1 x CRT connector
- 1 x PS/2 keyboard connector
- 1 x PS/2 mouse connector
- 2 x USB 2.0 connectors
- 2 x LAN RJ-45 connectors

The A300 has the following on-board jumpers:

- Clear CMOS
- CF Card Setup
- COM Port Jumper Settings
- LCD Voltage Setup
- LCD Rotate Setup

1.2.2 Technical Specifications

A300 technical specifications are listed in **Table 1-1**. Detailed descriptions of each specification can be found in **Chapter 2**.

Specification	A300
CPU	Intel® Pentium M/Celeron M 400Mhz FSB up to 2.10GHz
System Chipset	Intel® 855GME + ICH4
Display	CRT integrated in Intel® 855GME DVI integrated in Silicon Image SiI164
TTL/LVDS	Dual channel 18-bit LVDS integrated in Intel® 855GME Supports independent dual display
Memory	Supports two DDR 266/333 184-pin DIMM modules up to 2GB
BIOS	AMI BIOS
SSD	Compact Flash (CF)
Audio	AC'97 Codec Realtek ALC655
LAN	Dual Realtek RTL8110S/SC GbE
COM	Five RS-232 and One RS-232/422/RS-485
USB2.0	Six USB 1.1 or USB 2.0 devices supported
IDE	Two 44-pin IDE connects to four Ultra ATA33/66/100 devices
Watchdog Timer	Software programmable 1-255 sec. by supper I/O
Digital I/O	One GPIO connector
Expansion	One PCI slot One PCMCIA slot
Power Supply	ATX power support
Temperature	0ºC - 60ºC
Humidity (operating)	5%~95% non-condensing

Dimensions	235mm x 220mm
Weight (GW/NW)	1200g/680g

Table 1-1: Technical Specifications

Chapter

2

Detailed Specifications

2.1 Overview

This chapter describes the specifications and on-board features of the A300 in detail.

2.2 Dimensions

2.2.1 Board Dimensions

The dimensions of the board are listed below:

- **Length**: 235mm
- **Width**: 220mm

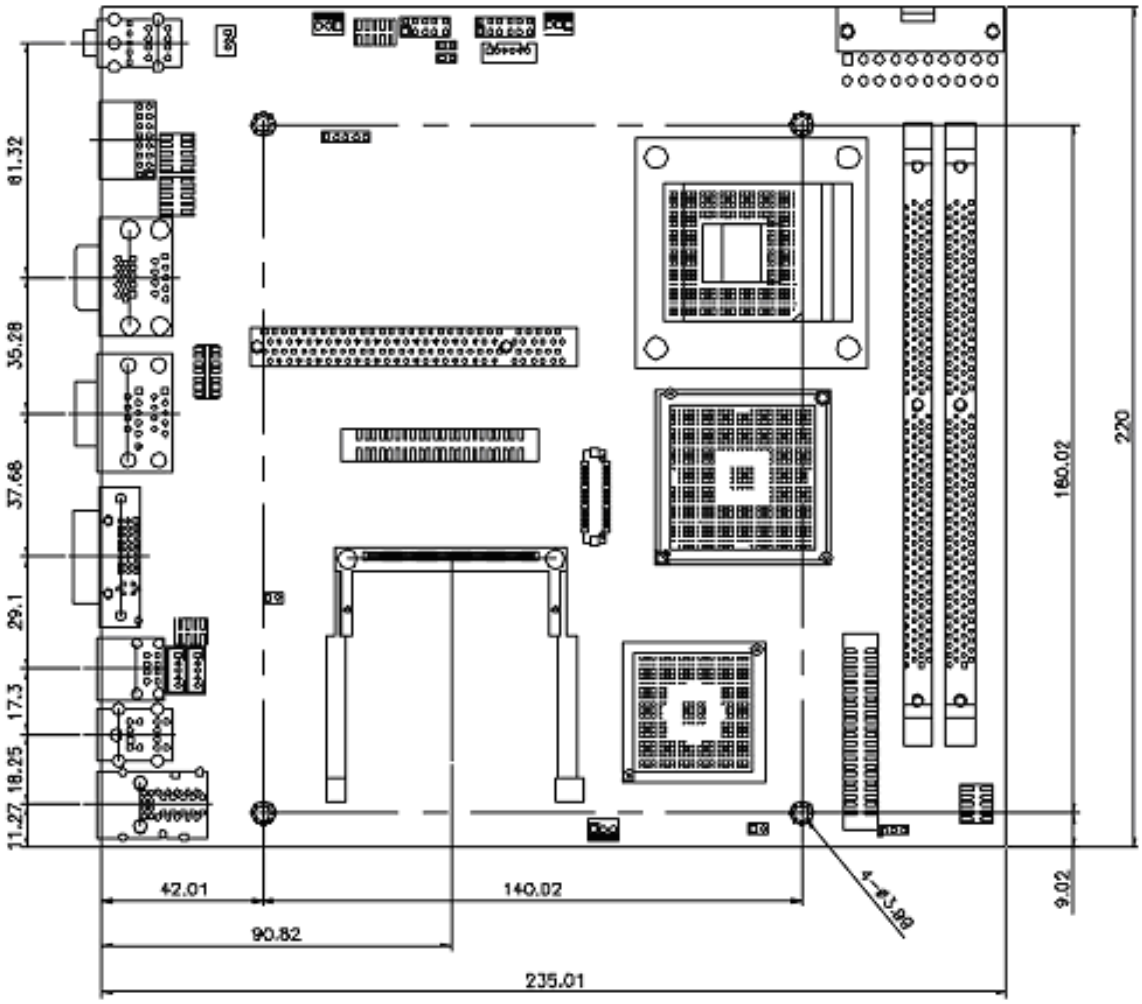


Figure 2-1: A300 Dimensions (mm)

2.2.2 External Interface Panel Dimensions

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

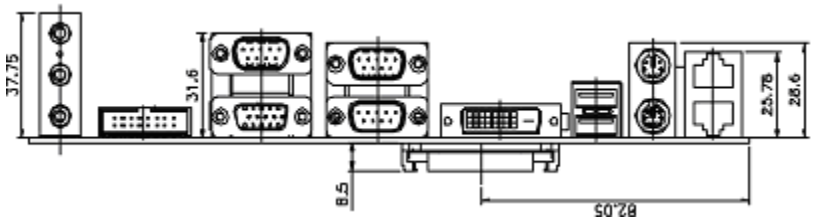


Figure 2-2: External Interface Panel Dimensions (mm)

2.3 Data Flow

The A300 motherboard comes with an Intel® Pentium M / Celeron M CPU. **Figure 2-3** shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

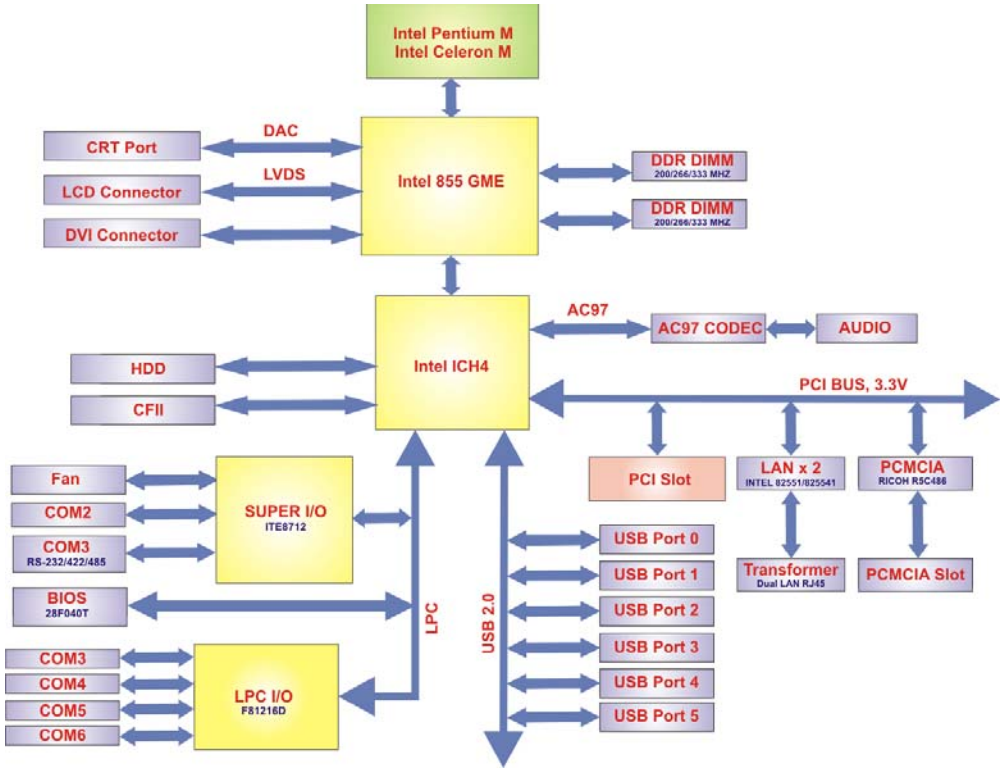


Figure 2-3: Data Flow Block Diagram

2.4 Compatible Processor

2.4.1 CPU Overview

Socket 479 Intel® Pentium® M processors with enhanced Intel SpeedStep® Technology and Socket 479 Intel® Celeron® M processors can be installed on the A300 motherboard.

2.4.2 Supported Processors

Specifications for the compatible processors are listed in **Table 2-1** below:

Family	Number	Architecture	Cache	Clock Speed	FSB
Pentium® M	765	90 nm	2 MB L2	2.10 GHz	400 MHz
Pentium® M	755	90 nm	2 MB L2	2.0 GHz	400 MHz
Pentium® M	745	90 nm	2 MB L2	1.80 GHz	400 MHz
Pentium® M	735	90 nm	2 MB L2	1.70 GHz	400 MHz
Pentium® M	725	90 nm	2 MB L2	1.60 GHz	400 MHz
Pentium® M	715	90 nm	2 MB L2	1.50 GHz	400 MHz
Pentium® M	710	90 nm	2 MB L2	1.40 GHz	400 MHz
Celeron® M	390	90 nm	1 MB L2	1.70 GHz	400 MHz
Celeron® M	380	90 nm	1 MB L2	1.60 GHz	400 MHz
Celeron® M	370	90 nm	1 MB L2	1.50 GHz	400 MHz
Celeron® M	360	90 nm	1 MB L2	1.40 GHz	400 MHz
Celeron® M	350	90 nm	1 MB L2	1.30 GHz	400 MHz

Table 2-1: Supported Processors

2.5 Intel® 855GME Chipset Graphics Memory Controller Hub

2.5.1 Intel® 855GME Overview

The Intel® 855GME chipset comes with the following features:

- 400 MHz system bus delivers a high-bandwidth connection between the processor and the platform
- Integrated graphics utilizing Intel® Extreme Graphics 2 technology
- AGP 4X support
- Three USB host controllers provide high-performance peripherals with 480 Mbps of bandwidth, while enabling support for up to six USB 2.0 ports.
- The latest AC '97 implementation delivers 20-bit audio for enhanced sound quality and full surround sound capability
- LAN Connect Interface (LCI) provides flexible network solutions such as 10/100 Mbps Ethernet and 10/100 Mbps Ethernet with LAN manageability
- Dual Ultra ATA/100 controllers, coupled with the Intel® Application Accelerator support faster IDE transfers to storage devices
- The Intel Application Accelerator software provides additional performance over native ATA drivers by improving I/O transfer rates and enabling faster O/S load time, resulting in accelerated boot times
- Communication and Network Riser (CNR) offers flexibility in system configuration with a baseline feature set that can be upgraded with an audio card, modem card, or network card
- Error Correcting Code (ECC) support in integrated graphics mode only

2.5.2 Intel® 855GME Memory Support

The Intel® 855GME supports two DDR memory modules with frequencies up to 333MHz. The A300 has two 184-pin DDR DIMM SDRAM socket that supports two 200MHz, 266MHz or 333MHz DDR DIMM memory module with a maximum capacity of 2GB.

2.5.3 Intel® 855GME Internal Graphics Controller

The Intel® 855GME supports both CRT and TFT in a dual display mode. The following display specifications.

- Graphics Core Frequency
  - Display/Render frequency up to 250 MHz (with 1.35 V core voltage)
- 3D Graphics Engine
  - 3D Setup and Render Engine
  - Zone Rendering
  - High-quality performance Texture Engine
- Analog Display Support
  - 350-MHz integrated 24-bit RAMDAC
  - Hardware color cursor support
  - Accompanying I2C and DDC channels provided through multiplexed interface
  - Dual independent pipe for dual independent display
  - Simultaneous display: same images and native display timings on each display device
- Digital Video Out Port (DVOB & DVOC) support
  - DVOB & DVOC with 165-MHz dot clock support for each 12-bit interface
  - Compliant with DVI Specification 1.5
- Dedicated LFP (local flat panel) support
  - Single or dual channel LVDS panel support up to UXGA panel resolution with frequency range from 25 MHz to 112 MHz per channel
  - SSC support of 0.5%, 1.0%, and 2.5% center and down spread with external SSC clock
  - Supports data format of 18 bpp
  - LCD panel power sequencing compliant with SPWG timing specification
  - Compliant with ANSI/TIA/EIA 644-1995 spec
  - Integrated PWM interface for LCD backlight inverter control
  - Bi-linear Panel fitting
- Internal Graphics Features (Intel 855GME chipset)
  - Core Vcc = 1.2 V or 1.35 V (to support higher graphics core frequency and DDR333)
  - Graphics core frequency
- Display core frequency at 133 MHz, 200 MHz, 250 MHz
- Render core frequency at 100 MHz, 133 MHz, 166 MHz, 200 MHz, 250 MHz
- Intel® Dual-Frequency Graphics Technology
  - 3D Graphics Engine

- Enhanced Hardware Binning Instruction Set supported
- Bi-Cubic Filtering supported
- Linear Gamma Blending for Video Mixer Rendering (VMR)
- Video Mixer Rendering (VMR) supported
  - Graphics Power Management
- Dynamic Core Frequency Switching
- Intel® Smart 2D Display Technology
- Memory Self-Refresh During C3
- Intel® Display Power Saving Technology

2.5.4 Intel® 855GME Power Management

The power management for the Intel® 855GME is listed below:

- Optimized Clock Gating for 3D and Display Engines
- On-die thermal sensor

2.6 Intel® 82801DB I/O Controller Hub (ICH4)

2.6.1 Intel® ICH4 Overview

The Intel® ICH4 I/O controller hub comes with the following features:

- PCI Local Bus Specification, Revision 2.2-compliant with support for 33 MHz PCI operations.
- ACPI Power Management Logic Support
- Enhanced DMA controller, Interrupt controller, and timer functions
- Integrated IDE controller supports Ultra ATA100/66/33
- USB host interface with support for 6 USB ports; 3 UHCI host controllers; 1 EHCI high-speed
- USB 2.0 Host controller
- Integrated LAN controller
- System Management Bus (SMBus) Specification, Version 2.0 with additional support for I^2C devices
- Supports Audio Codec ’97, Revision 2.3 specification
- Low Pin Count (LPC) interface
- Firmware Hub (FWH) interface support

- Alert On LAN* (AOL) and Alert On LAN 2* (AOL2)

2.6.2 Intel® ICH4 IDE Interface

The single A300 IDE connector supports two IDE hard disks and ATAPI devices. PIO IDE transfers up to 16MB/s and Ultra ATA transfers of 100MB/s. The integrated IDE interface is able to support the following IDE HDDs:

The onboard ATA-6 controller is able to support the following IDE HDDs:

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

Specification	Ultra ATA/100	Ultra ATA/66	Ultra ATA/100
IDE devices	2	2	2
PIO Mode	0 – 4	0 – 4	0 – 4
PIO Max Transfer Rate	16.6 MB/s	16.6 MB/s	16.6 MB/s
DMA/UDMA designation	UDMA 3 - 4	UDMA 3 – 4	UDMA 2
DMA/UDMA Max Transfer	100MB/s	66MB/s	33MB/s
Controller Interface	5V	5V	5V

Table 2-2: Supported HDD Specifications

2.6.3 Intel® ICH4 Compact Flash Interface

The A300 CompactFlash socket supports standard CF Type I and CF Type II cards. The chipset flash interface is multiplexed with an IDE interface and can be connected to an array of industry standard NAND Flash or NOR Flash devices.

2.6.4 Intel® ICH4 Audio Codec 97 (AC'97) Controller

The Audio Codec '97 (AC'97) controller integrated into the ICH4 complies with AC'97 Component Specification, Version 2.3. The AC'97 controller is connected to the onboard

audio connector. The audio connector is connected to an audio kit with an embedded AC'97 audio codec. The AC'97 controller supports up to six PCM audio output channels. Complete surround sound requires six-channel audio consisting of:

- Front left
- Front right
- Back left
- Back right
- Center
- Subwoofer

2.6.5 Intel® ICH4 USB Controller

Two external USB ports on the A300 board are interfaced to the chipset USB controller. Six USB 1.1 or USB 2.0 devices can be connected simultaneously to the A300. The chipset USB controller has the following specifications:

- 6 USB ports
- USB 1.1 and USB 2.0 compliant
- 3 Universal Host Controller Interface (UHCI) controllers
- High-speed, full-speed and low-speed capable

2.6.6 Intel® ICH4 PCI Interface

The PCI interface on the ICH4 is compliant with the PCI Revision 2.2 implementation. Some of the features of the PCI interface are listed below.

- PCI Revision 2.2 compliant
- 33MHz
- 5V tolerant PCI signals (except PME#)
- Integrated PCI arbiter supports up to six PCI bus masters

2.6.7 Intel® ICH4 Low Pin Count (LPC) Interface

The ICH4 LPC interface complies with the LPC 1.0 specifications. The LPC bus from the ICH4 is connected to the following components:

- BIOS chipset
- Super I/O chipset

2.6.8 BIOS

The BIOS flash memory chip on the A300 has a licensed copy of AMI BIOS loaded onto it. The BIOS flash memory chip is connected to the chipset via the LPC bus. The flash BIOS features are listed below:

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

2.7 PCI Bus Components

2.7.1 PCI Bus Overview

The PCI bus controller on the ICH4 is compliant with PCI Revision 2.2 specifications and has a 33MHz PCI clock. The components listed below are all connected to the PCI bus:

- PCI socket
- Realtek RTL8110S GbE interface
- One PCMCIA slot

2.7.2 GbE Ethernet

A highly integrated and cost-effective single-chip, fast RealTek RTL8110S/SC GbE Ethernet controller is interfaced through first the PCI bus to the CPU and system chipset. The RealTek RTL8110S/SC controller provides 10Mbps, 100Mbps or 1000Mbps Ethernet connectivity to the A300. Some of the features of the RealTek RTL8110S/SC are listed 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)

2.7.3 PCMCIA Slot

The PCMCIA slot supports PCMCIA cards that are compliant with PCMCIA 2.0 standard. The PCMCIA cards are easily installed into the socket. PCMCIA cards are 54.0mm wide, 85.6mm long. Supported PCMCIA cards include wireless LAN cards and GPRS card.

2.8 LPC Bus Components

2.8.1 LPC Bus Overview

The LPC bus is connected to components listed below:

- BIOS chipset
- Super I/O chipset

2.8.2 BIOS Chipset

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

- AMI Flash BIOS
- SMIBIOS (DMI) compliant
- Console redirection function support

- PXE (Pre-boot Execution Environment) support
- USB booting support

2.8.3 Super I/O Chipset

The iTE IT8712F Super I/O chipset is connected to the ICH4 through the LPC bus. The iTE IT8712F is an LPC interface-based Super I/O device that comes with Environment Controller integration. Some of the features of the iTE IT8712F chipset are listed below:

- LPC Interface
- PC98/99/2001, ACPI and LANDesk Compliant
- Enhanced Hardware Monitor
- Fan Speed Controller
- SmartGuardian Controller
- Single +5V Power Supply
- Two 16C550 UARTs for serial port control
- One IEEE 1284 Parallel Port
- Keyboard Controller
- Watchdog Timer
- Serial IRQ Support
- Vbat & Vcch Support
- Single +5V Power Supply

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

2.8.3.1 Super I/O 16C550 UARTs

The onboard Super I/O has two integrated 16C550 UARTs that can support the following:

- Two standard serial ports (COM1 and COM2)
- IrDa 1.0 and ASKIR protocols

Another two chipsets connected to the LPC bus provided connectivity to another four serial port connectors (COM3, COM4, COM5 and COM6).

2.8.3.2 Super I/O Enhanced Hardware Monitor

The Super I/O Enhanced Hardware Monitor monitors three thermal inputs, VBAT internally, and eight voltage monitor inputs. These hardware parameters are reported in the BIOS and can be read from the BIOS Hardware Health Configuration menu.

2.8.3.3 Super I/O Fan Speed Controller

The Super I/O fan speed controller enables the system to monitor the speed of the fan. One of the pins on the fan connector is reserved for fan speed detection and interfaced to the fan speed controller on the Super I/O. The fan speed is then reported in the BIOS.

2.8.3.4 Super I/O Keyboard Controller

The Super I/O keyboard controller can execute the 8042 instruction set. Some of the keyboard controller features are listed below:

- The 8042 instruction is compatible with a PS/2 keyboard and PS/2 mouse
- Gate A20 and Keyboard reset output
- Supports multiple keyboard power on events
- Supports mouse double-click and/or mouse move power on events

2.8.4 LPC I/O Chipset

The LPC I/O chipset is connected to the ICH4 through the LPC bus and complies with the Intel® Low Pin Count Specification Rev. 1.0. The LPC I/O chipset supports two standard serial ports.

2.9 Environmental and Power Specifications

2.9.1 System Monitoring

Three thermal inputs on the A-300 Super I/O Enhanced Hardware Monitor monitor the following temperatures:

- System temperature
- Temperature Sensor #1

Eight voltage inputs on the A-300 Super I/O Enhanced Hardware Monitor monitor the following voltages:

- Vcore
- +3.30Vin
- +5.00Vin
- +12Vin

The A-300 Super I/O Enhanced Hardware Monitor also monitors the CPU fan speeds.

2.9.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the A300 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.

2.9.3 Power Consumption

Table 2-3 shows the power consumption parameters for the A300 when an Intel® Pentium® M 1.6GHz CPU is running with one 256MB DDR333 SDRAM memory module.

Voltage	Current
3.3V	0.46A
5V	1.05A
12V	0.41A
5VSB	0.29A
-12V	0.74A

Table 2-3: Power Consumption

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the A300 may result in permanent damage to the A300 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the A300. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the A300, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the A300, place it on an antic-static pad. This reduces the possibility of ESD damaging the A300.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

3.2 Unpacking

3.2.1 Unpacking Precautions

When the A300 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 3.1**.
- Make sure the packing box is facing upwards so the A300 does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

3.3 Unpacking Checklist

NOTE:

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the A300 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

3.3.1 Package Contents

The A300 is shipped with the following components:

Quantity	Item	Image
1	A300 single board computer	
1	IDE flat cable 44p/40p/40p	
1	IDE flat cable 44p/44p	
2	Single port RS-232 cable	
1	RS-232/422/485 cable	

1	Mini jumper pack	
1	Quick installation guide	
1	Utility CD	

Table 3-1: Package List Contents

Chapter

4

Connector Pinouts

4.1 Peripheral Interface Connectors

Section 4.1.2 shows peripheral interface connector locations. Section 4.1.2 lists all the peripheral interface connectors seen in Section 4.1.2.

4.1.1 A300 Layout

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

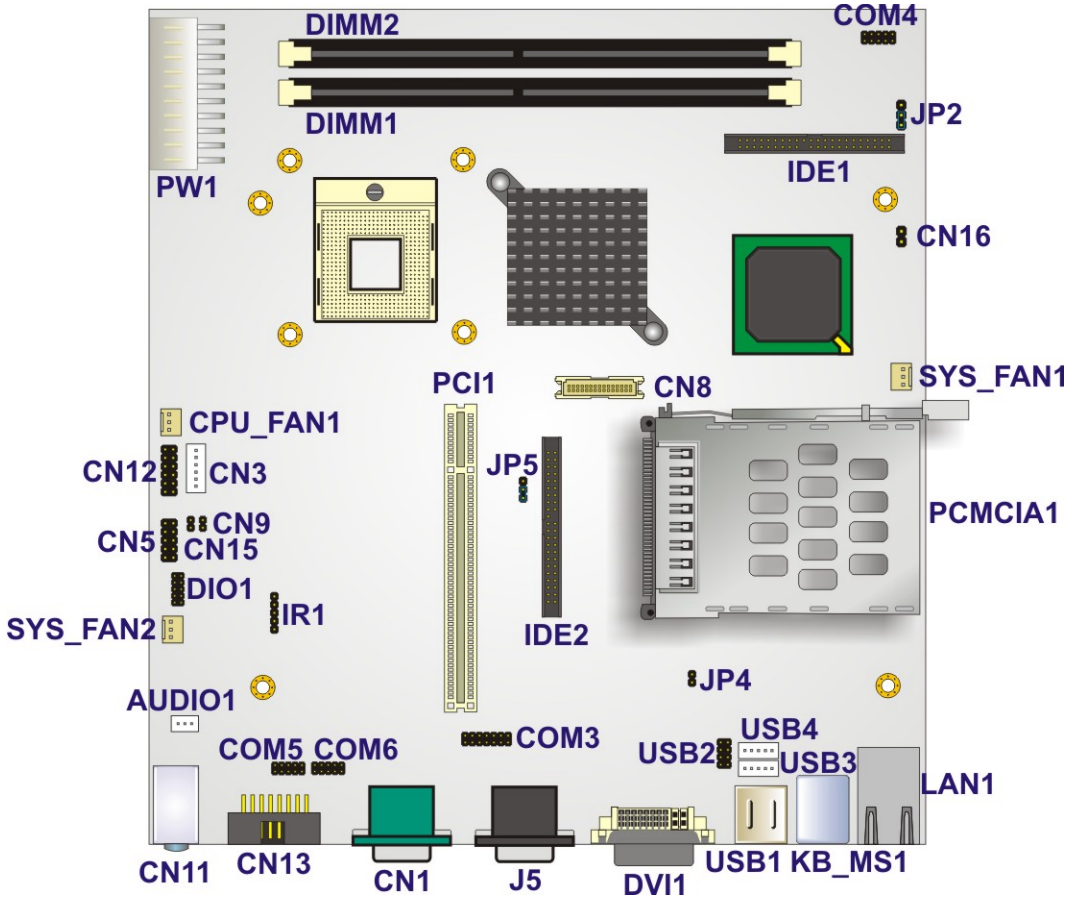


Figure 4-1: Connector and Jumper Locations

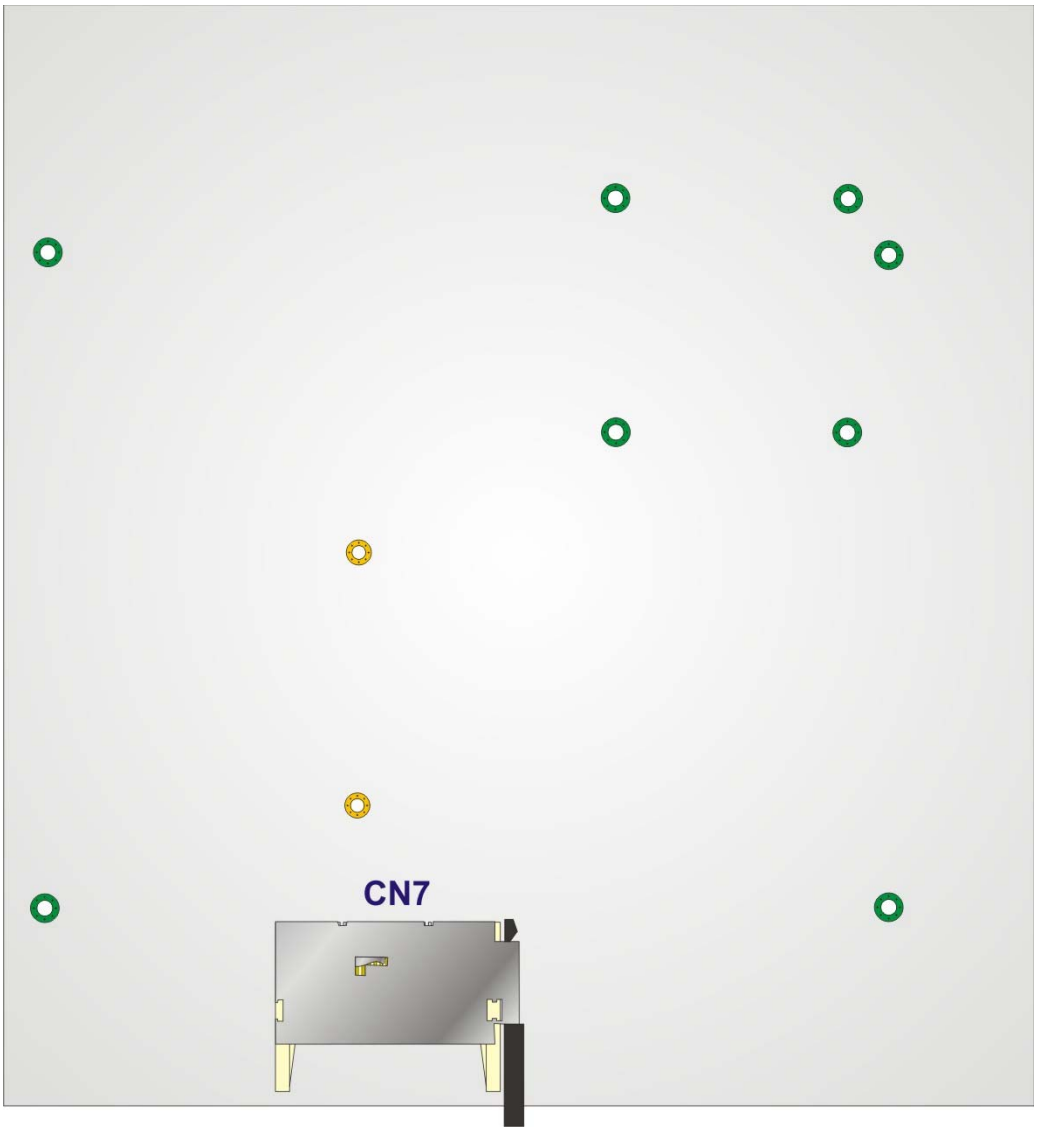


Figure 4-2: Connector and Jumper Locations (Solder Side)

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the A300. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
ATX power connector	20-pin connector	PW1

Audio connector	3-pin wafer connector	AUDIO1
Compact Flash (CF) connector	50-pin CF slot	CN7
Fan connector (CPU)	3-pin wafer connector	CPU_FAN1
Fan connector (System)	3-pin wafer connector	SYS_FAN1
Fan connector (System)	3-pin wafer connector	SYS_FAN2
Front panel connector	10-pin header	CN5
GPIO connector	10-pin header	DIO1
IDE Interface connector (primary)	44-pin box header	IDE1
IDE Interface connector (secondary)	44-pin box header	IDE2
Inverter power connector	6-pin wafer connector	CN3
IR interface connector	5-pin header	IR1
LED connector	2-pin header	CN9
Power button connector	2-pin header	CN15
Serial port connector (RS-422/485)	14-pin header	COM3
Serial port connector (RS-232)	10-pin header	COM4
Serial port connector (RS-232)	10-pin header	COM5
Serial port connector (RS-232)	10-pin header	COM6
System panel connector	12-pin header	CN12
TFT LCD LVDS connector	30-pin crimp connector	CN8
USB connector	8-pin header	USB2
USB connector	5-pin wafer connector	USB3
USB connector	5-pin wafer connector	USB4

Table 4-1: Peripheral Interface Connectors

4.1.3 External Interface Panel Connectors

Table 4-2 lists the rear panel connectors on the A300. Detailed descriptions of these connectors can be found in **Section 0** on **page 50**.

Connector	Type	Label
Audio connectors	Audio jack	CN11
DVI-I connector	Female DVI-I	DVI1
Ethernet connectors	RJ-45 connector	LAN1
Keyboard/mouse connector	PS/2 connector	KB_MS1
RS-232 serial port connector (COM1)	DB-9 connector	CN1.B
RS-232 serial port connectors (COM2, COM3)	DB-9 connector	J5
USB ports	USB port	USB1
VGA port connector	15-pin female	CN1.A

Table 4-2: Rear Panel Connectors

4.2 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 A300.

4.2.1 ATX Power Connector

CN Label: **PW1**

CN Type: 20-pin ATX power connector (2x10)

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

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

The 20-pin ATX power connector is connected to an AT power supply.

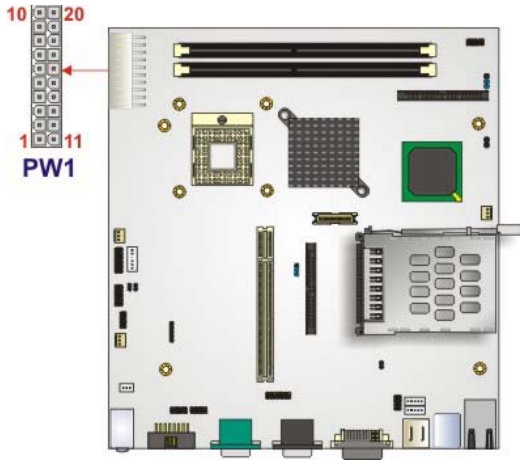


Figure 4-3: ATX Power Connector Location

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 4-3: ATX Power Connector Pinouts

4.2.2 Audio Connector

CN Label: **AUDIO1**

CN Type: 3-pin wafer connector

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

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

The 3-pin audio connector is connected to speakers the output of audio signals from the system.

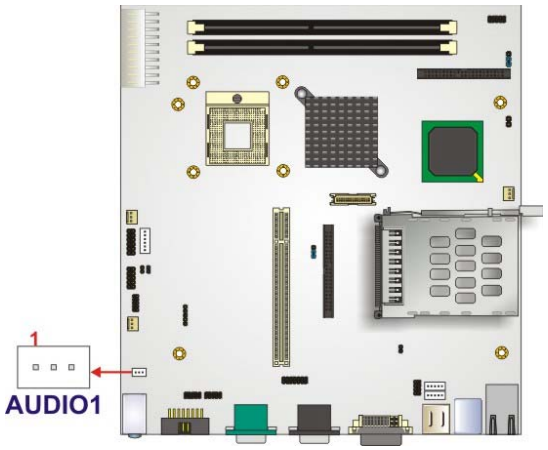


Figure 4-4: Audio Connector Pinouts (10-pin)

PIN NO.	DESCRIPTION
1	Speaker Out R
2	GND
3	Speaker Out L

Table 4-4: Audio Connector Pinouts (3-pin)

4.2.3 Compact Flash Socket

CN Label: **CN7** (solder side)

CN Type: 50-pin CF slot (2x25)

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

CN Pinouts: See **Table 4-5**

A CF Type I or Type II memory card is inserted to the CF socket on the solder side of the A300.

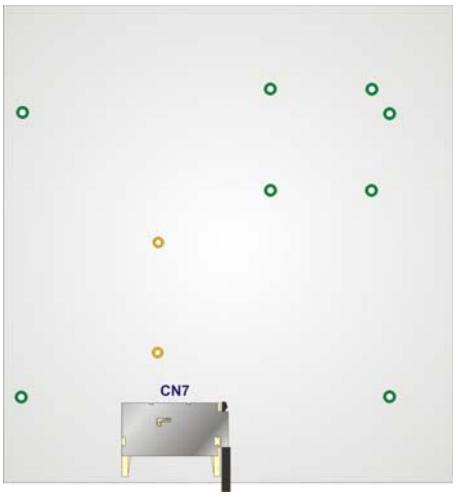


Figure 4-5: CF Card Socket Location

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 4-5: CF Card Socket Pinouts

4.2.4 Fan Connectors

CN Label: **CPU_FAN1**, **SYS_FAN1** and **SYS_FAN2**

CN Type: 3-pin wafer connector

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

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

The cooling fan connectors on the A300 provide a 12V, 500mA current to a CPU cooling fan and a system cooling fan.

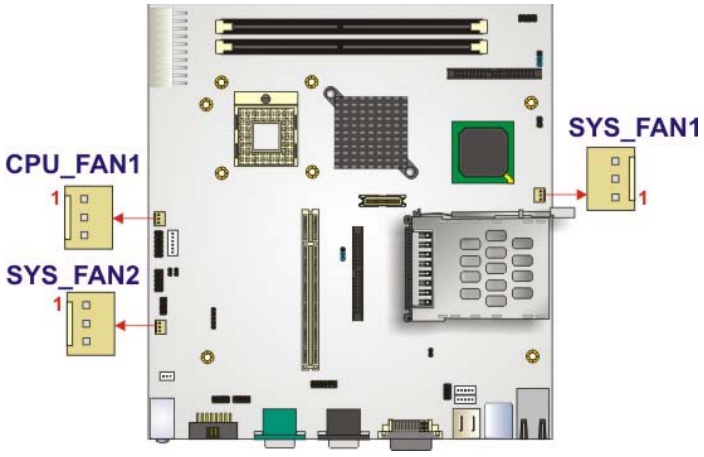


Figure 4-6: Fan Connector Locations

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

Table 4-6: System Fan Connector Pinouts

4.2.5 Front Panel Connector

CN Label: **CN5**

CN Type: 10-pin header (2x5)

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

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

The front panel connector connects to several external switches to control the front panel. These switches control:

- Front panel power
- Backlight
- Speaker

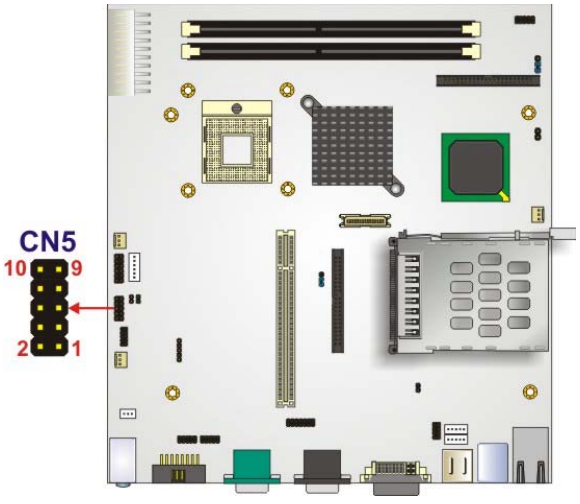


Figure 4-7: Front Panel Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Speaker Up	2	LCD On/Off
3	Speaker Down	4	5V Power
5	GND	6	Power Button
7	BKLT Up	8	Standby Power
9	BKLT Down	10	GND

Table 4-7: Front Panel Connector Pinouts

4.2.6 GPIO Connector

CN Label: **DIO1**

CN Type: 10-pin header (2x5)

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

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

The GPIO connector can be connected to external I/O control devices including sensors, lights, alarms and switches.

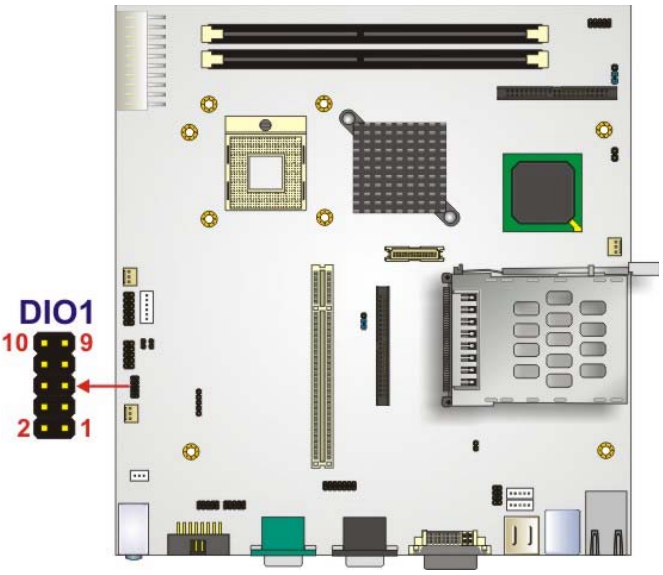


Figure 4-8: GPIO Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC5
3	GPIO0	4	GPIO1
5	GPIO2	6	GPIO3
7	GPIO4	8	GPIO5
9	GPIO6	10	GPIO7

Table 4-8: GPIO Connector Pinouts

4.2.7 IDE Connector

CN Label: **IDE1** (Primary) and **IDE2** (Secondary)

CN Type: 44-pin box header (2x22)

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

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

One 44-pin IDE device connector on the A300 supports connectivity to two hard disk drives.

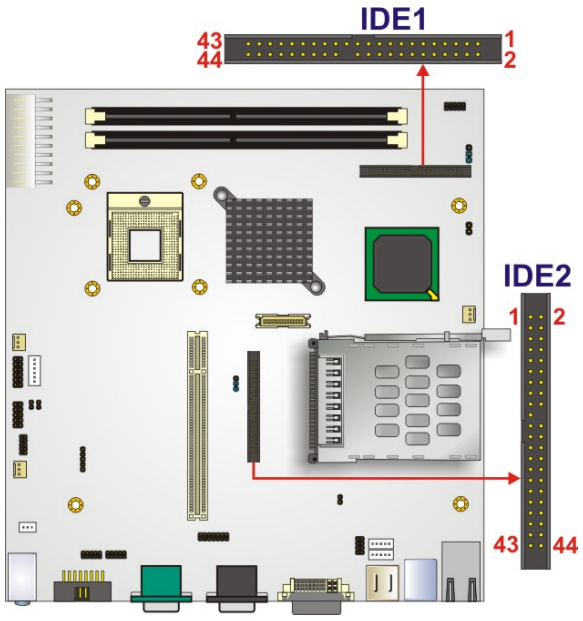


Figure 4-9: IDE Device Connector Locations

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 4-9: IDE Connector Pinouts

4.2.8 Inverter Power Connector

CN Label: **CN3**

CN Type: 6-pin wafer connector (1x6)

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

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

The inverter connector is connected to the LCD backlight.

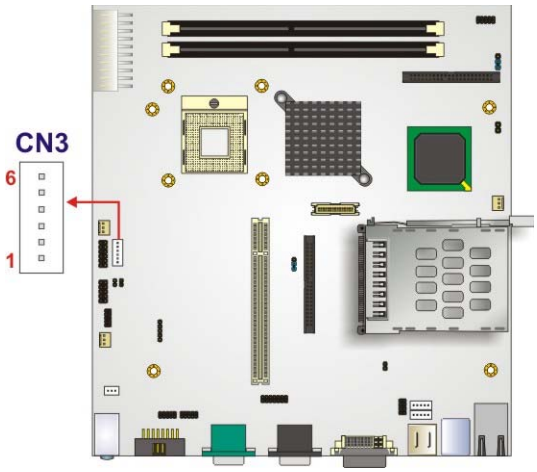


Figure 4-10: Inverter Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC12	2	VCC12
3	BKLT_EN	4	BKLT_ADJ
5	GND	6	GND

Table 4-10: Inverter Power Connector Pinouts

4.2.9 IrDA Infrared Interface Connector

CN Label: **IR1**

CN Type: 5-pin header (1x5)

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

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

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

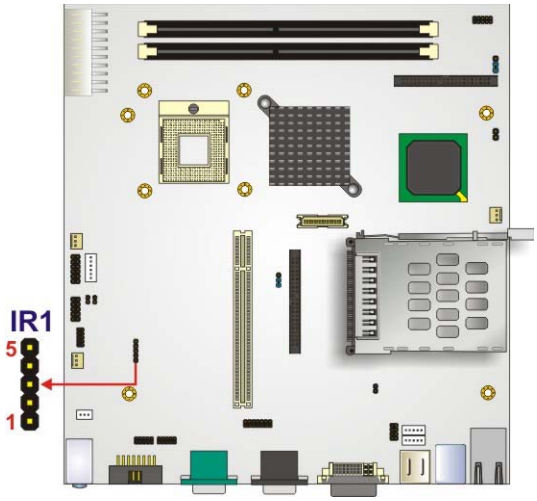


Figure 4-11: IR Connector Location

PIN NO.	DESCRIPTION
1	VCC5
2	NC
3	IRRX
4	GND
5	IRTX

Table 4-11: IR Connector Pinouts

4.2.10 LED Connector

CN Label: **CN9**

CN Type: 2-pin header (1x2)

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

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

The LED connector connects to a backlight indicator LED on the system chassis to inform the user about the backlight status.

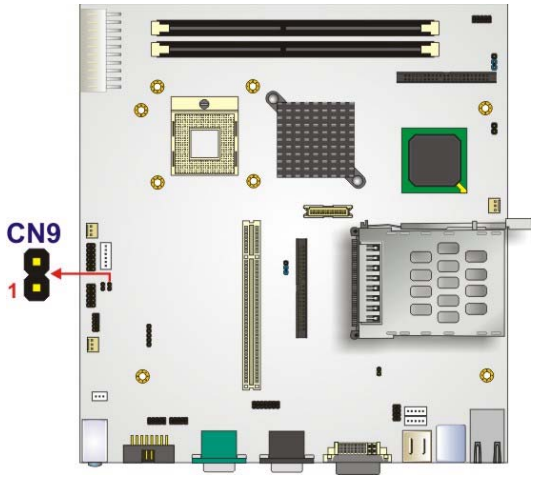


Figure 4-12: LED Connector Locations

PIN NO.	DESCRIPTION
1	+LED
2	-LED

Table 4-12: LED Connector Pinouts

4.2.11 Power Button Connector

CN Label: **CN15**

CN Type: 2-pin header (1x2)

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

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

The power button connector is connected to a power switch on the system chassis to enable users to turn the system on and off.

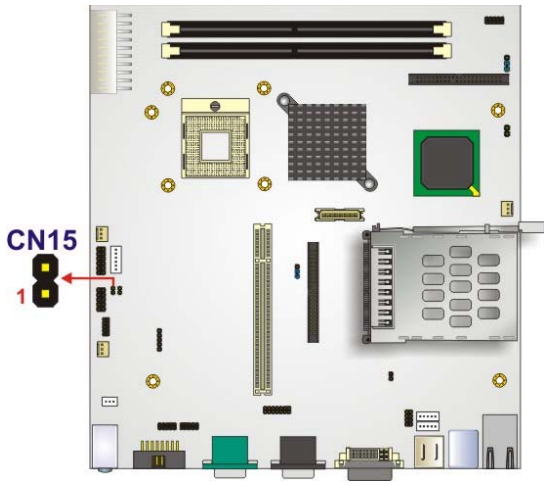


Figure 4-13: Power Button Connector Location

PIN NO.	DESCRIPTION
1	Power Button
2	GND

Table 4-13: Power Button Connector Pinouts

4.2.12 Serial Port Connector (RS-422/485)

CN Label: **COM3**

CN Type: 14-pin header (2x7)

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

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

The serial ports connectors connect to RS-422 or RS-485 serial port device.

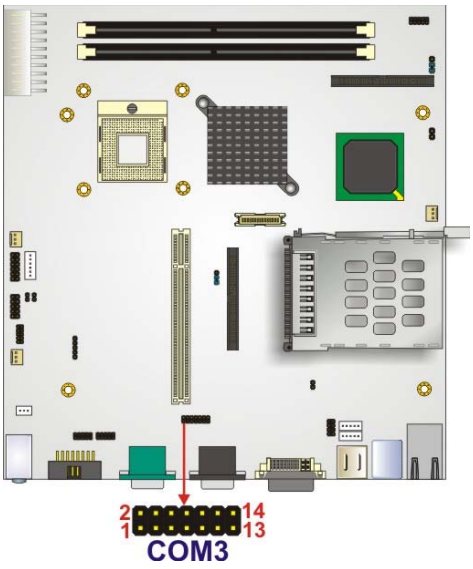


Figure 4-14: Serial Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD3	2	DSR3
3	RX3	4	RTS3
5	TX3	6	CTS3
7	DTR3	8	RI3
9	GND	10	GND
11	TX3+	12	TX3-
13	RX3+	14	RX3-

Table 4-14: RS-422/485 Serial Port Connector Pinouts

4.2.13 Serial Port Connector (RS-232)

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

CN Type: 10-pin header (2x5)

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

CN Pinouts: See **Table 4-15**, **Table 4-16** and **Table 4-17**

The serial ports connectors connect to RS-232 serial port device.

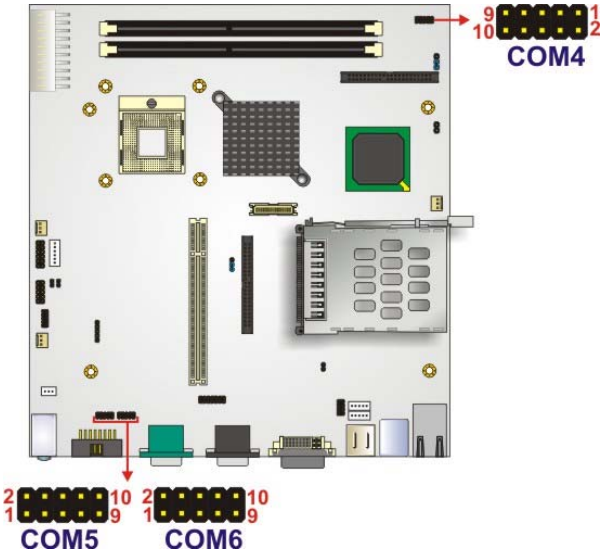


Figure 4-15: RS-232 Serial Port Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD4	2	DSR4
3	RX4	4	RTS4
5	TX4	6	CTS4
7	DTR4	8	RI4
9	5V	10	GND

Table 4-15: COM4 Serial Port Connector Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD5	2	DSR5
3	RX5	4	RTS5
5	TX5	6	CTS5
7	DTR5	8	RI5
9	GND	10	GND

Table 4-16: COM5 Serial Port Connector Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD6	2	DSR6
3	RX6	4	RTS6
5	TX6	6	CTS6
7	DTR6	8	RI6
9	GND	10	GND

Table 4-17: COM6 Serial Port Connector Pinouts

4.2.14 System Panel Connector

CN Label: **CN12**

CN Type: 12-pin header (2x6)

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

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

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

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

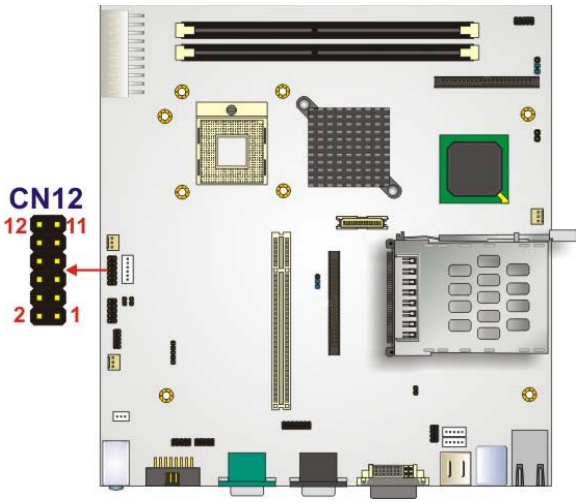


Figure 4-16: Front Panel Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1-3	POWER LED	2-8	SPEAKER
5-7	PWR BUTTON	10-12	RESET
9-11	HDLED		

Table 4-18: Front Panel Connector Pinouts

4.2.15 TFT LCD LVDS Connector

CN Label: **CN8**

CN Type: 30-pin crimp connector (2x15)

CN Location: See **Figure 4-17**

CN Pinouts: See **Table 4-19**

The 30-pin TFT LCD LVDS can be connected to a TFT LCD screen directly.

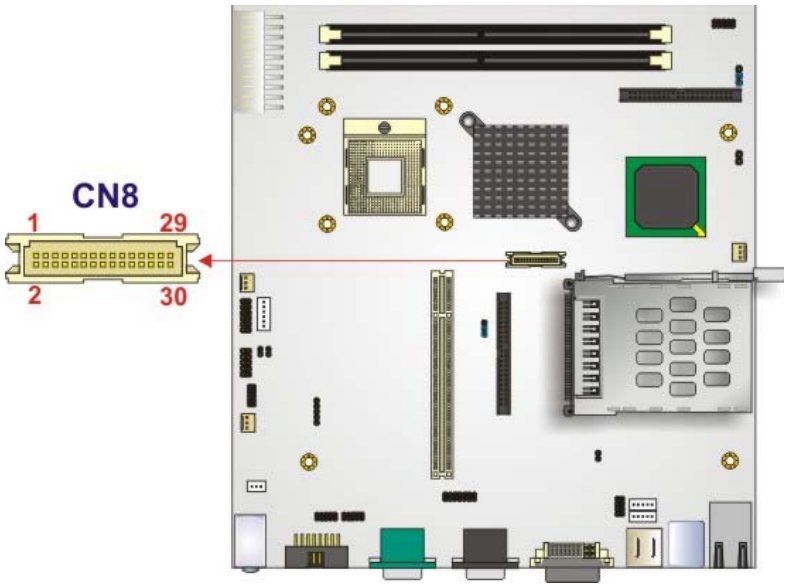


Figure 4-17: TFT LCD LVDS Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	Rin0+	4	Rin0-
5	Rin1+	6	Rin1-
7	Rin2+	8	Rin2-
9	CLK1+	10	CLK1-
11	Rin3+	12	Rin3-
13	GND	14	GND
15	Rin4+	16	Rin4-
17	Rin5+	18	Rin5-
19	Rin6+	20	Rin6-
21	CLK2+	22	CLK2-
23	Rin7+	24	Rin7-
25	GND	26	GND
27	LCD_VDD	28	LCD_VDD
29	LCD_VDD	30	LCD_VDD

Table 4-19: TFT LCD LVDS Port Connector Pinouts

4.2.16 Internal USB Connectors (8-Pin)

CN Label: **USB2**

CN Type: 8-pin header (2x4)

CN Location: See **Figure 4-18**

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

One 2x4 pin connector provides connectivity to two USB 2.0 ports. The USB ports are used for I/O bus expansion.

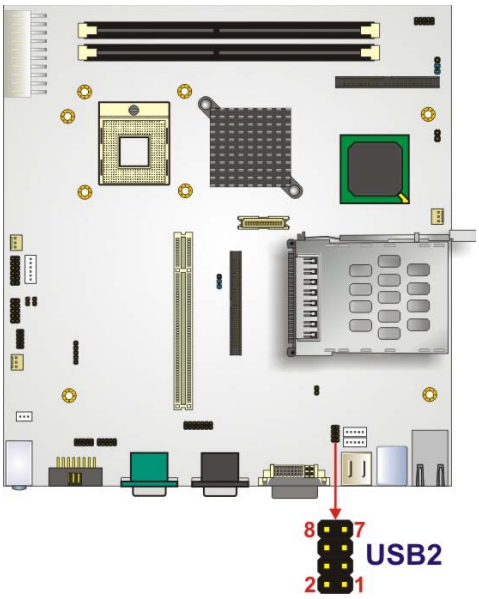


Figure 4-18: Internal USB Connector Locations (8-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC2	2	USBGND3
3	D2-	4	D3+
5	D2+	6	D3-
7	USBGND2	8	USBVCC3

Table 4-20: Internal USB Connector Pinouts (8-pin)

4.2.17 Internal USB Connectors (5-Pin)

CN Label:	**USB3** and **USB4**
CN Type:	5-pin wafer connector (1x5)
CN Location:	See **Figure 4-19**
CN Pinouts:	See **Table 4-21**

One 1x5 pin connector provides connectivity to one USB 2.0 ports. The USB ports are used for I/O bus expansion.

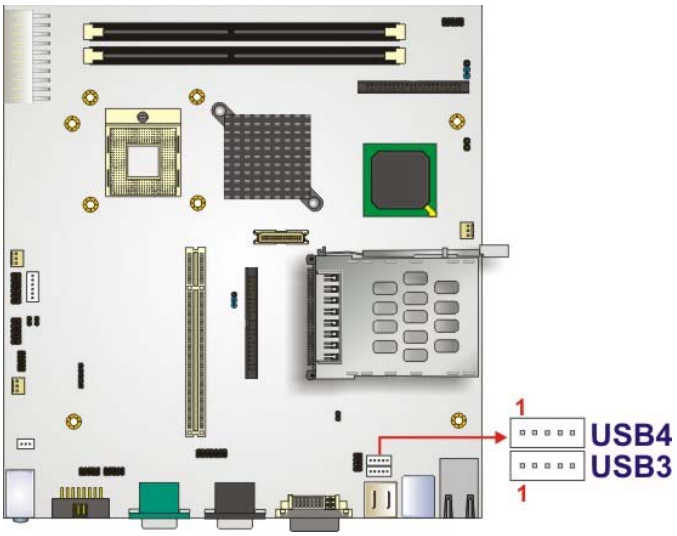


Figure 4-19: Internal USB Connector Locations (5-pin)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	USBVCC4
3	GND	4	D4+
5	D4-		

Table 4-21: Internal USB Connector Pinouts (5-pin)

4.3 External Peripheral Interface Connectors

4.3.1 External Peripheral Interface Connector Overview

The A300 external peripheral interface connectors are listed below and shown in **Figure 4-20**:

- 3 x Audio jack
- 1 x DVI-I connector
- 2 x RJ-45 Ethernet connector
- 1 x Keyboard/mouse connector
- 3 x Serial communications port
- 2 x USB combo port
- 1 x VGA port

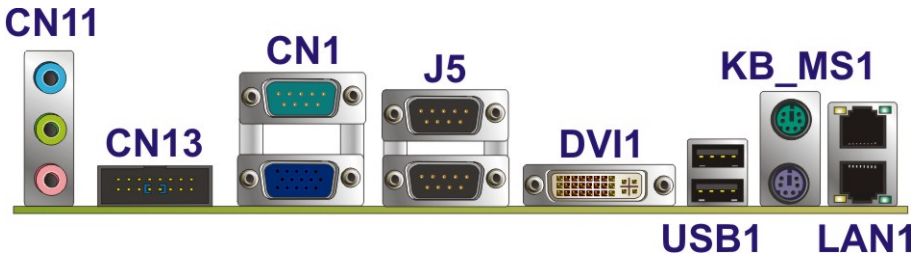


Figure 4-20: A300 On-board External Interface Connectors

4.3.2 Audio Connectors

CN Label: **CN11**

CN Type: Audio jack

CN Location: See **Figure 4-20**

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

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

- **Microphone (Pink):** Connects a microphone.

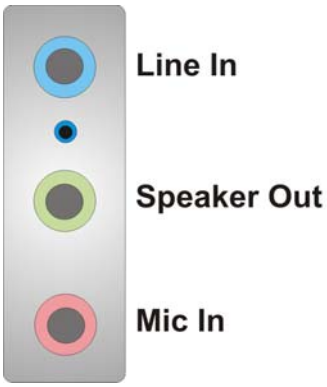


Figure 4-21: Audio Connector

4.3.3 DVI-I Connector

CN Label: **DVI1**

CN Type: DVI interface with analog RGB signal

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-22** or **Figure 4-22**

The A300 has an external DVI-I connector.

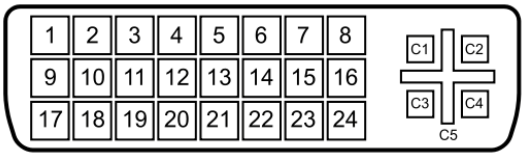


Figure 4-22 DVI-I Connector Pinout Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DTX2-	9	DTX1-	17	DTX0-
2	DTX2+	10	DTX1+	18	DTX0+
3	GND	11	GND	19	GND
4	N/C	12	N/C	20	N/C

5	N/C	13	N/C	21	N/C
6	SB_CK_C	14	PVDD1	22	GND
6	SB_DA_C	15	GND	23	DTXC+
8	V_SYNC	16	GND	24	DTXC-
C1	R	C3	B	25	GND
C5	GND	C6	GND	26	GND
C2	G	C4	H_SYNC		

Table 4-22: DVI-I Connector Pinouts

4.3.4 RJ-45 Ethernet Connector

CN Label: **LAN1**

CN Type: RJ-45

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-23**

The RJ-45 Ethernet connector on the A300 provides connectivity to a GbE Ethernet connection between the A300 and a Local Area Network (LAN) through a network hub.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
A1	MDIOA0+	B1	MDIOB0+
A2	MDIOA0-	B2	MDIOB0-
A3	MDIOA1+	B3	MDIOB1+-
A4	MDIOA1-	B4	MDIOB1-
A5	MDIOA2+	B5	MDIOB2+
A6	MDIOA2-	B6	MDIOB2-
A7	MDIOA3+	B7	MDIOB3+
A8	MDIOA3-	B8	MDIOB3-
A9	NC	B9	NC
A10	NC	B10	NC
A11	LINK1000	B11	VCC
A12	LINK100	B12	LINK100

A13	ACT	B13	ACT
A14	LINK	B14	LINK
A15-17	GND	B15-17	GND

Table 4-23: RJ-45 Ethernet Connector Pinouts

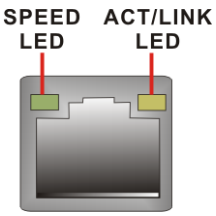


Figure 4-23: J7 Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 4-24**.

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

Table 4-24: RJ-45 Ethernet Connector LEDs

4.3.5 Keyboard/Mouse Connector

CN Label: **KB_MS1**

CN Type: PS/2 connector

CN Location: See **Figure 4-20** (labeled number 1)

CN Pinouts: See **Table 4-25**

The A300 keyboard and mouse connectors are standard PS/2 connectors.

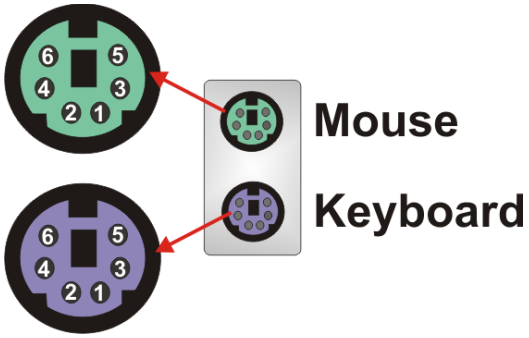


Figure 4-24: PS/2 Pinouts

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	KB DATA	7	MS DATA
2	NC	8	NC
3	GND	9	GND
4	5V	10	5V
5	KB CLK	11	MS CLK
6	NC	12	NC

Table 4-25: Keyboard Connector Pinouts

4.3.6 Serial Port Connector (COM 1)

CN Label: **CN1.B**

CN Type: DB-9 connector

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-26** and **Figure 4-25**

The 9-pin DB-9 COM 1 serial port connector is connected to RS-232 serial communications devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD1	2	DSR1
3	RX1	4	RTS1

5	TX1	6	CTS1
7	DTR1	8	RI1
9	GND	10	GND

Table 4-26: RS-232 Serial Port (COM 1) Pinouts

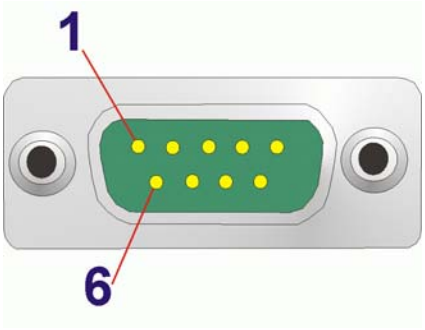


Figure 4-25: Serial Port Pinout Locations

4.3.7 Serial Port Connectors (COM 2 and COM3)

CN Label: **J5**

CN Type: DB-9 connector

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-27** and **Figure 4-25**

The 9-pin DB-9 COM 2 and COM3 serial port connectors are connected to RS-232 serial communications devices.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD3	2	DSR3
3	RX3	4	RTS3
5	TX3	6	CTS3
7	DTR3	8	RI3
9	GND	10	GND

Table 4-27: RS-232 Serial Port (COM2, COM3) Pinouts

4.3.8 USB Combo Ports

CN Label: **USB1**

CN Type: USB Combo port

CN Location: See **Figure 4-20**

CN Pinouts: See **Table 4-28**

The two USB combo ports provide connectivity to USB devices. The USB port support both USB 1.1 and USB 2.0.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USBVCC0	2	USBVCC1
3	D0-	4	D1-
5	D0+	6	D1+
7	USBGND0	8	USBGND1

Table 4-28: USB Connector Pinouts

4.3.9 VGA Connector

CN Label: **CN1.A**

CN Type: DB15

CN Location: See **Figure 4-20**

CN Pinouts: See **Figure 4-26** and **Table 4-29**

The standard 15-pin female DB15 VGA connector connects to a CRT or LCD monitor directly.

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 4-29: VGA Connector Pinouts

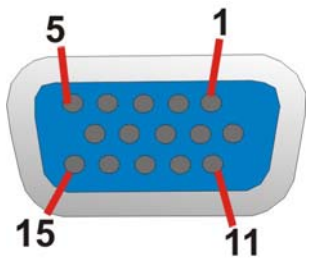


Figure 4-26: VGA Connector

Chapter

5

Installation

5.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the A300 may result in permanent damage to the A300 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the A300. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the A300, or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the A300, place it on an antic-static pad. This reduces the possibility of ESD damaging the A300.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold the PCB by the edges.

5.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the A300 is installed. All installation notices pertaining to the installation of the A300 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the A300 and injury to the person installing the motherboard.

5.2.1 Installation Notices

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the A300, A300 components and injury to the user.

Before and during the installation please DO the following:

- **Read the user manual**:
  - The user manual provides a complete description of the A300 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 A300 on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power to the A300 off**:

- When working with the A300, 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 A300 DO NOT:

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

5.2.2 Installation Checklist

The following checklist is provided to ensure the A300 is properly installed.

- All the items in the packing list are present (see **Chapter 4**)
- A compatible memory module is properly inserted into the slot (see **Chapter 2**)
- The CF Type I or CF Type II card is properly installed into the CF socket
- The jumpers have been properly configured
- The A300 is installed into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected
  - Audio kit
  - Power supply
  - Serial port cables
- The following external peripheral devices are properly connected to the chassis:
  - VGA screen
  - RS-232 serial communications device
  - USB devices

5.3 CPU and CPU Cooling Kit Installation

WARNING:

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU, A300 and other electronic components attached to the system may be incurred. Running a CPU without a cooling kit may also result in injury to the user.

The CPU, CPU cooling kit and DIMM are the most critical components of the A300. If one of these component is not installed the A300 cannot run.

5.3.1 Socket 479 CPU Installation

WARNING:

CPUs are expensive and sensitive components. When installing the CPU please be careful not to damage it in anyway. Make sure the CPU is installed properly and ensure the correct cooling kit is properly installed.

To install a socket 479 CPU onto the A300, follow the steps below:

WARNING:

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

Step 1: **Unlock the CPU retention screw.** 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 unlock the screw. See **Figure 5-1**.

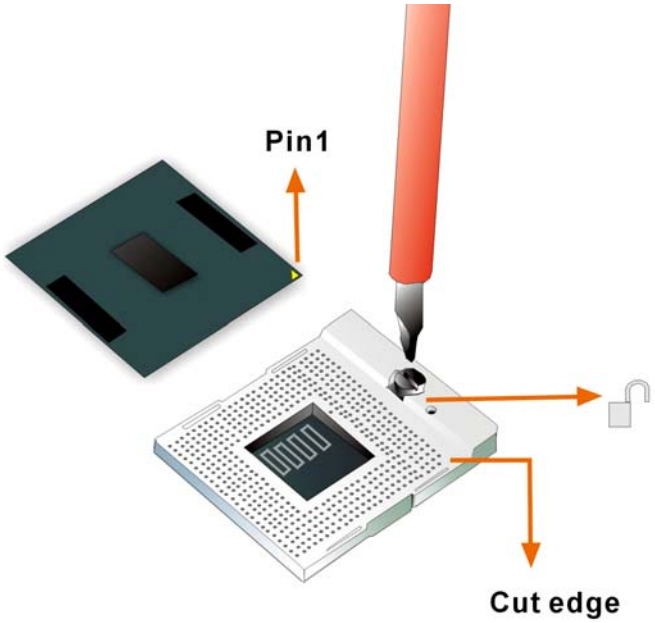


Figure 5-1: Make sure the CPU socket retention screw is unlocked

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 Orientate the CPU**. Make sure the IHS (integrated heat sink) side is facing upwards.

Step 4: **Correctly position the CPU.** Match the Pin 1 mark with the cut edge on the CPU socket. See **Figure 5-1**.

Step 5: **Align the CPU pins.** Carefully align the CPU pins with the holes in the CPU socket.

Step 6: **Insert the CPU.** Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly.

Step 7: **Lock the retention screw.** Rotate the retention screw into the locked position.

See **Figure 5-2**.

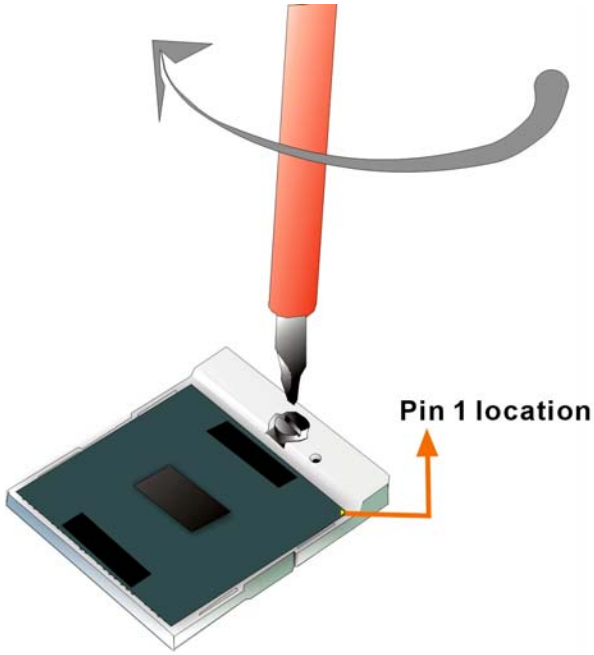


Figure 5-2: Lock the CPU Socket Retention Screw

5.3.2 Cooling Kit CF-479B-RS Installation

Figure 5-3: IEI CF-518-RS and CF-479A-RS Cooling Kit

An IEI Socket 479 CPU cooling kit can be purchased separately. See **Figure 5-3**. The cooling kit comprises a CPU heat sink and a cooling fan.

WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the CF-479A-RS/CF-518-RS heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the CF-479A-RS/CF-518-RS cooling kit, please follow the steps below.

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

Step 2: **Properly align the cooling kit**. Make sure its four spring 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 support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 5-4**)

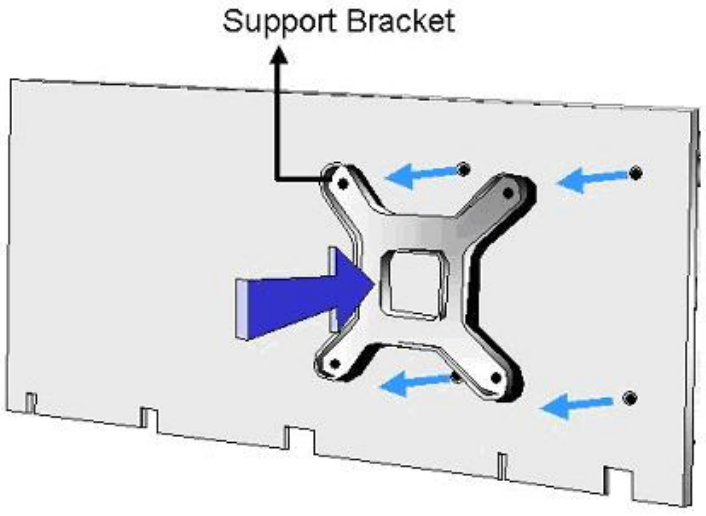


Figure 5-4: Cooling Kit Support Bracket

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

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

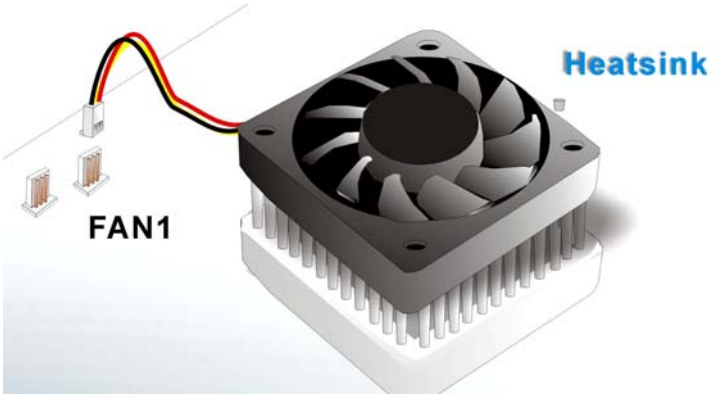


Figure 5-5: Connect the cooling fan cable

5.4 DIMM Module Installation and CF Card Installation

5.4.1 DIMM Module Installation

WARNING:

Using incorrectly specified DIMM may cause permanently damage the A300. Please make sure the purchased DIMM complies with the memory specifications of the A300. DIMM specifications compliant with the A300 are listed in **Chapter 2**.

The A300 has one DDR SDRAM DIMM socket. Follow the steps below to install the DIMM module.

Step 1: Make sure the two handles of the DIMM socket are in the "open" position, leaning outward (**Figure 5-6**).

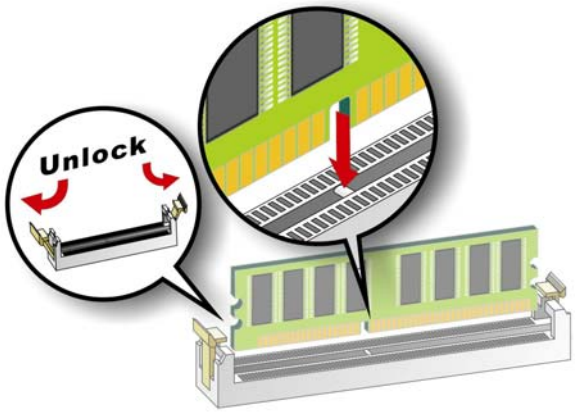


Figure 5-6: Installing the DIMM Module

Step 2: Slowly slide the DIMM module along the plastic guides on both ends of the socket. Press the DIMM module down into the socket until it clicks into position and the two handles have automatically locked the memory module into place (**Figure 5-6**).

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

5.4.2 CF Card Installation

Note:

The A300 can support both CF Type I cards and CF Type II cards. For the complete specifications of the supported CF cards please refer to Chapter 2.

To install the a CF card (Type 1 or Type 2) onto the A300, please follow the steps below:

Step 1: **Locate the CF card socket**. Place the A300 on an anti-static pad with the solder side facing up. Locate the CF card.

Step 2: **Align the CF card**. Make sure the CF card is properly aligned with the CF

socket.

Step 3: **Insert the CF card**. Gently insert the CF card into the socket making sure the socket pins are properly inserted into the socket. See **Figure 5-7**.

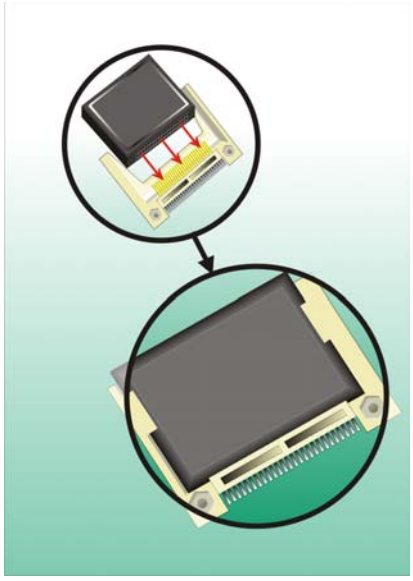
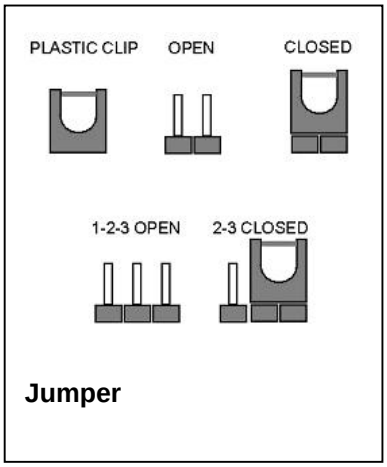


Figure 5-7: CF Card Installation

5.5 Jumper Settings

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

Before the A300 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the A300 are listed in **Table 5-1**.

Description	Label	Type
CF card setup	JP4	2-pin header
Clear CMOS	JP2	3-pin header
COM port select	CN13	12-pin box header
LCD voltage select	JP5	3-pin header
LCD rotate	CN16	2-pin header

Table 5-1: Jumpers

5.5.1 CF Card Setup Jumper Settings

Jumper Label: **JP4**

Jumper Type: 2-pin header

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

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

The CF Card Setup jumper sets the compact flash card as either the slave device or the master device. Make the necessary jumper setting in accordance with the settings shown in **Table 5-2**.

CF Card Setup	Description	
Open	Slave	Default
Short	Master	

Table 5-2: CF Card Setup Jumper Settings

The location of the CF Card Setup jumper is shown in **Figure 5-8** below.

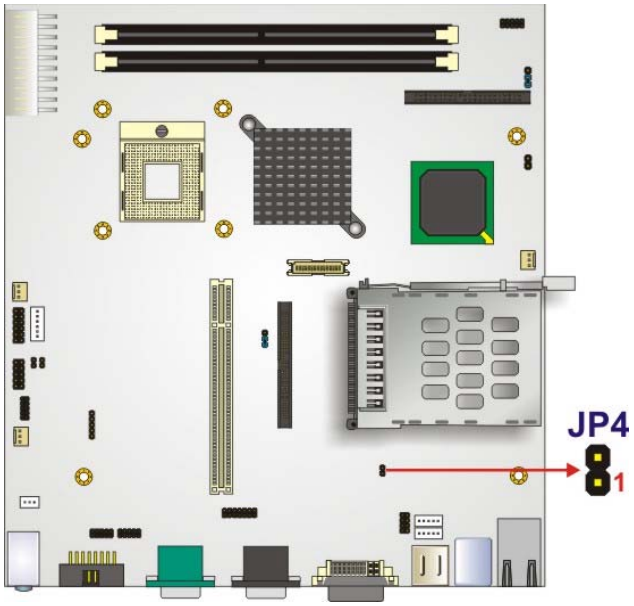


Figure 5-8: CF Card Setup Jumper Location

5.5.2 Clear CMOS Jumper

Jumper Label:	**JP2**
Jumper Type:	3-pin header
Jumper Settings:	See **Table 5-3**
Jumper Location:	See **Figure 5-9**

If the A300 fails to boot due to improper BIOS settings, the CMOS can be cleared using the battery connector. Disconnect the battery from the connector for a few seconds then reconnect the battery. The CMOS should be cleared.

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

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

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

The clear CMOS jumper settings are shown in **Table 5-3**.

Clear CMOS	Description	
Short 1-2	Keep CMOS Setup	Default
Open 2-3	Clear CMOS Setup	

Table 5-3: JP2 Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 5-9** below.

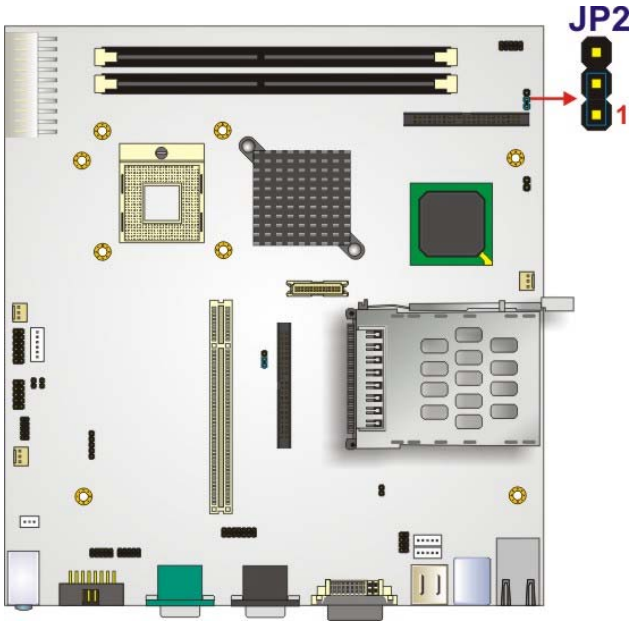


Figure 5-9: JP2 Clear CMOS Jumper

5.5.3 COM Port Setting Jumper

Jumper Label: **CN13**

Jumper Type: 12-pin header

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

Jumper Location: See **Figure 5-10**

The COM Port Setting jumper configures pin 9 on COM 1, COM 3 or COM 2 as either a +5V, +12V power source. The CN13 jumper also sets the communication protocol used by the second serial communications port (COM 3) as RS-232, RS-422 or RS-485. The COM Port Setting jumper selection options are shown in **Table 5-4**.

PIN NO.	Description	PIN NO.	Description
Short 1, 3	COM1 Pin9 use +5V	Short 2, 4	COM2 Pin9 use +5V
Short 3, 5	COM1 Pin9 use +12V	Short 4, 6	COM2 Pin9 use +12V
Short 7, 9	COM3 Pin9 use +5V	Short 8, 10	COM3 is RS-232 (default)
Short 9, 11	COM3 Pin9 use +12V	Short 10, 12	COM3 is RS-422/485r

Table 5-4: COM Port Setting Jumper Settings

The COM Port Setting jumper location is shown in **Figure 5-10** below.

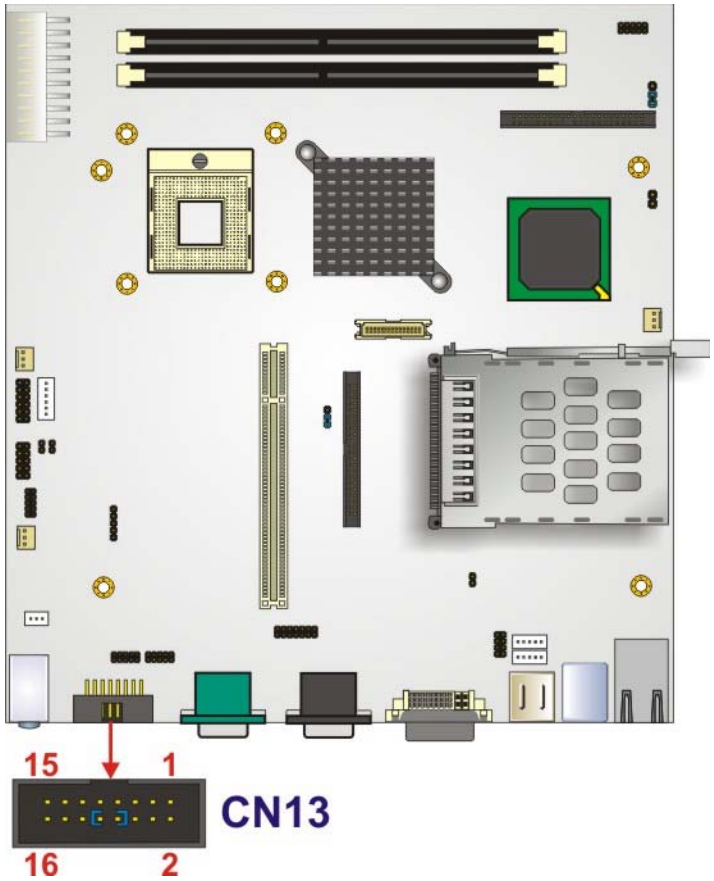


Figure 5-10: COM Port Setting Jumper Location

5.5.4 LCD Voltage Selection

WARNING:

Permanent damage to the screen and A300 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

Jumper Label: **JP5**

Jumper Type: 3-pin header

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

Jumper Location: See **Figure 5-11**

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

AT Power Select	Description	
Short 1-2	+3.3V LVDS	Default
Short 2-3	+5V LVDS	

Table 5-5: LCD Voltage Selection Jumper Settings

The LCD Voltage Selection jumper location is shown in **Figure 5-11**.

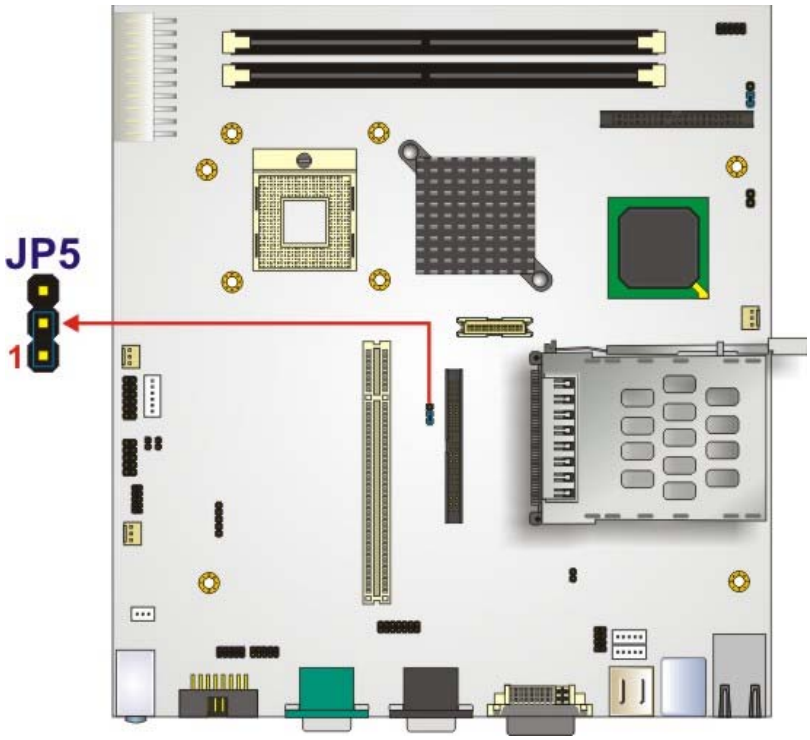


Figure 5-11: LCD Voltage Selection Jumper Location

5.5.5 LCD Rotation Jumper

Jumper Label:	**CN16**
Jumper Type:	2-pin header
Jumper Settings:	See **Table 5-6**
Jumper Location:	See **Figure 5-12**

Use the LCD Rotate jumper to rotate the LCD. The LCD Rotate settings are shown in **Table 5-6**.

LCD Rotate	Description
1	LCD Rotate
2	GND

Table 5-6: LCD Rotate Jumper Settings

The LCD Rotate jumper location is shown in **Figure 5-12**.

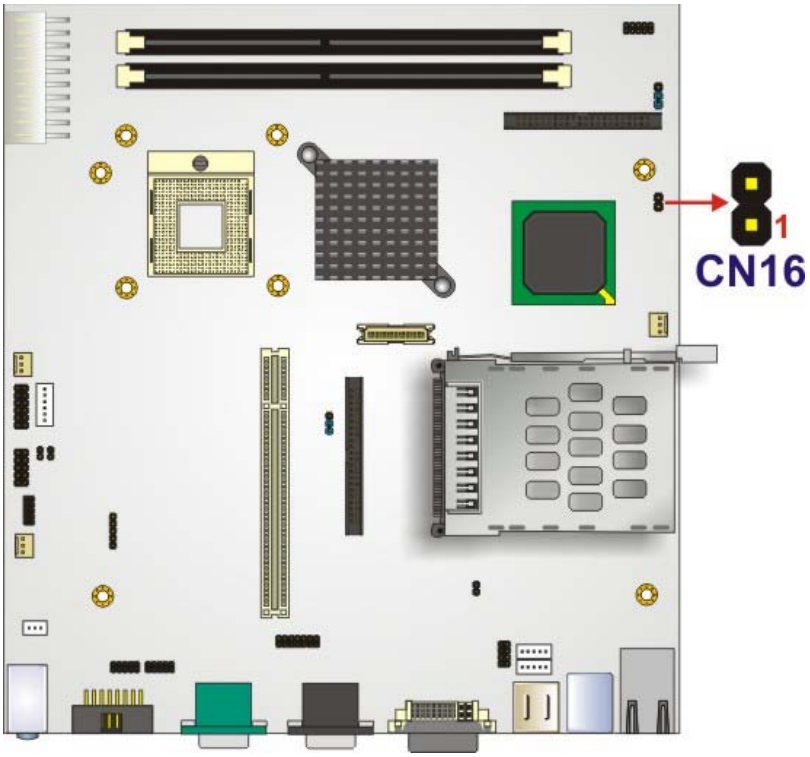


Figure 5-12: LCD Rotate Jumper Location

5.6 Chassis Installation

5.6.1 Airflow

WARNING:

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the A300 must have air vents to allow cool air to move into the system and hot air to move out.

The A300 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit,

the cooling fan of a power supply can also help generate airflow through the board surface.

5.6.2 Motherboard Installation

To install the A300 motherboard into the chassis please refer to the reference material that came with the chassis.

5.7 Internal Peripheral Device Connections

5.7.1 Peripheral Device Cables

The cables listed in Table 5-7 are shipped with the A300.

Quantity	Type
1	IDE flat cable 44p/40p/40p
1	IDE flat cable 44p/44p
2	Single port RS-232 cable
1	RS-232/422/485 cable

Table 5-7: IEI Provided Cables

5.7.2 ATA Flat Cable Connection

The IDE flat cable connects to the A300 to one or two IDE devices. To connect an IDE HDD to the A300 please follow the instructions below.

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

Step 2: **Insert the connector**. Connect the IDE cable connector to the onboard connector. See **Figure 5-13**. A key on the front of the cable connector ensures it can only be inserted in one direction.

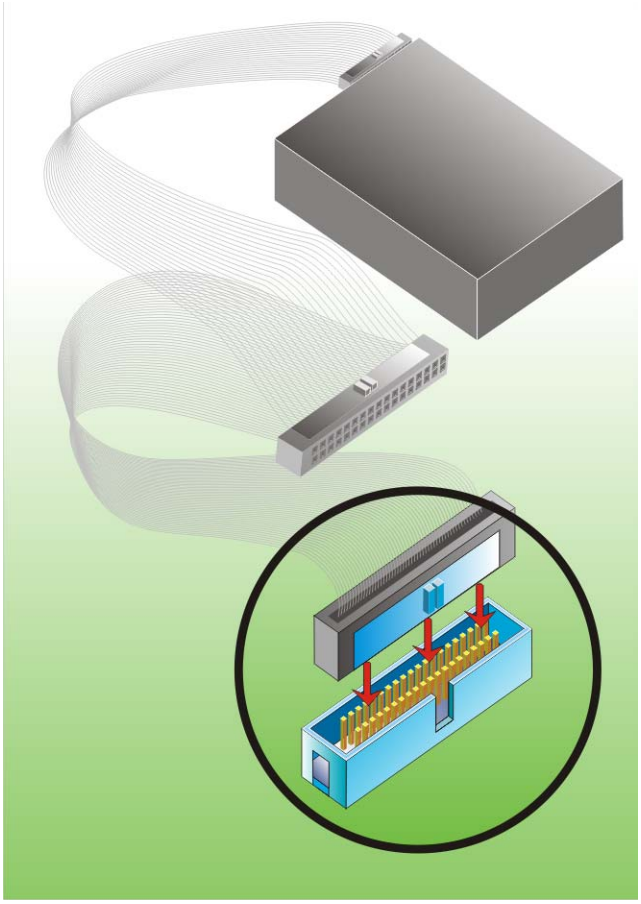


Figure 5-13: IDE Cable Connection

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

5.7.3 Single Port RS-232 Cable

The A300 is shipped with two single port RS-232 cables. The single port RS-232 cable connects one serial port connector on the cable to the 10-pin serial port connector on the A300. To connect the single port RS-232 cable, please follow the steps below.

Step 1: **Locate the serial port connector**. The location of the 10-pin serial port connector is shown in **Chapter 3**.

Step 2: **Align the connectors**. Correctly align pin 1 on the cable connector with pin 1 on

the A300 keyboard/mouse connector. See **Figure 5-14**.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the keyboard/mouse connector on the A300, connect the cable connector to the onboard connectors. See **Figure 5-14**.

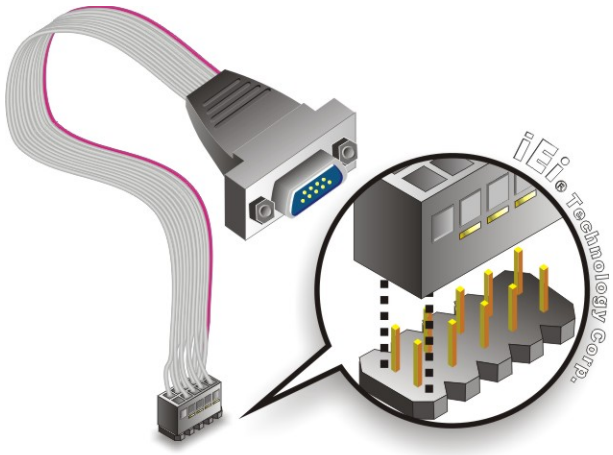


Figure 5-14: Single Port RS-232 Cable Connection

Step 4: **Attach DB-9 serial port connectors to the chassis**. The DB-9 single port connector can be inserted into the preformed hole in the chassis. Once, inserted the DB-9 connectors should be secured to the chassis with the retention screws.

5.8 External Peripheral Interface Connection

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

- Audio devices
- DVI-I devices
- Keyboard and mouse
- RJ-45 Ethernet cable connectors
- Serial port devices
- USB devices
- VGA monitors

To install these devices, connect the corresponding cable connector from the actual device to the corresponding A300 external peripheral interface connector making sure the pins are properly aligned.

Chapter

6

AMI BIOS

I

➔	**Disabled**		Prevents the system from using the on-board 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.

➔ **IDE Master and IDE Slave**

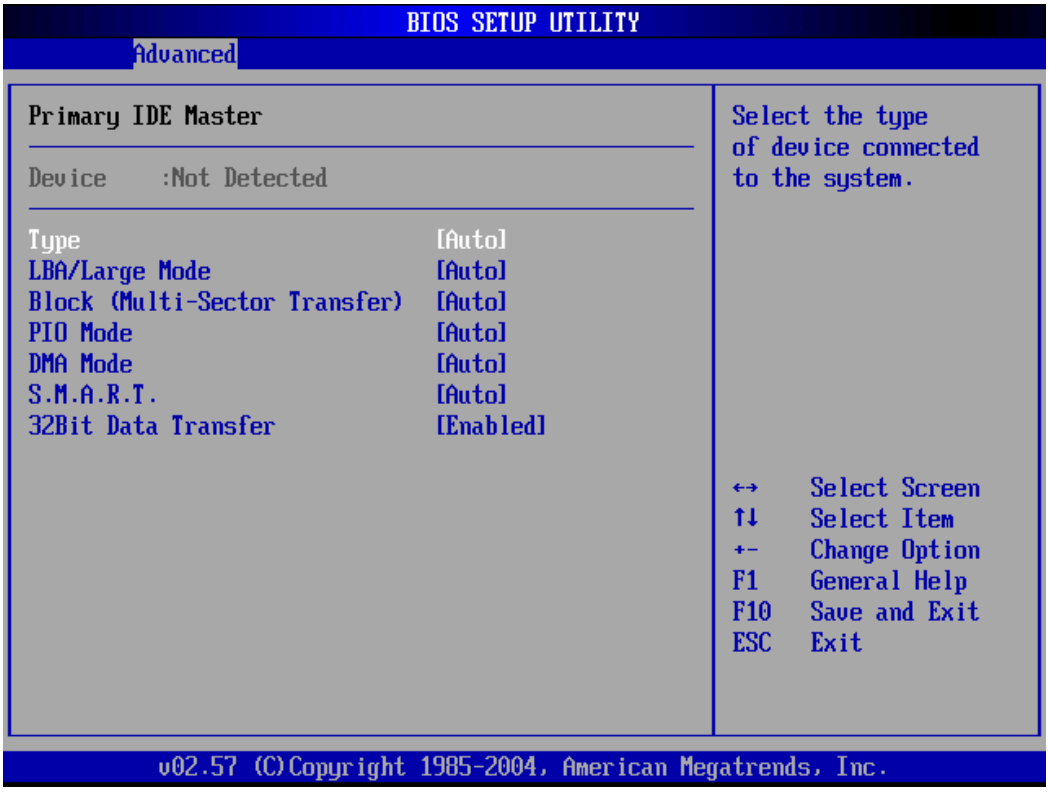
When entering setup, BIOS auto detects the presence of IDE devices. This displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

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

The **IDE Configuration** menu (**BIOS Menu 1**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 6.1.1.1** appear.

6.1.1.1 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 1: IDE Master Configuration

➔ **Auto-Detected Drive Parameters**

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

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Vendor**: Lists the device manufacturer
- **Size**: The size of the device.
- **LBA Mode**: Indicates whether the LBA (Logical Block Addressing) is a

method of addressing data on a disk drive is supported or not.

- **Block Mode**: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- **PIO Mode**: Indicates the PIO mode of the installed device.
- **Async DMA**: Indicates the highest Asynchronous DMA Mode that is supported.
- **Ultra DMA**: Indicates the highest Synchronous DMA Mode that is supported.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.

➔ **Type [Auto]**

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

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

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

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

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

➔ **ZIP**

➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

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

➔ **Disabled** This selection prevents the BIOS from using the LBA mode control on the specified channel.

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

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

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

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

➔ **PIO Mode [Auto]**

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

➔ **Auto** (Default) This setting allows the BIOS to auto detect the PIO mode. Use

this value if the IDE disk drive support cannot be determined.

- ➔ **0** PIO mode 0 selected with a maximum transfer rate of 3.3MBps
- ➔ **1** PIO mode 1 selected with a maximum transfer rate of 5.2MBps
- ➔ **2** PIO mode 2 selected with a maximum transfer rate of 8.3MBps
- ➔ **3** PIO mode 3 selected with a maximum transfer rate of 11.1MBps
- ➔ **4** PIO mode 4 selected with a maximum transfer rate of 16.6MBps

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

➔ **DMA Mode [Auto]**

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

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

➔ **S.M.A.R.T [Auto]**

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

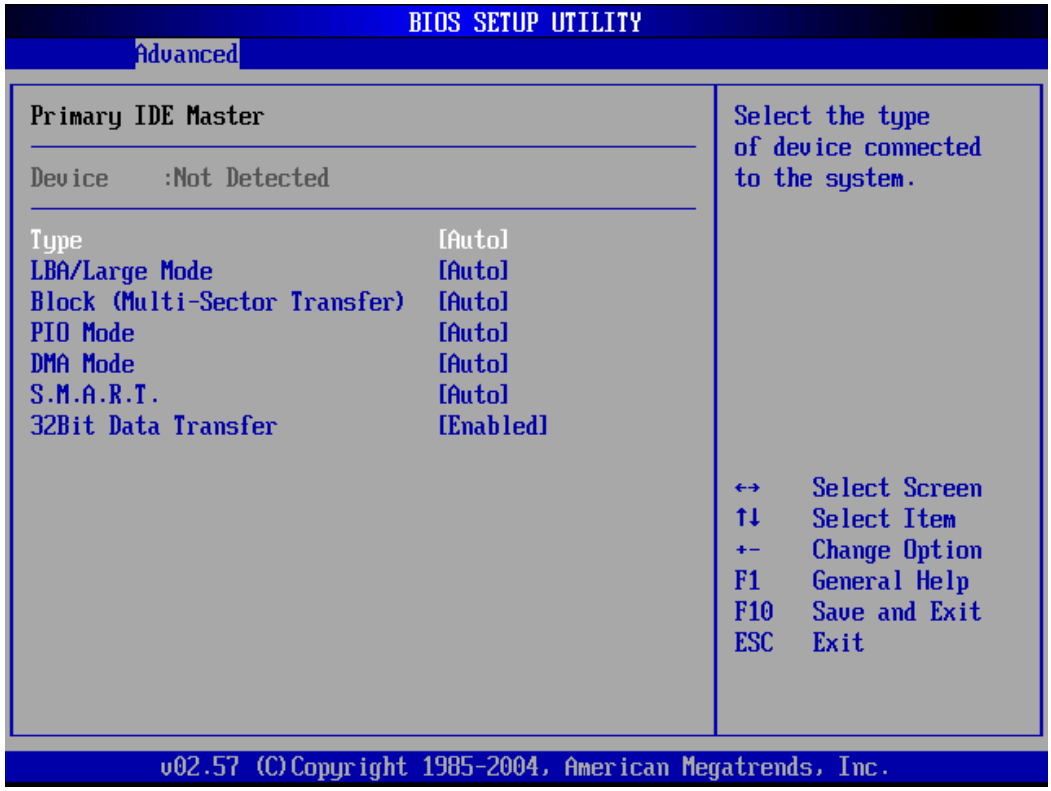
- ➔ **Auto** (Default) BIOS to auto detects if the hard disk drive supports S.M.A.R.T. Use this setting if the IDE disk drive support cannot be determined.
- ➔ **Disabled** Select this value to prevent the BIOS from using the SMART feature.
- ➔ **Enabled** Select this value to allow the BIOS to use the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

➔ **32Bit Data Transfer [Disabled]**

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.



BIOS Menu 2: IDE Slave Configuration

➔ **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**

➔ **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.)

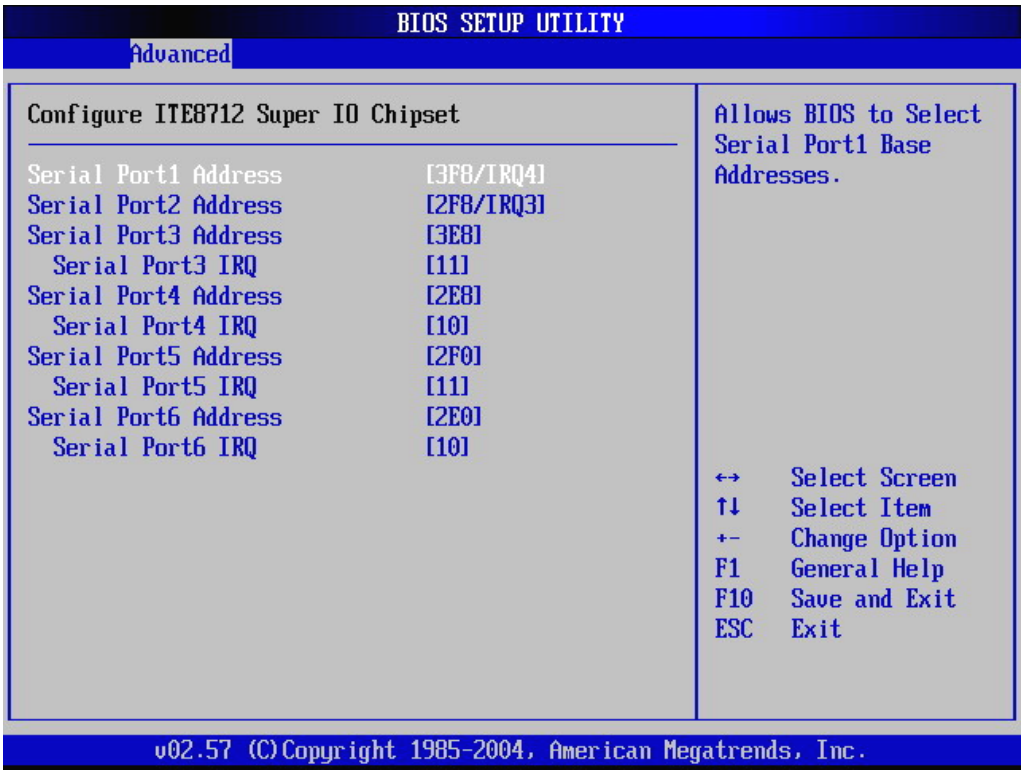
➔ **DMA Mode [Auto]**

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
➔ **UDMA0**		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

6.1.2 Super IO Configuration

The Super IO Configuration menu (BIOS Menu 3) sets or changes the configurations for the serial ports.



BIOS Menu 3: 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 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 4
➔ **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 Port4 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 [2F0]**

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

➔ **Disabled**		No base address is assigned to serial port 5
➔ **3E8**		Serial port 5 I/O port address is 3E8
➔ **2E8**		Serial port 5 I/O port address is 2E8
➔ **2F0**	(Default)	Serial port 5 I/O port address is 2F0
➔ **2D8**		Serial port 5 I/O port address is 2D8
➔ **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 [2E0]**

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

➔ **Disabled** No base address is assigned to serial port 6

➔ **3E8** Serial port 6 I/O port address is 3E8

➔ **2E8** Serial port 6 I/O port address is 2E8

➔ **2E0** (Default) Serial port 6 I/O port address is 2E0

➔ **2D8** Serial port 6 I/O port address is 2D8

➔ **2D0** Serial port 6 I/O port address is 2D0

➔ **Serial Port6 IRQ [10]**

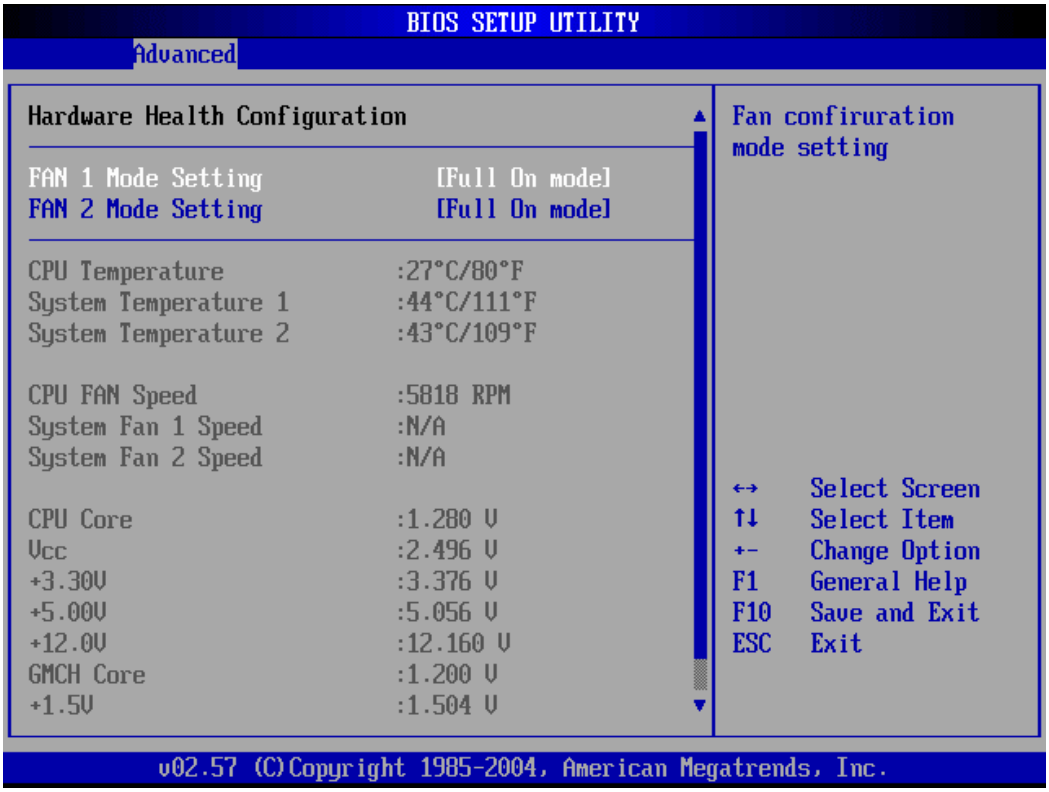
The **Serial Port6 IRQ** selection sets the interrupt address for serial port 6.

➔ **10** (Default) Serial port 6 IRQ address is 10

➔ **11** Serial port 6 IRQ address is 11

6.1.3 Hardware Health Configuration

The Hardware Health Configuration menu (BIOS Menu 4) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 4: Hardware Health Configuration

➔ **FAN 1 Mode Setting: [Full On]**

The **FAN 1 Mode Setting** has the following options:

➔ **Full On** (Default) If selected, there are no additional configurable options.

➔ **Automatic Mode** If selected, the following options will appear with values that can be configured:

- ➔ **Temperature 1 Limit of OFF**
- ➔ **Temperature 1 Limit of Start**
- ➔ **Temperature 1 Limit of Full**
- ➔ **Fan 1 Start PWM**

➔ **Slop PWM 1**: 0 PWM , 2 PWM (Default), 4 PWM or 8 PWM, 16 PWM, 32 PWM, 64 PWM

➔ **FAN 2 Mode Setting: [Full On]**

The **FAN 2 Mode Setting** has the following options:

➔ **Full On**	(Default)	If selected, there are no additional configurable options.
➔ **Automatic Mode**		If selected, the following options will appear with values that can be configured:

➔ **Temperature 2 Limit of OFF**

➔ **Temperature 2 Limit of Start**

➔ **Temperature 2 Limit of Full**

➔ **Fan 2 Start PWM**

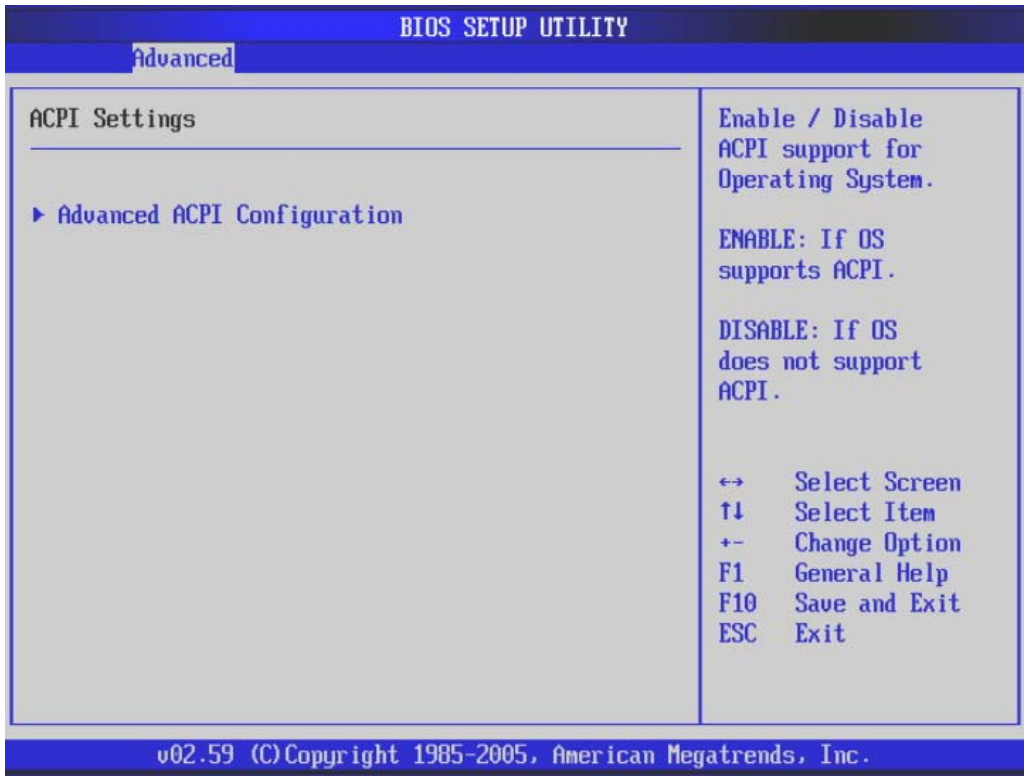
➔ **Slop PWM 1**: 0 PWM , 2 PWM (Default), 4 PWM or 8 PWM, 16 PWM, 32 PWM, 64 PWM

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

6.1.4 ACPI Configuration

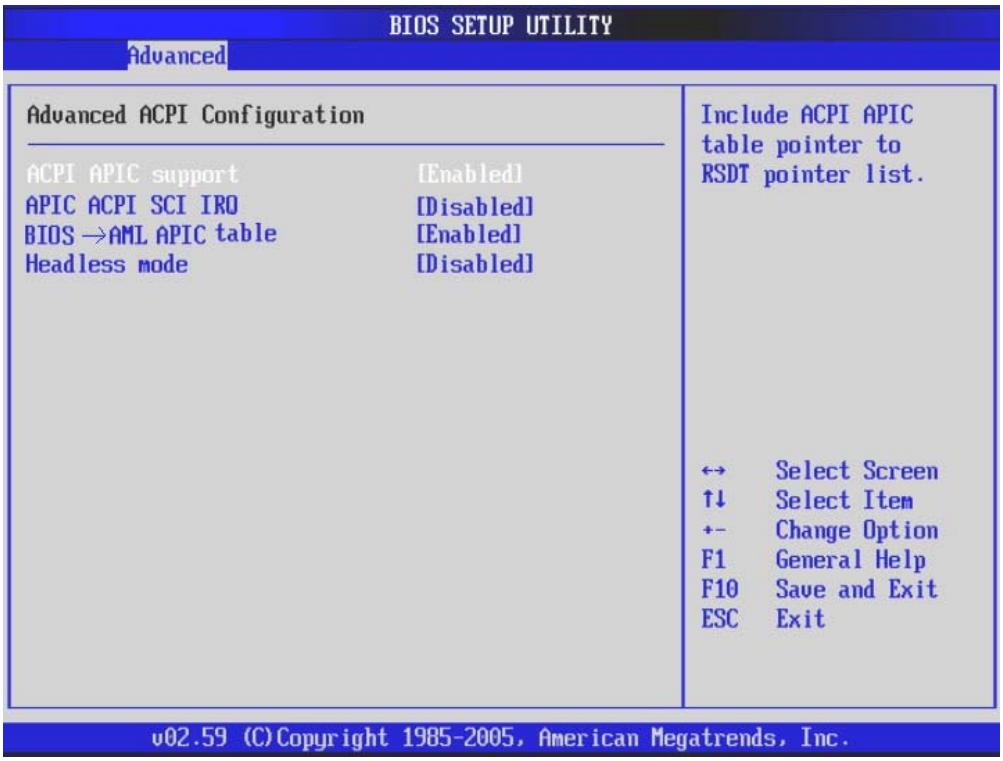
The **ACPI Configuration** menu (**BIOS Menu 5**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.



BIOS Menu 5: ACPI Configuration

6.1.4.1 Advanced ACPI Configuration

Use the **Advanced ACPI Configuration** menu (**BIOS Menu 6**) to select the ACPI state when the system is suspended.



BIOS Menu 6: Advanced ACPI Configuration

➔ **ACPI APIC Support [Enabled]**

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

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

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

➔ **APIC ACPI SCI IRQ [Disabled]**

Use **APIC ACPI SCI IRQ** option to enable the system to send a flag report to the ACPI OS if a SCI IRQ interrupt event is made via the APIC.

➔	**Disabled**	**DEFAULT**	No flag report is sent to the ACPI OS when there is a "SCI IRQ" interrupt event.
➔	**Enabled**		Flag report is sent to the ACPI OS when there is a "SCI IRQ" interrupt event is made via the APIC.

➔ **BIOS→AML ACPI table [Enabled]**

The **AMI OEMB table** allows the ACPI BIOS to add a pointer to an AML ACPI table in the Root System Description Table (RSDT). The OEMB table is used to pass POST data to the AML code during ACPI O/S operations."

➔	**Disabled**	(Default)	BIOS will not add a pointer to an AML ACPI table
➔	**Enabled**		BIOS adds a pointer to an AML ACPI table

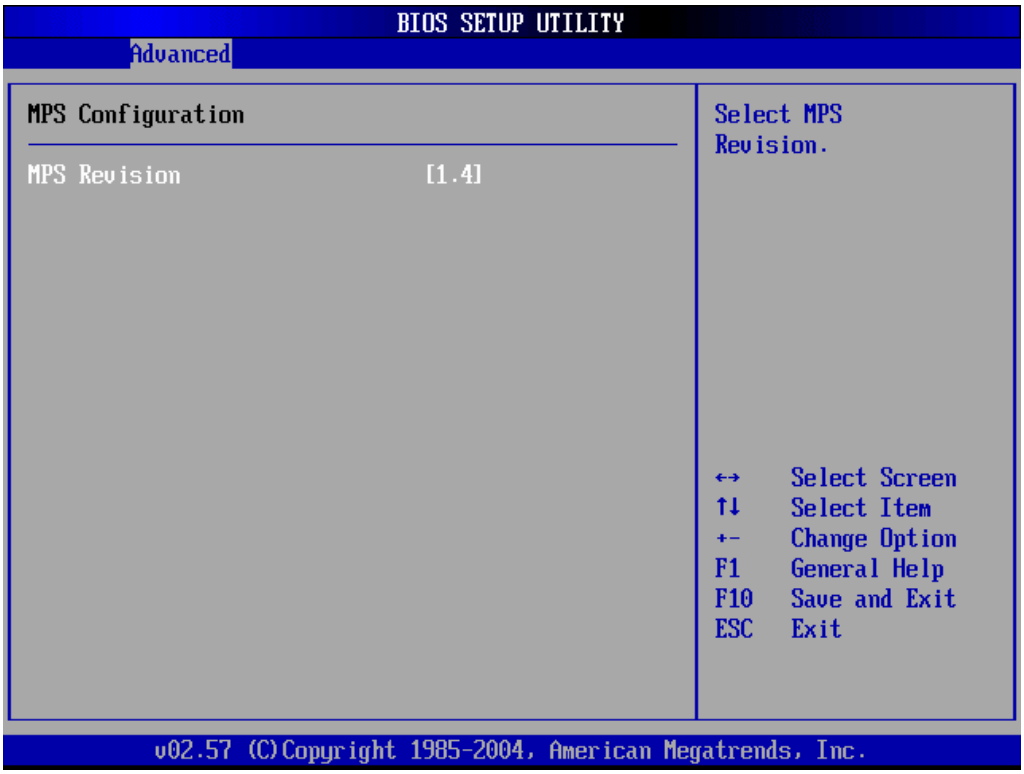
➔ **Headless Mode [Disabled]**

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

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

6.1.5 MPS Configuration

The MPS Configuration menu (**BIOS Menu 7**) configures the multi-processor table.



BIOS Menu 7: MPS Configuration

➔ **MPS Revision [1.4]**

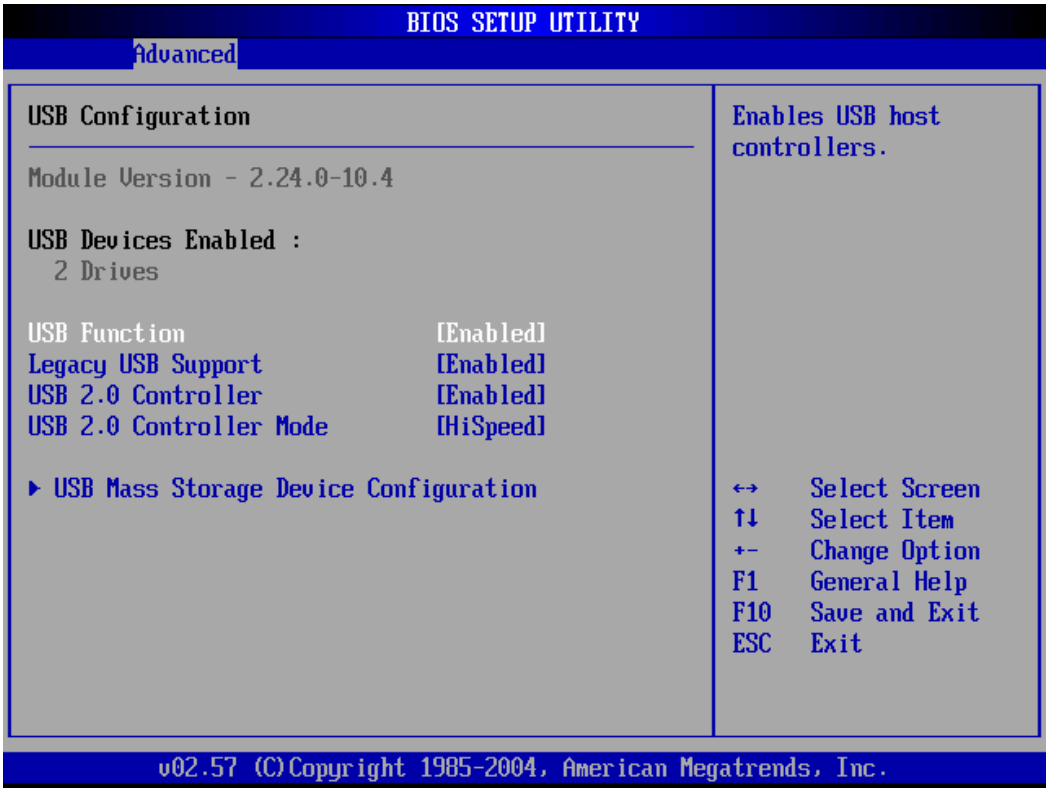
The **Multiprocessor Specification (MPS) for OS** specifies the MPS version to be used.

➔ **1.1** MPS version 1.1 is used

➔ **1.4** (Default) MPS version 1.4 is used

6.1.6 USB Configuration

The **USB Configuration** menu (**BIOS Menu 8**) gives USB configuration information and configures some USB features.



BIOS Menu 8: USB Configuration

➔ **USB Configuration**

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

- Module Version: 2.24.0-10.4

➔ **USB Devices Enabled:**

Lists the USB devices that are enabled on the system

➔ **USB Function [Enabled]**

The **USB Function** BIOS option enables or disables the USB function

➔	**Disabled**		USB function disabled
➔	**Enabled**	(Default)	USB function enabled

➔ **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
➔	**Auto**		Legacy USB support is automatically detected

➔ **USB 2.0 Controller [Enabled]**

The **USB 2.0 Controller** BIOS option enables or disables the USB 2.0 controller

➔	**Enabled**	(Default)	USB function enabled
➔	**Disabled**		USB function disabled

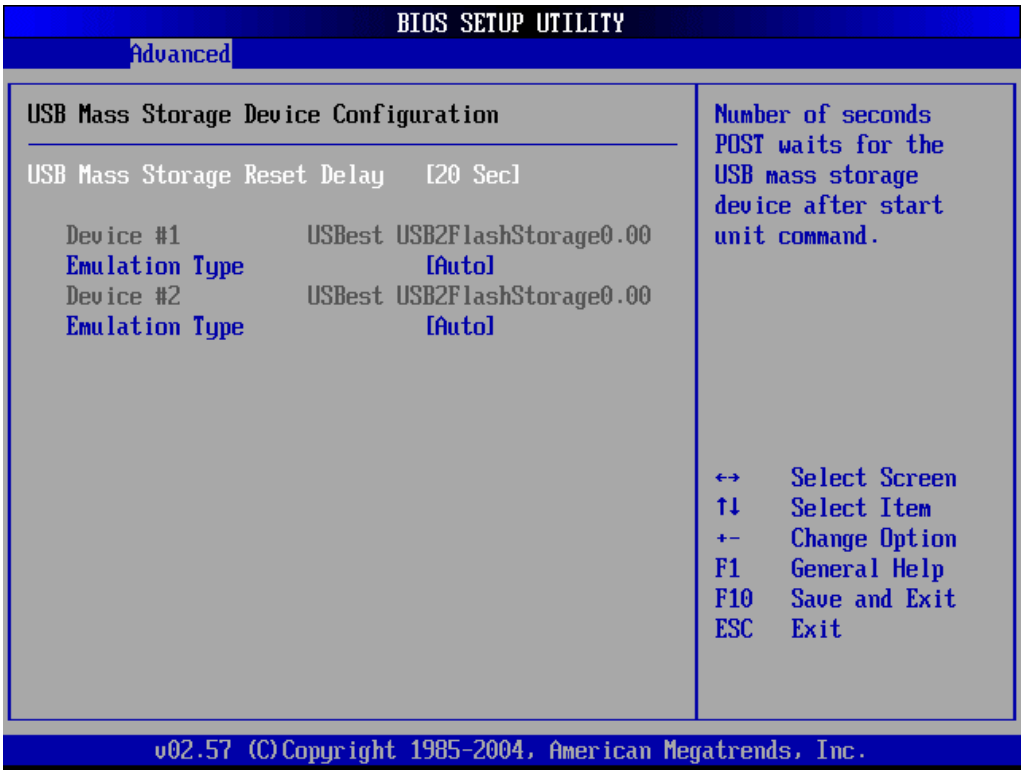
➔ **USB2.0 Controller Mode [HiSpeed]**

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)

6.1.6.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (**BIOS Menu 9**) to configure USB mass storage class devices.



BIOS Menu 9: USB Mass Storage Device Configuration

➔ **USB Mass Storage Reset Delay [20 Sec]**

Use the **USB Mass Storage Reset Delay** option to set the number of seconds POST waits for the USB mass storage device after the start unit command.

➔ **10 Sec**		POST waits 10 seconds for the USB mass storage device after the start unit command.
➔ **20 Sec**	(Default)	POST waits 20 seconds for the USB mass storage device after the start unit command.
➔ **30 Sec**		POST waits 30 seconds for the USB mass storage device after the start unit command.

➔ **40 Sec** POST waits 40 seconds for the USB mass storage device after the start unit command.

➔ **Device ##**

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

➔ **Emulation Type [Auto]**

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

NOTE:

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

➔ **Auto** (Default) BIOS auto-detects the current USB.

➔ **Floppy** The USB device will be emulated as a floppy drive. The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.

➔ **Forced FDD** Allows a hard disk image to be connected as a

floppy image. This option works only for drives formatted with FAT12, FAT16 or FAT32.

➔ **Hard Disk** Allows the USB device to be emulated as hard disk responding to INT13h calls that return DL values of 80h or above.

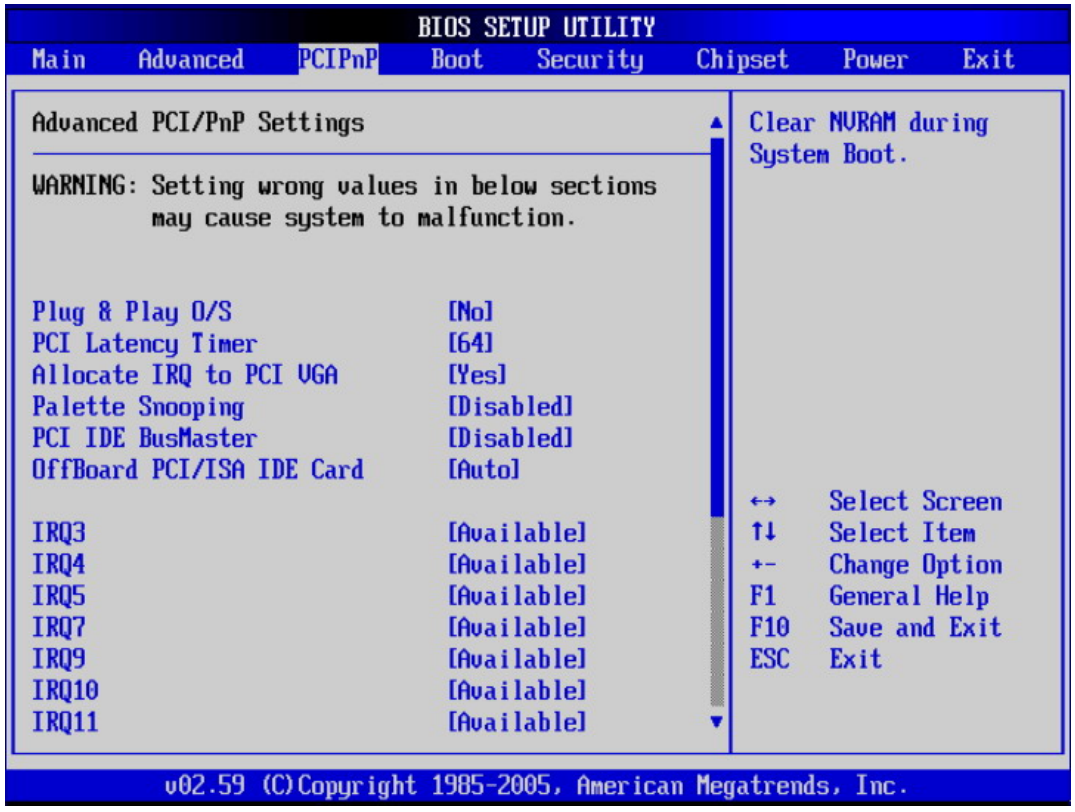
➔ **CDROM** Assumes the CD-ROM is formatted as bootable media. All the devices that support block sizes greater than 512 bytes can only be booted using this option.

6.2 PCI/PnP

Use the **PCI/PnP** menu (**BIOS** Menu 8) to configure advanced PCI and PnP settings.

WARNING!

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



BIOS Menu 10: PCI/PnP Configuration

➔ **Plug & Play O/S [No]**

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

➔ **No** **DEFAULT** If the operating system does not meet the Plug and Play specifications, this option allows the BIOS to configure all the devices in the system.

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

➔ **PCI Latency Timer [64]**

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

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

➔ **Allocate IRQ to PCI VGA [Yes]**

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

➔ **Yes** (Default) Assigns an IRQ to a PCI VGA card if card requests IRQ

➔ **No** Does not assign IRQ to a PCI VGA card even if the card requests an IRQ

➔ **Palette Snooping [Disabled]**

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

➔ **Disabled** **DEFAULT** Unless the VGA card manufacturer requires palette snooping to be enabled, this option should be disabled.

➔ **No/Enabled** PCI devices are informed that an ISA based Graphics device is installed in the system so the ISA based Graphics card functions correctly. This does not necessarily indicate a physical ISA adapter card.

The graphics chipset can be mounted on a PCI card. Always check with the adapter card manual first, before modifying the default settings in the BIOS.

➔ **PCI IDE BusMaster [Disabled]**

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

➔ **Disabled**	**DEFAULT**	Busmastering is prevented
➔ **No/Enabled**		IDE controller on the PCI local bus has mastering capabilities

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

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

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

adapter card is installed in PCI Slot 4.

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

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

➔ **IRQ# [Available]**

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

➔ **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

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

➔ **DMA Channel# [Available]**

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

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

Available DMA Channels are:

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

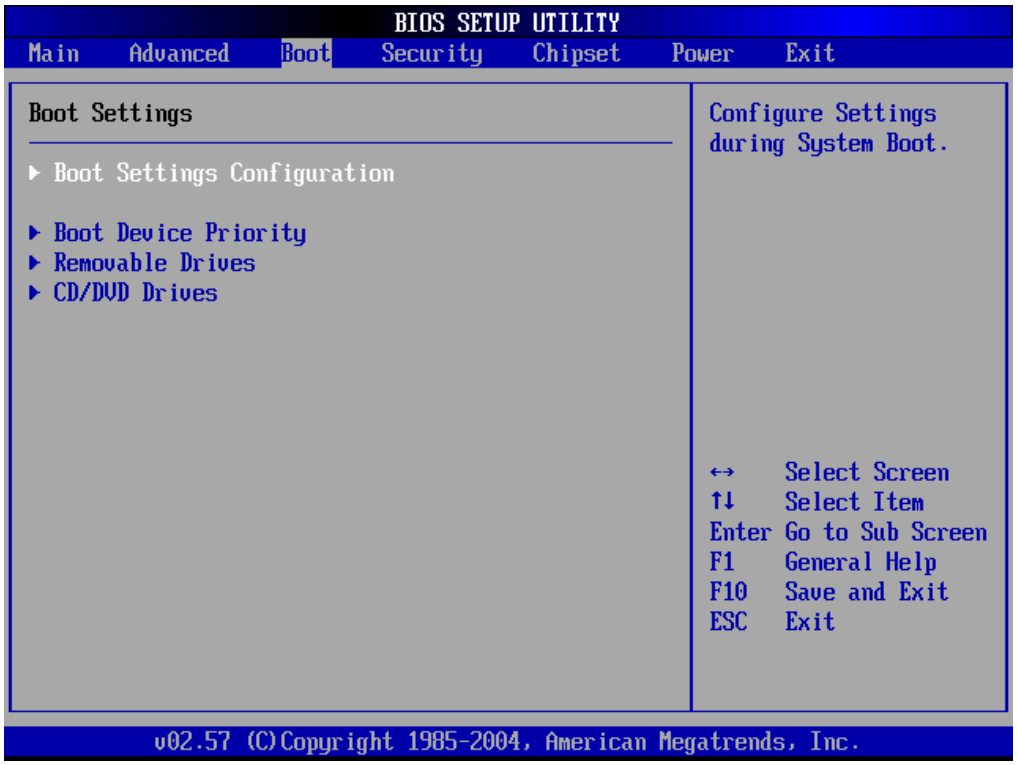
➔ **Reserved Memory Size [Disabled]**

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

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

6.3 Boot

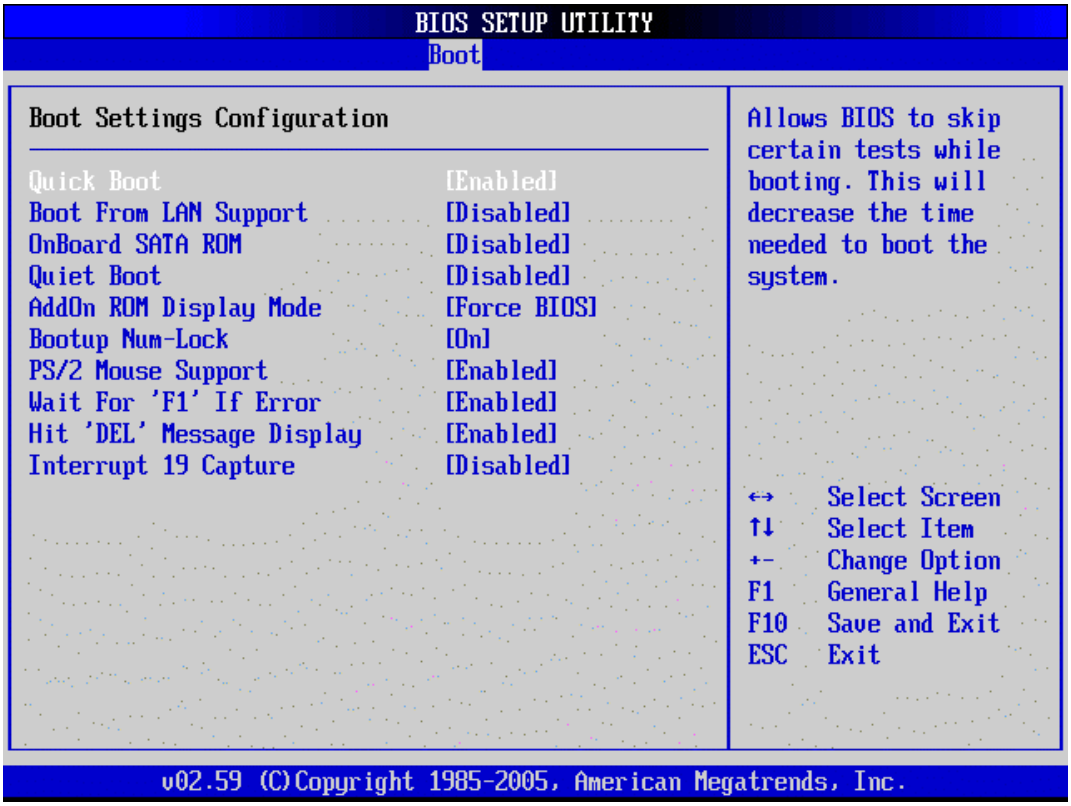
The Boot menu (BIOS Menu 11) configures system boot options.



BIOS Menu 11: Boot

6.3.1 Boot Settings Configuration

The Boot Settings Configuration menu (**BIOS Menu 12**) configures advanced system boot options.



BIOS Menu 12: 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

➔ **Boot From LAN Support [Disabled]**

Use the **BOOT From LAN Support** option to enable the system to be booted from a remote system.

➔ **Disabled** (Default) Cannot be booted from a remote system through the LAN

➔ **Enabled** (Default) Can be booted from a remote system through the LAN

➔ **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]**

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

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

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

➔ **Bootup Num-Lock [On]**

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.
➔ **Auto**		Allows the system to automatically detect if a PS/2 mouse is being used.

➔ **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 [Enabled]**

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]**

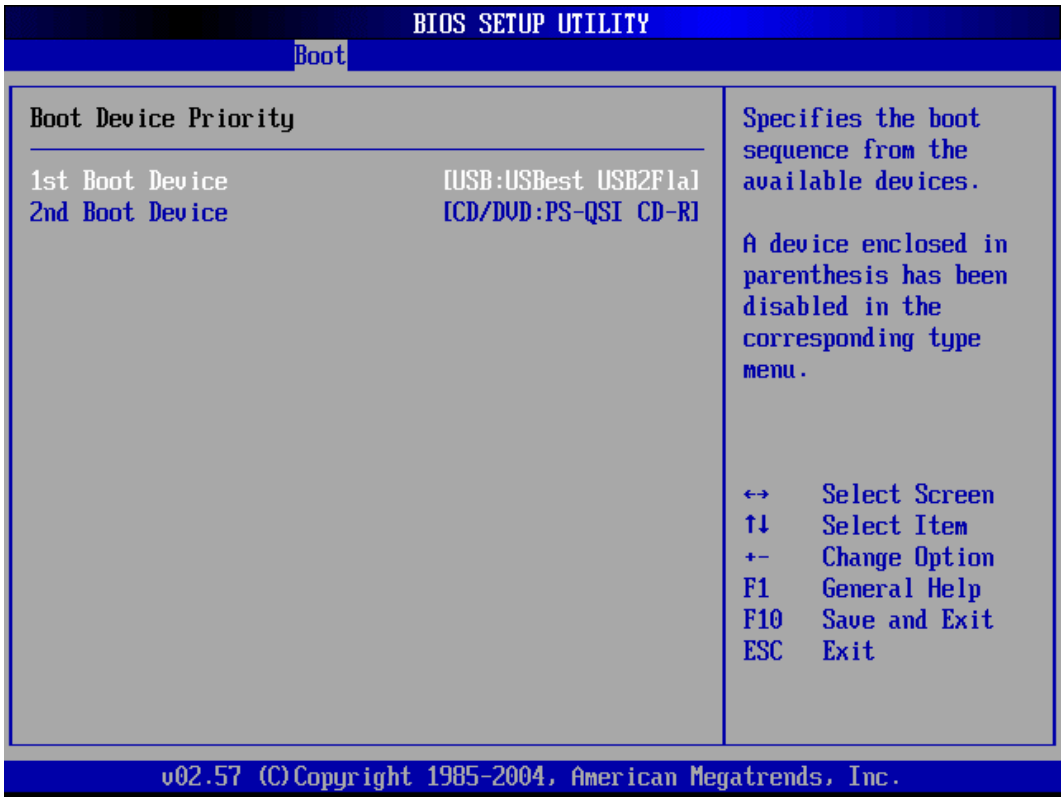
Use the **Interrupt 19 Capture** option to allow optional ROMs such as network controllers to trap BIOS interrupt 19.

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

6.3.2 Boot Device Priority

The **Boot Device Priority** menu (**BIOS Menu 13**) specifies the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD



BIOS Menu 13: Boot Device Priority Settings

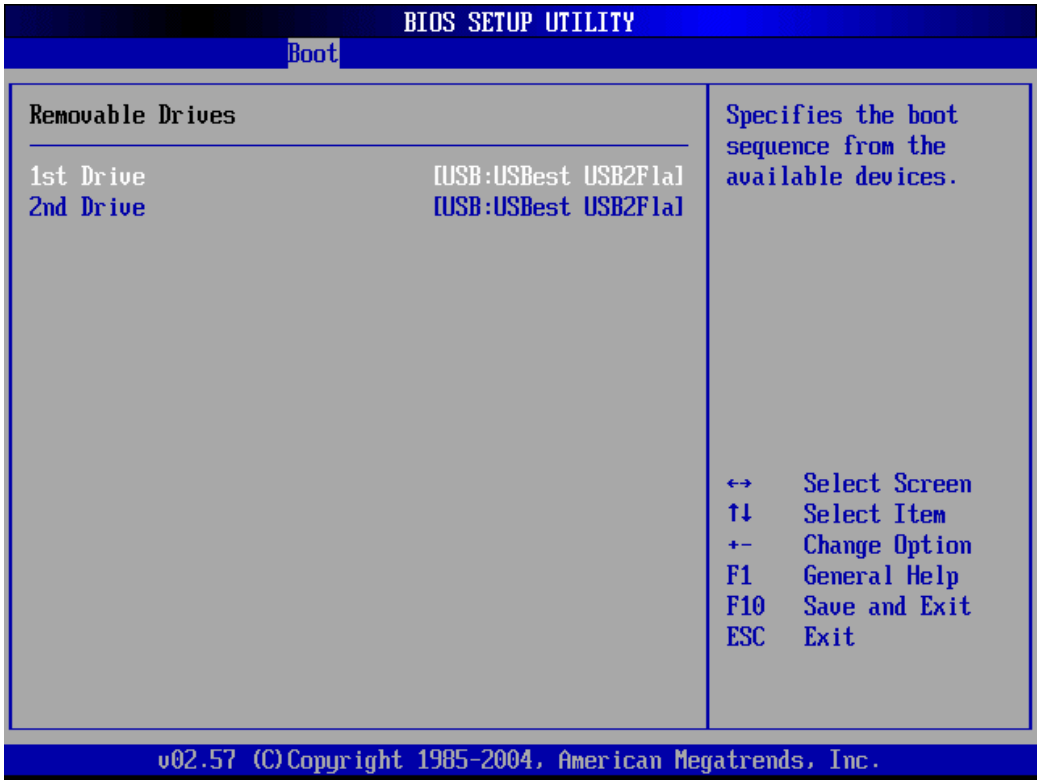
6.3.3 Removable Drives

The Removable Drives menu (BIOS Menu 14) specifies the boot sequence of the available USB drives.

NOTE:

Only the drives connected to the system are shown. For example, if only one USB 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 USB drives is shown. Select the first USB drive system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.



BIOS Menu 14: Removable Drives

6.3.4 CD/DVD Drives

The **CD/DVD Drives** menu is similar to the **Removable Drives BIOS Menu 14** 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)]
-

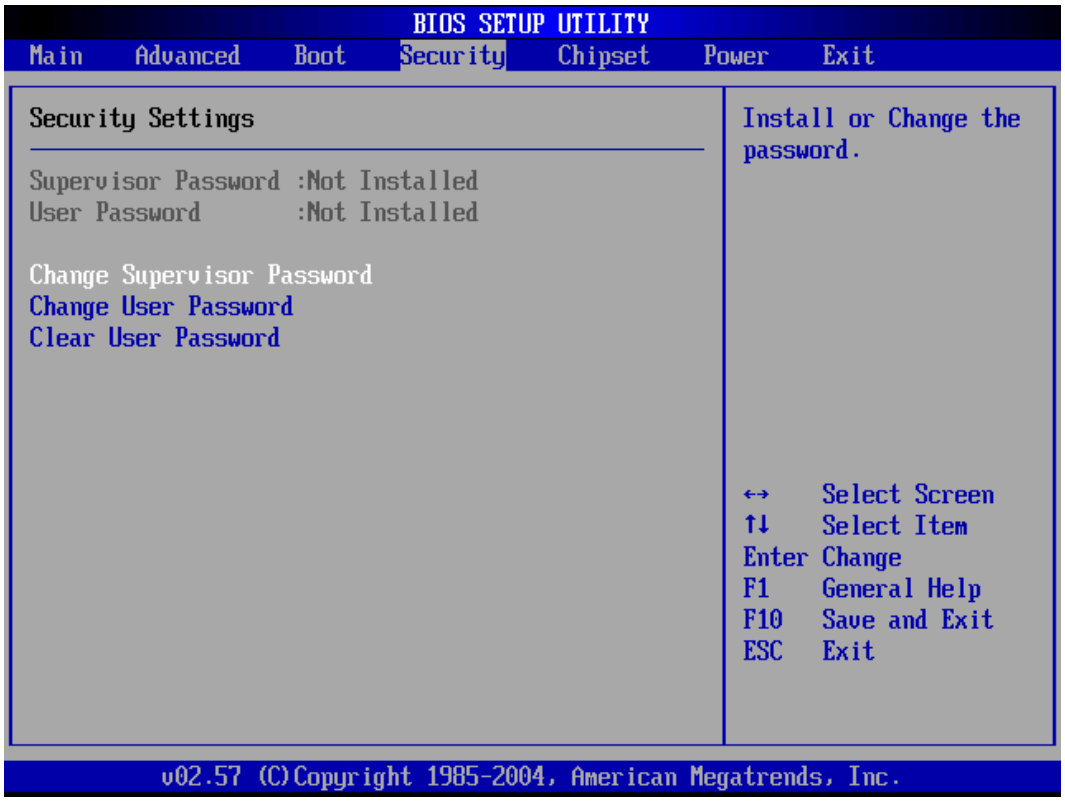
NOTE:

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.

6.4 Security

The **Security** menu (**BIOS Menu 15**) allows system security settings including passwords to be configured.



BIOS Menu 15: 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**

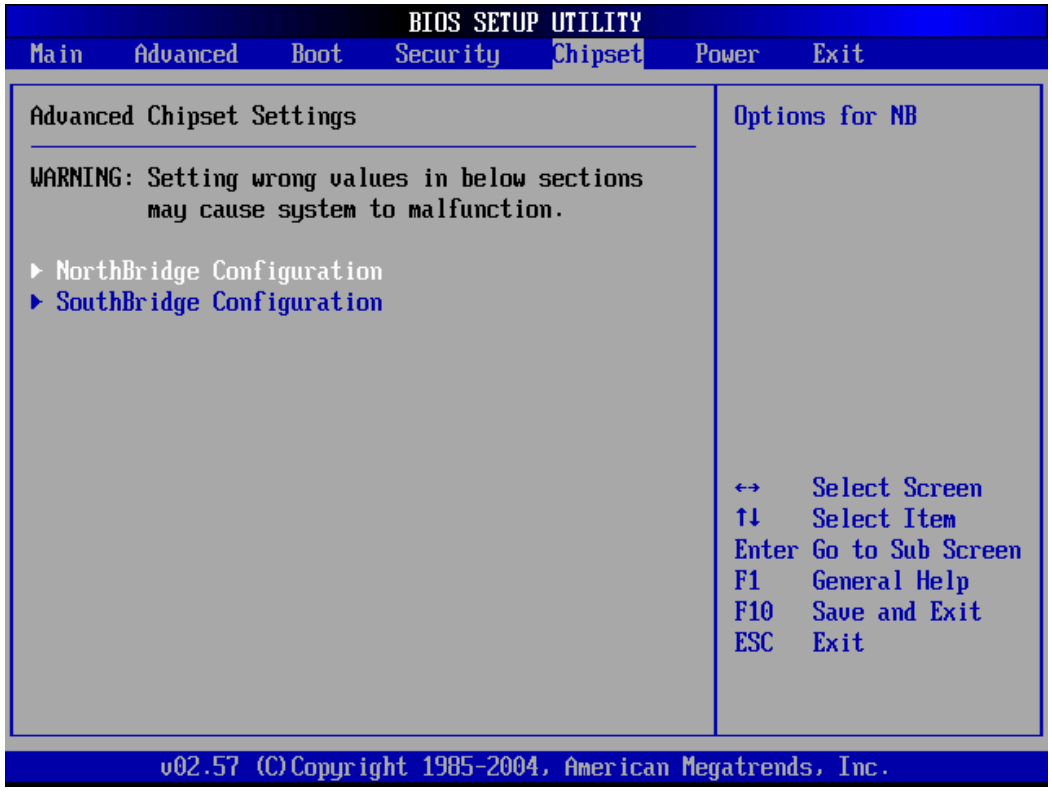
The default setting for the **Change User Password** is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

6.5 Chipset

The Chipset menu (**BIOS Menu 16**) has two sub-menus, NorthBridge Configuration and SouthBridge Configuration. The NorthBridge Configuration menu configures the northbridge chipset and the SouthBridge Configuration menu configures the southbridge chipset.

WARNING!

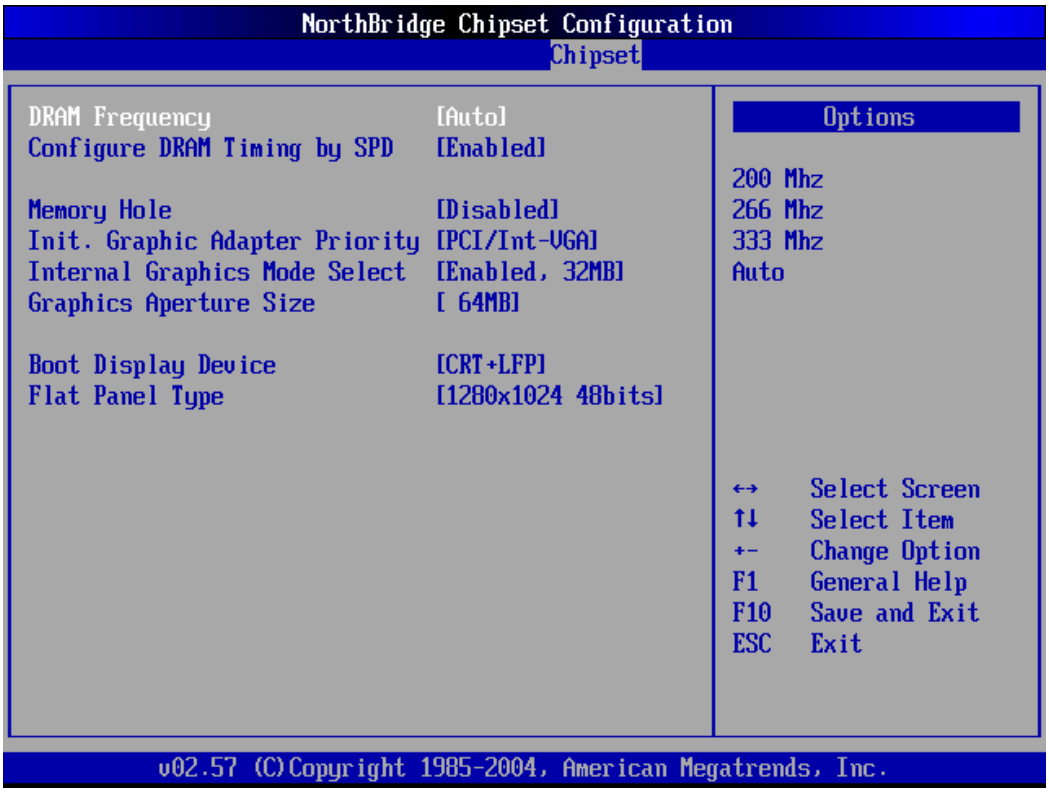
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 16: Chipset

6.5.1 NorthBridge Configuration

The NorthBridge Configuration menu (**BIOS Menu 17**) allows the northbridge chipset to be configured.



BIOS Menu 17: NorthBridge Chipset Configuration

➔ **DRAM Frequency [Auto]**

The **DRAM Frequency** option allows specifies the DRAM frequency or allow the system to automatically detect the DRAM frequency.

➔	**200MHz**		Sets the DRAM frequency to 200MHz
➔	**266MHz**		Sets the DRAM frequency to 266MHz
➔	**333MHz**		Sets the DRAM frequency to 333MHz
➔	**Auto**	(Default)	Automatically selects the DRAM frequency

➔ **Configure DRAM Timing by SPD [Enabled]**

The **Configure DRAM Timing by SPD** option determines if the system uses the SPD (Serial Presence Detect) EEPROM to configure the DRAM timing. The SPD EEPROM contains all necessary DIMM specifications the including speed of the individual components such as CAS and bank cycle time as well as valid settings for the module and the manufacturer's code. The SPD enables the BIOS to read the spec sheet of the DIMMs on boot-up and then adjust the memory timing parameters accordingly.

➔	**Disabled**		DRAM timing parameters can be manually set using the DRAM sub-items
➔	**Enabled**	(Default)	DRAM timing parameter are set according to the DRAM Serial Presence Detect (SPD)

The **Configure DRAM Timing by SPD** option is disabled, the following configuration options appear.

- DRAM CAS# Latency [2.5]
- DRAM RAS# Precharge [3 clocks]
- DRAM RAS# to CAS# Delay [3 clocks]
- DRAM Precharge Delay [7 clocks]
- DRAM Burst Length [8]

➔ **Memory Hole [Disabled]**

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

➔	**Disabled**	(Default)	Memory is not reserved for ISA expansion cards
➔	**15M– 16M**		Memory is reserved for ISA expansion cards

➔ **Init. Graphic Adapter Priority [PCI/Int-VGA]**

The **Init. Graphic Adapter Priority** option selects the graphics controller the system uses as a primary boot device. The options are:

- Internal VGA
- PCI/Int-VGA

➔ **Internal Graphics Mode Select [Enable, 32MB]**

The **Internal Graphic Mode Select** option determines the amount of system memory that can be used by the Internal graphics device.

➔ **Disable**		
➔ **Enable, 1MB**		1MB of memory used by internal graphics device
➔ **Enable, 4MB**		4MB of memory used by internal graphics device
➔ **Enable, 8MB**		8MB of memory used by internal graphics device
➔ **Enable, 16MB**		16MB of memory used by internal graphics device
➔ **Enable, 32MB**	(Default)	32MB of memory used by internal graphics device

➔ **Graphics Aperture Size [64MB]**

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

➔ **64MB**	(Default)	Graphics aperture size set as 64MB
➔ **128MB**		Graphics aperture size set as 128MB
➔ **256MB**		Graphics aperture size set as 256MB

➔ **Boot Display Device [CRT+LEP]**

The **Boot Display Device** BIOS option selects the display device the system uses when it boots. The available options are listed below:

- CRT
- EFP
- LFP
- CRT + EFP
- CRT + LFP (Default)

➔ **Flat Panel Type [1280x1024 48bits]**

The **Flat Panel Type** BIOS option specifies the flat panel PC type being used.

NOTE:

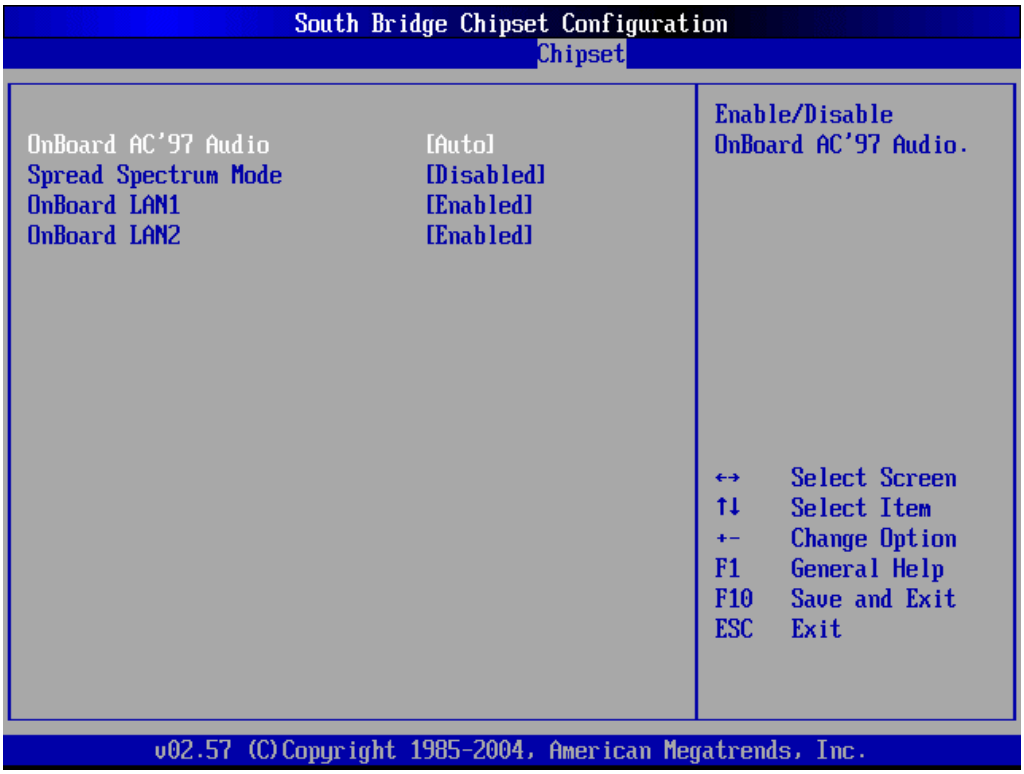
Please refer to the technical documents that came with the flat panel PC to ensure the correct settings are selected.

The following options are available:

- 640x480 LVDS (Default)
- 800x600 LVDS
- 1024x768 LVDS 24bits
- 1280x1024 LVDS
- 1400x1050 LVDS
- 1024x768 LVDS 18bits
- 1600x1200 LVDS
- 1280x1024 48bits
- 800x600 24bits
- 800x600 18bits
- 1024x768 36bits

6.5.2 SouthBridge Configuration

The SouthBridge Configuration menu (**BIOS Menu 18**) the southbridge chipset to be configured.



BIOS Menu 18: SouthBridge Chipset Configuration

➔ **OnBoard AC'97 Audio [Auto]**

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

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

➔ **Spread Spectrum Mode [Disabled]**

The **Spread Spectrum Mode** option enables or disables the spread spectrum mode.

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

➔ **OnBoard LAN1 [Enabled]**

The **OnBoard LAN1** option enables or disables the on-board LAN1.

➔ **Disabled**		On-board LAN1 device manually disabled
➔ **Enabled**	(Default)	The on-board LAN1 device automatically detected and enabled

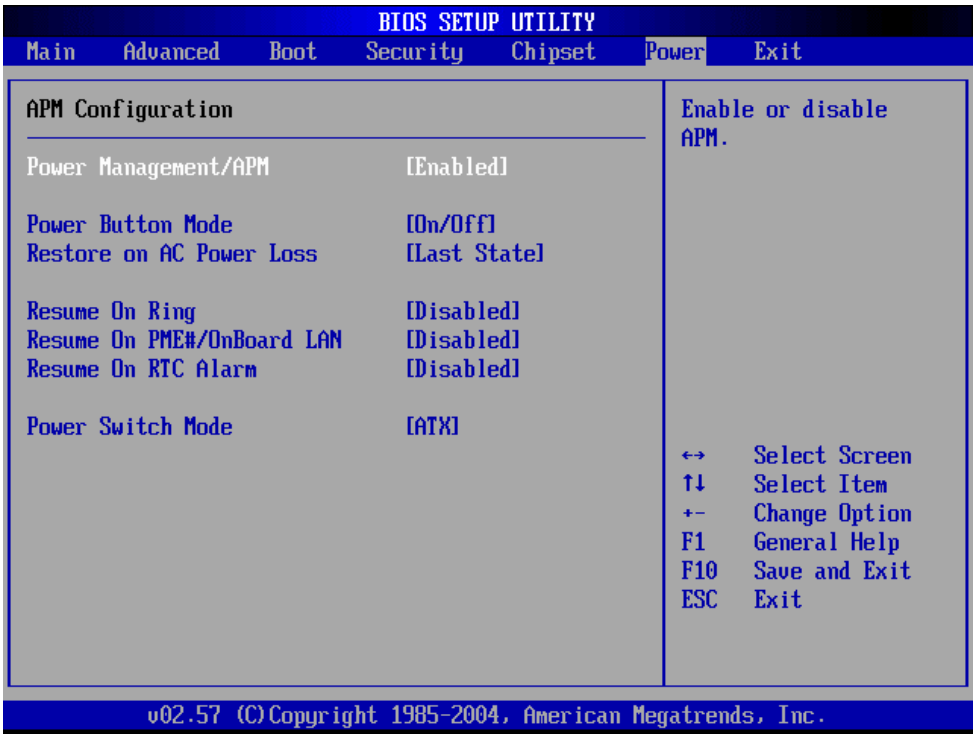
➔ **OnBoard LAN2 [Enabled]**

The **OnBoard LAN2** option enables or disables the on-board LAN2.

➔ **Disabled**		On-board LAN2 device manually disabled
➔ **Enabled**	(Default)	The on-board LAN2 device automatically detected and enabled

6.6 Power

The **Power** menu (**BIOS Menu 19**) allows the advanced power management options to be configured.



BIOS Menu 19: 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

➔ **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.

➔ **Resume on Ring [Disabled]**

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

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

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

➔ **Resume on PME#/Onboard LAN [Disabled]**

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

➔ **Disabled** (Default) Wake event not generated by PCI PME controller or on-board LAN controller activity

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

on-board LAN controller activity

➔ **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.

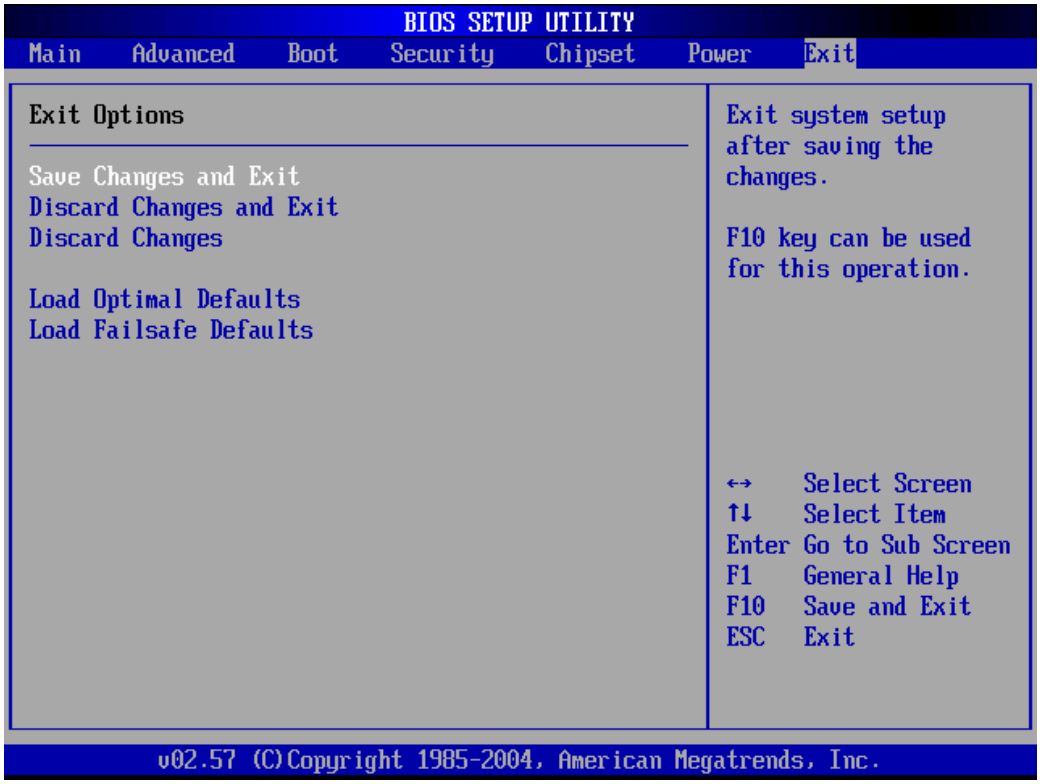
➔ **Power Switch Mode [ATX]**

The **Power Switch Mode** option specifies the power switch mode.

➔ **ATX**	(Default)	specifies the power switch mode as ATX
➔ **AT**		specifies the power switch mode as AT

6.7 Exit

The **Exit** menu (**BIOS Menu 20**) loads default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 20: 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.

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Chapter

7

Software Drivers

7.1 Available Software Drivers

NOTE:

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

The A300 board has four software drivers:

- Chipset
- Audio
- VGA
- SATA
- Touch Panel

All four drivers can be found on the CD that came with the A300. To install the drivers please follow the instructions in the sections below. The optional touch panel driver installation is described in **Appendix C**.

7.2 Chipset Driver Installation

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

Step 1: Insert the CD into the system that contains the A300 board. Open the **INF** directory and locate the icon for the **Setup** installation file. Once located, use the mouse to double click the icon.

Step 2: The “InstallShield Wizard Preparation Screen” in **Figure 7-1** appears.

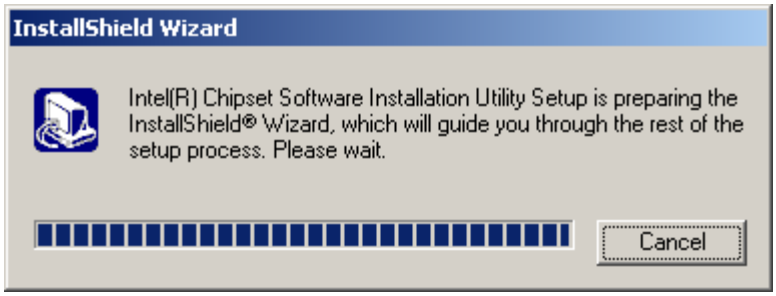

Figure 7-1: InstallShield Wizard Preparation Screen

Step 1: The “Welcome” window in **Figure 7-2** appears next.

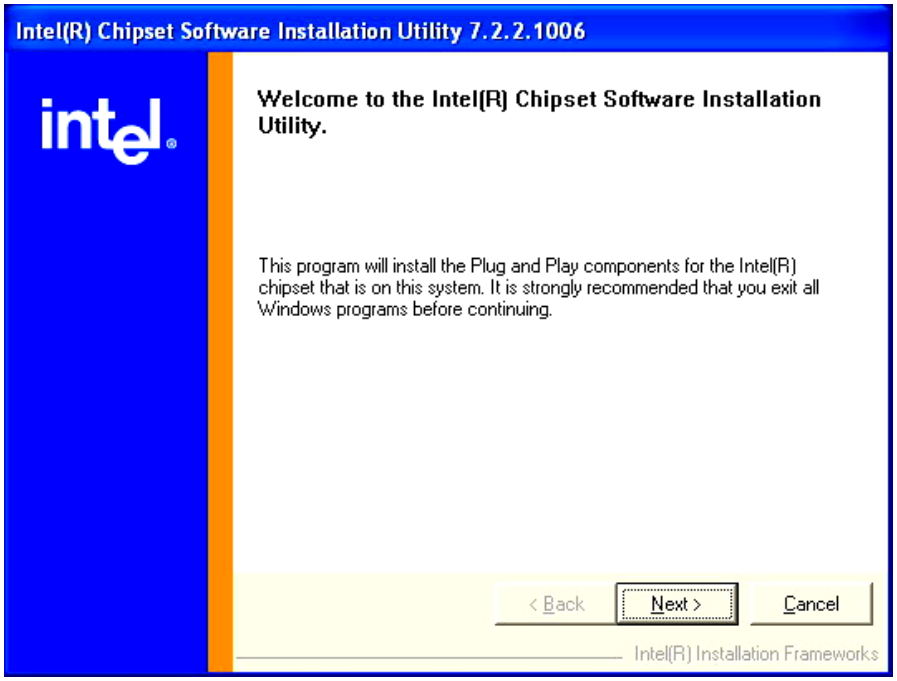

Figure 7-2: Welcome Screen

Step 2: Click “**Next**” and the license agreement shown in **Figure 7-3** appears.

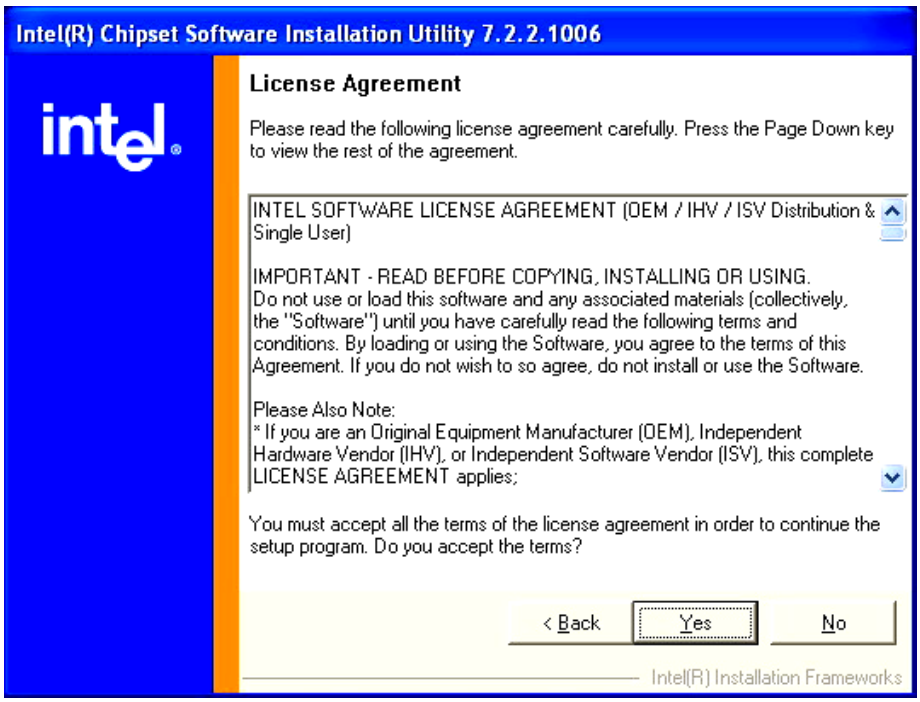

Figure 7-3: License Agreement

Step 3: Agree to the license terms by clicking "**Yes**". The "**Readme**" in **Figure 7-4** appears.

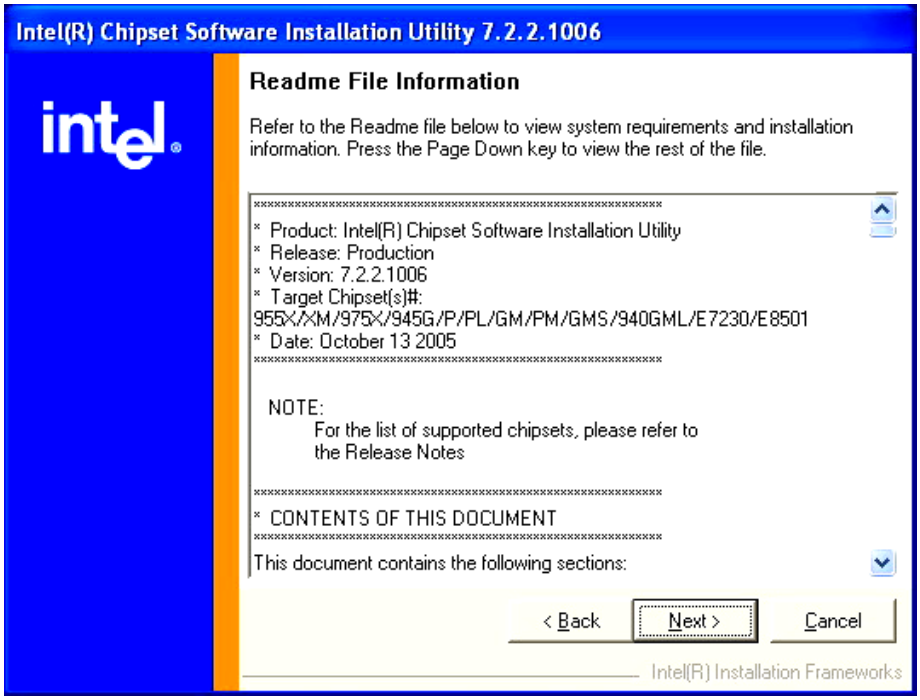

Figure 7-4: Readme Information

Step 4: Click "**Yes**". The driver is installed on the computer. After the installation is complete, the installation complete screen shown in **Figure 7-5** appears. Select the preferred option and click "**Finish**" to complete the installation process.

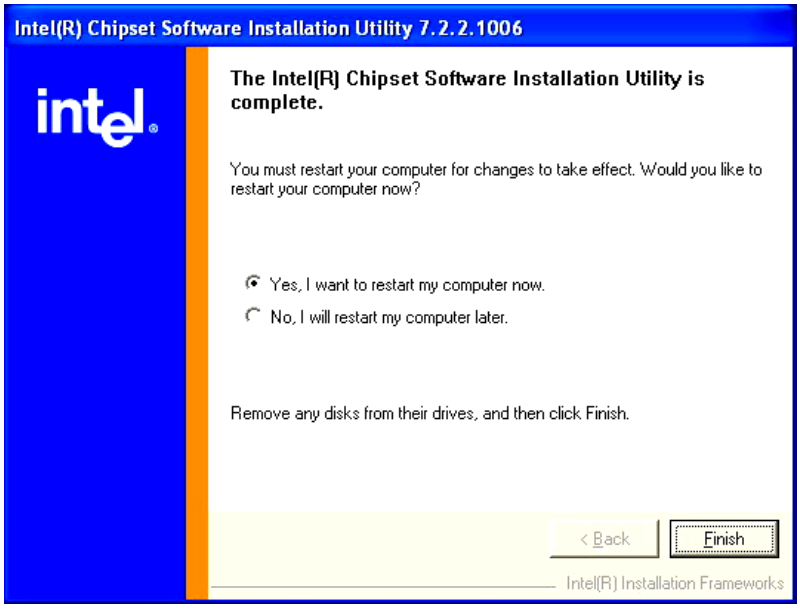

Figure 7-5: Restart the Computer

7.3 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 A300 board. Open the CD folder and locate the **REALTEK/AC655** directory. Open the directory and look for icon for the **WDM_A380** installation file. Once located, use the mouse to double click the icon.

Step 2: Once double clicking the icon, the install shield wizard for the audio driver starts. See **Figure 7-6.**

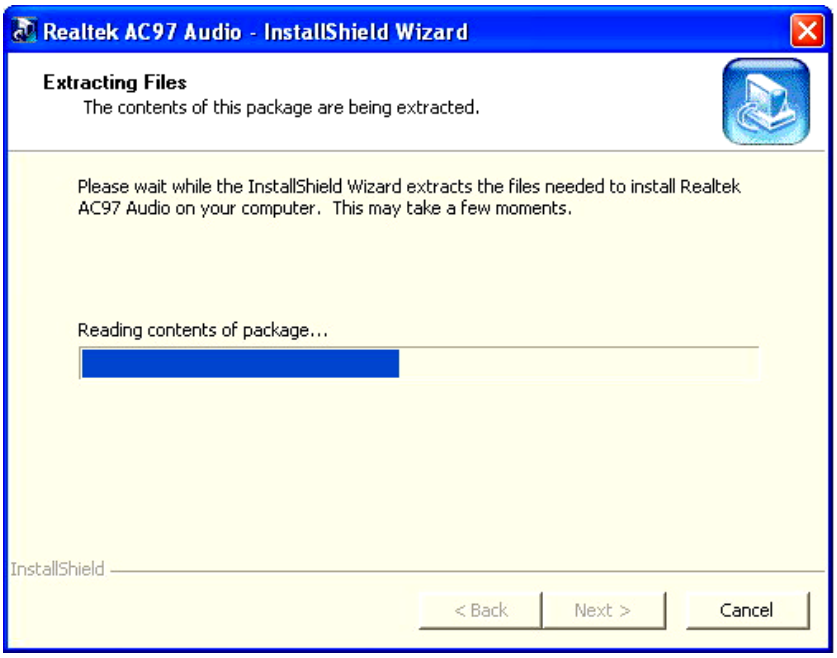

Figure 7-6: Audio Driver Install Shield Wizard Starting

Step 3: The RealTek Audio Setup prepares the install shield to guide through the rest of the setup process.

Step 4: After install shield is prepared, the welcome screen shown in **Figure 7-7** appears. To continue the installation process, click the "**Next**" button. The install shield starts to configure the new software as shown in **Figure 7-8**.

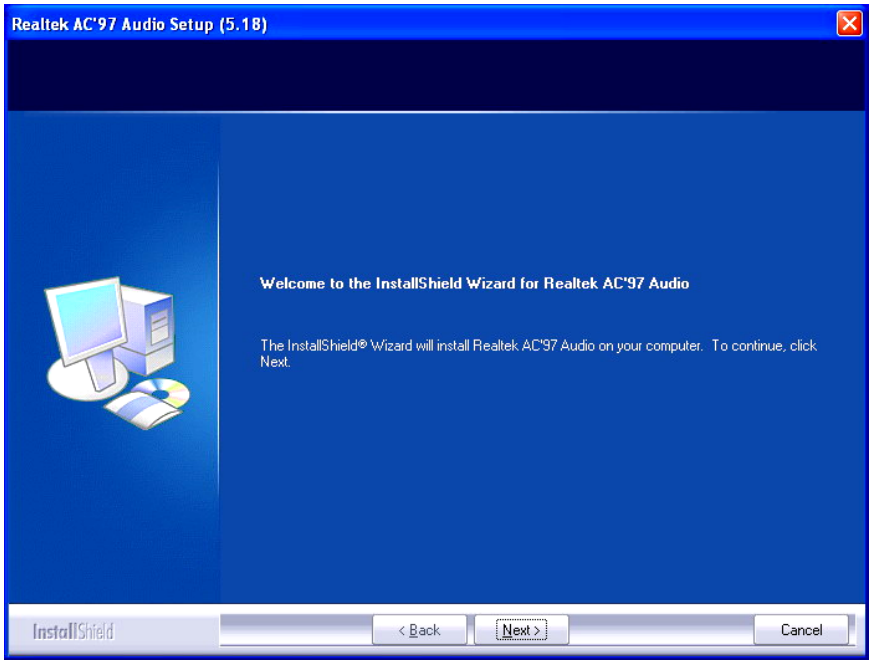

Figure 7-7: Audio Driver Welcome Screen

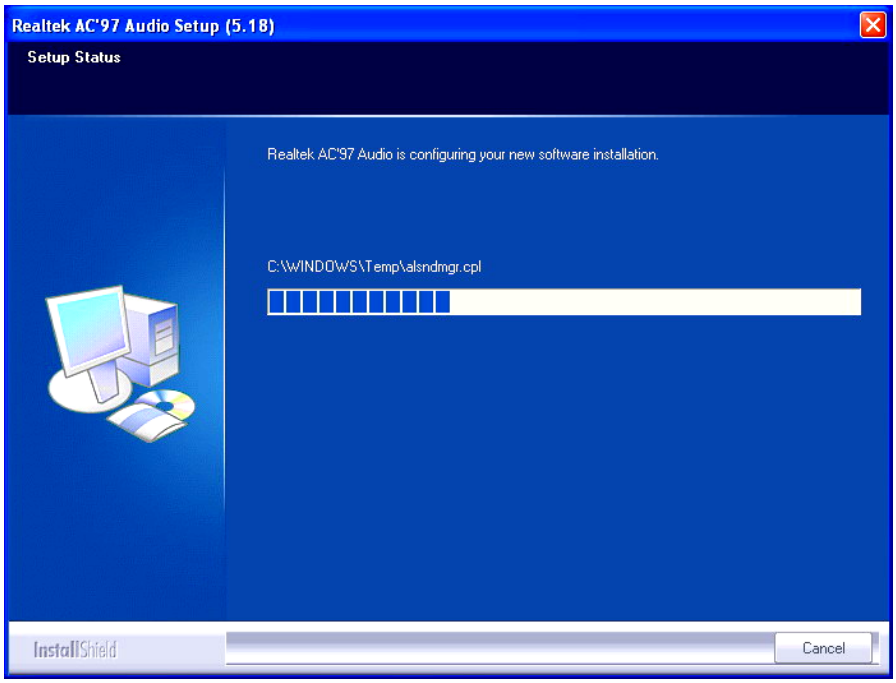

Figure 7-8: Audio Driver Software Configuration

Step 5: At this stage the "**Hardware Installation**" screen shown in **Figure 7-9** appears.

To continue the installation process, click the “**Continue Anyway**” button.

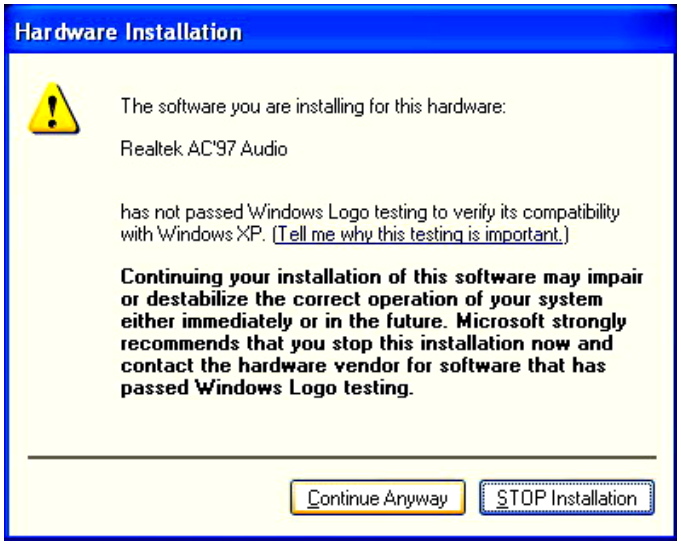

Figure 7-9: Audio Driver Digital Signal

Step 6: After the driver installation process is complete, a confirmation screen shown in **Figure 7-10** appears

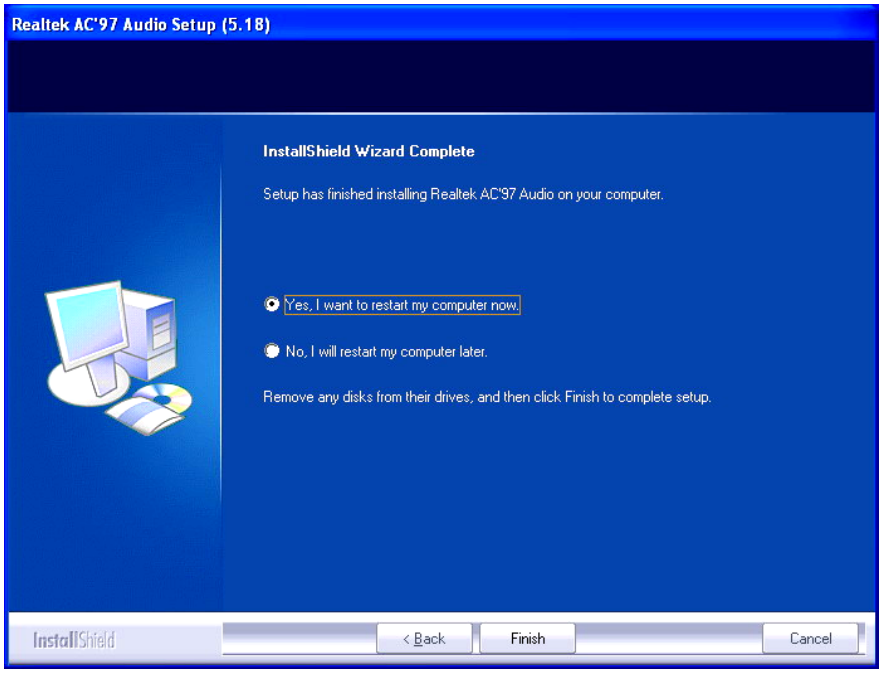

Figure 7-10: Audio Driver Installation Complete

Step 7: The confirmation screen shown in **Figure 7-10** allows user to restart the computer immediately after the installation is complete or to restart the computer later. For the settings to take effect the computer must be restarted. Once decided when to restart the computer, click the "**Finish**" button.

7.4 Intel Chipset Graphics Driver

To install the Intel Chipset Graphics driver, please follow the steps below:

Step 1: Insert the CD into the system that contains the A300. Open the **G82855GME/AGP** directory and locate the **win2k_xp1415** installation file. Once located, use the mouse to double click the icon.

Step 2: Once double clicking the Setup icon, an InstallShield Wizard screen shown in **Figure 7-11** appears.

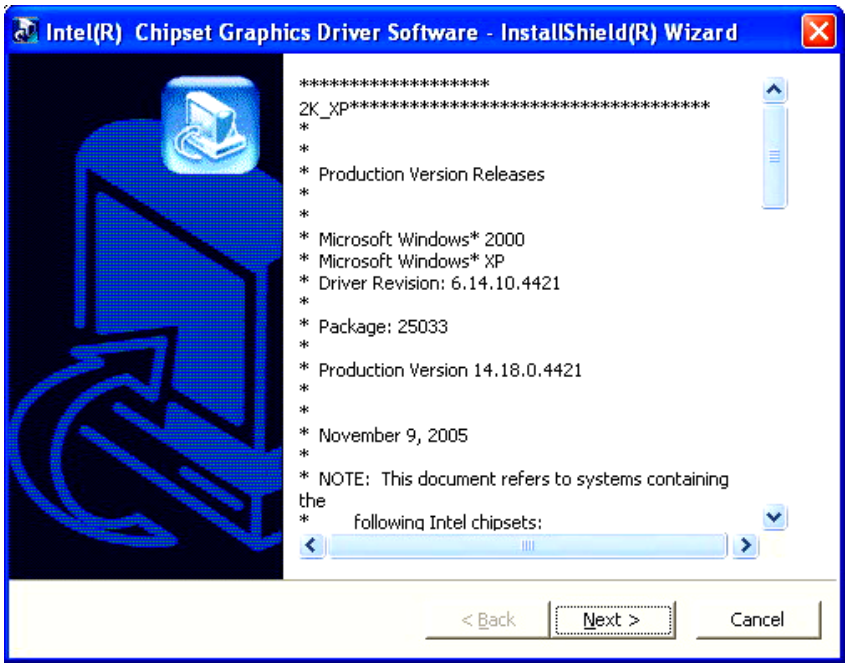

Figure 7-11: VGA Driver Installation InstallShield Wizard Screen

Step 3: To continue installing click "**Next**" and a welcome screen shown in **Figure 7-12** appears.

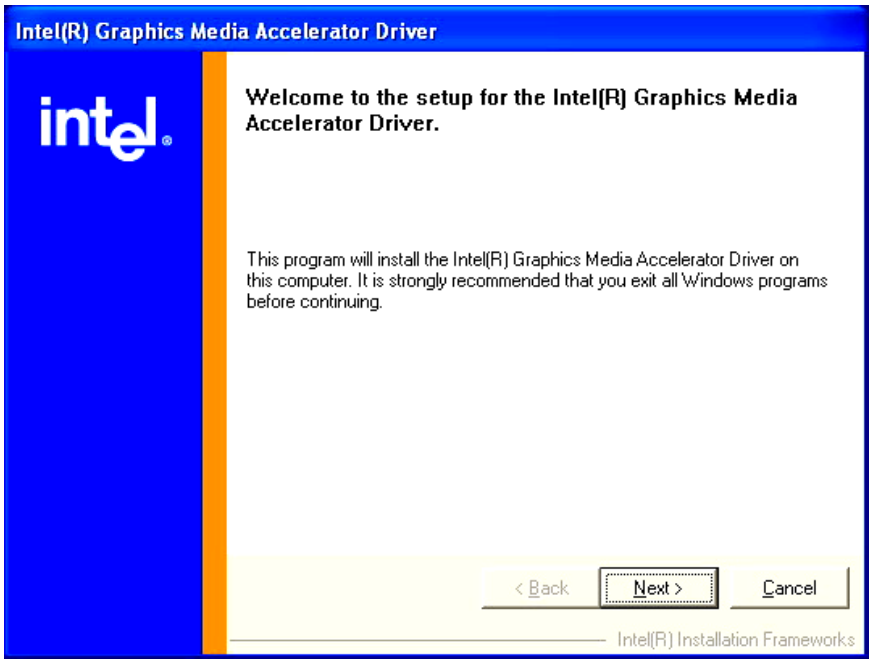

Figure 7-12: VGA Driver Welcome Screen

Step 4: To continue installing click "**Next**". After the driver installation process is complete, a confirmation screen shown in **Figure 7-13** appears.

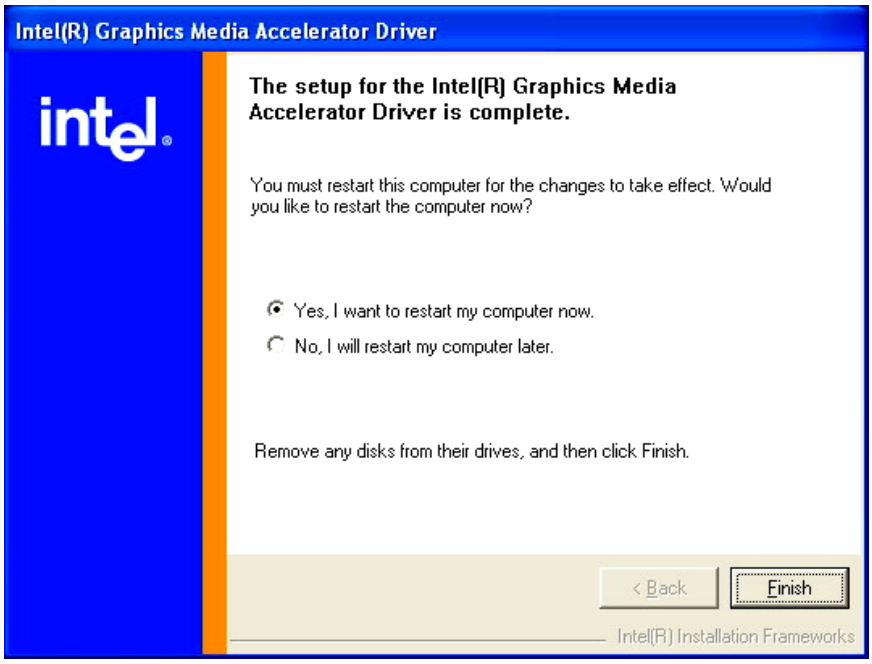

Figure 7-13: GMA Driver Installation Complete

Step 5: The confirmation screen shown in **Figure 7-13** allows user to restart the computer immediately after the installation is complete or to restart the computer later. For the settings to take effect the computer must be restarted. Once decided when to restart the computer, click the "**Finish**" button.

7.5 SATA - ALi RAID Driver Installation

CAUTION!

Because of the inherent limitations by Intel's ICH4 chipset, the ALi M5283 SATA and RAID controller is implemented as a device that requires device driver during the Windows installation process. To successfully install the device driver, please carefully read the following instructions.

The ALi driver is especially required if SATA drives are the only hard disk drives in the A300 system. Otherwise, the Windows installation program may fail to locate the hard

drives whether configuring the SATA disk drives into RAID volumes or using them as individual disk drives.

The system BIOS can identify SATA disk drives, but cannot control their operation. The separately installed driver therefore is necessary.

7.5.1 Installation Steps During Windows XP Installation

Step 1: Enable SATA ROM using the BIOS configuration utility. The process has been detailed in Appendix E.

Step 2: Locate the ALi installation driver folder within the Utility CD that came with the motherboard.

Step 3: Copy files under a sub-directory named “SATA50XX” (taking Windows XP installation as the example) to the root directory of floppy diskette (labeled driver diskette). The file names are listed below:

- disk1
- 5283096D.bin
- txtsetup.oem

Step 4: Also copy the OS option directory “win98_me”, “win_nt”, or “win_xp”, and related driver files in each directory.

Step 5: Boot from Windows installation CD-ROM (set CD-ROM as the 1st Boot Device), when the Windows XP Setup blue screen appears and prompts users to Press F6. Please press the F6 key, if third-party SCSI or RAID driver installation is needed.

Step 6: The setup program continues, later when the setup program prompts users to specify additional adapters, please press the **S** key.

Step 7: The setup program prompts user to insert the driver diskette. Please insert the driver diskette, and press **ENTER** to continue.

Step 8: The follow-up window lists out the installation choices, please select **ALi**

SATA/RAID Controller for Windows XP and press **ENTER** to continue.

Step 9: The follow-up window lists out the devices to be installed, in which selected ALi controller(s) should be included.

Step 10: Repeat step 5, but select **ALi ATA/RAID Controller** at step 7. If both controllers are installed, go to next step.

Step 11: If users want to install other devices, please operate at this time. If all devices have been successfully installed, please go to next step.

Step 12: Press **ENTER** to continue Windows XP setup.

7.5.2 Installation Steps under Existing Windows XP

After Windows XP is started, Windows system automatically finds the newly installed adapter and prompts user to install its driver. Please follow these steps to install the driver:

Step 1: When the Found New Hardware Wizard windows appear (Mass Storage Controller), select Install from a list or specify location (Advanced) and click Next to continue.

Step 2: In the follow-up window, please select "Don't search, I will choose the driver to install", then click Next to continue.

Step 3: In the follow-up window, please select SCSI and RAID controllers, and then click Next to continue.

Step 4: In the follow-up window, click Have Disk, then insert the driver diskette and type in the driver location: e.g., a CD-ROM, then click OK to continue.

Step 5: In the follow-up window, select ALi SATA/RAID Controller, then click Next to continue.

Step 6: Confirm the follow-up windows and click the Finish button to continue.

Step 7: Please "confirm" the Digital Signature Not Found window when it appears, when finished, please restart the computer.

Step 8: Repeat step 1, but select ALi ATA/RAID Controller at step 4.

Appendix

A

BIOS Options

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Appendix

B

GPIO Connection

B.1 GPIO Settings and Default Values

B.1.1 GPIO Settings

Two addresses (320h and 321h) on the LVC chipset are reserved to control the GPIO connector.

- Port 320h stores the data that is inputted to or outputted from the specified pin on the GPIO connector.
- Port 321h is the input/output setting register for each pin on the GPIO connector. If a pin outputs data, the corresponding bit is set to "0." If a pin inputs data, the corresponding bit is set to "1." The table below outlines the status of each GPIO pin.

Bit Number	Corresponding GPIO pin	GPIO N Status	
		Bit N = 0	Bit N = 1
Bit 0	GPIO 0	Output	Input
Bit 1	GPIO 1	Output	Input
Bit 2	GPIO 2	Output	Input
Bit 3	GPIO 3	Output	Input
Bit 4	GPIO 4	Output	Input
Bit 5	GPIO 5	Output	Input
Bit 6	GPIO 6	Output	Input
Bit 7	GPIO 7	Output	Input

B.1.2 Default Settings

The default settings for all the bits (Bit 0 to Bit 7) for both Port 320h and Port 321h are 00h.

Bit Number	Port 320h	Port 321h
Bit 0	00h	00h
Bit 1	00h	00h
Bit 2	00h	00h
Bit 3	00h	00h

Bit 4	00h	00h
Bit 5	00h	00h
Bit 6	00h	00h
Bit 7	00h	00h

B.2 Assembly Language Samples

B.2.1 GPIO Initialization Procedure

The following instruction set initializes one pin on the GPIO connector.

MOV	**DX, 320h**	Moves 320h into the DX data register for one of the GPIO pins
MOV	**AL, XXh**	Moves the user defined output value XXh into the low bit accumulator register AL
OUT	**DX, AL**	The content of the low bit accumulator register AL is transmitted to the address stored in the DX data register

The following instruction set initializes the input/output setting register for one pin on the GPIO connector to specify whether that pin inputs or outputs data.

MOV	**DX, 321h**	Moves 320h into the DX data register for one of the GPIO pins
MOV	**AL, YYh**	Moves the user defined output value YYh into the low bit accumulator register AL. If YY is specified as 0, the pin is an output pin. If YY is specified as 1, the pin is an input pin.
OUT	**DX, AL**	The content of the low bit accumulator register AL is transmitted to the address stored in the DX data register

B.2.2 General Purpose Output Procedure

The following instruction set is for a GPO procedure for one pin on the GPIO connector.

MOV	**DX, 320h**	Moves 320h into the DX data register for one of the GPIO pins
MOV	**AL, ZZh**	Moves the user defined output data ZZh into the low bit accumulator register AL
OUT	**DX, AL**	The ouput data in the low bit accumulator register AL is transmitted out from the address stored in the DX data register

B.2.3 General Purpose Input Procedure

The following instruction set is for a GPI procedure for one pin on the GPIO connector.

MOV	**DX, 320h**	Moves 320h into the DX data register for one of the GPIO pins
IN	**AL, DX**	The input data in the low bit accumulator register AL is transmitted to the address stored in the DX data register

Appendix

C

Watchdog Timer

NOTE:

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

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

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

INT 15H:

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

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

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

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

NOTE:

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

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

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

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

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Appendix

D

Address Mapping

D.1 Address Map

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

Table D-1: IO Address Map

D.2 1st MB Memory Address Map

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

Table D-2: 1st MB Memory Address Map

D.3 IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	ACPI
IRQ2	Available	IRQ10	COM4/COM6
IRQ3	COM2	IRQ11	COM3/COM5
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	SMBus Controller	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Available	IRQ15	Secondary IDE

Table D-3: IRQ Mapping Table

D.4 DMA Channel Assignments

Channel	Function
0	Available
1	Available
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Table D-4: IRQ Mapping Table

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Appendix

E

External AC'97 Audio CODEC

E.1 Introduction

The motherboard comes with an on-board Realtek ALC203 CODEC. Realtek ALC203 is a 16-bit, full duplex AC'97 Rev. 2.3 compatible audio CODECwith a sampling rate of 48KHz.

E.1.1 Accessing the AC'97 CODEC

The CODEC is accessed through a connector on the A300 motherboard. Connect the audio kit to the connector.

E.1.2 Driver Installation

The driver installation has been described in **Chapter 7**

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

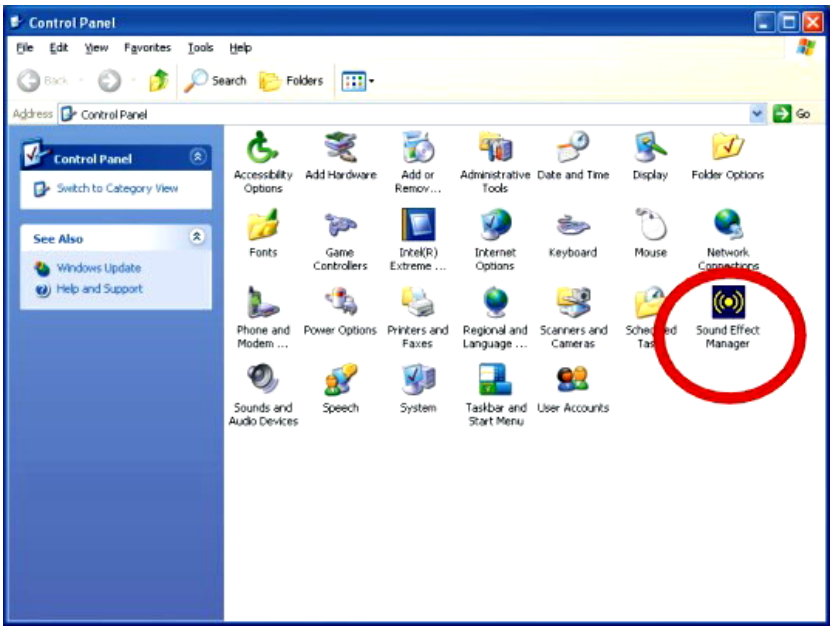

Figure E-1: Sound Effect Manager Control Panel

E.2 Sound Effect Configuration

E.2.1 Accessing the Sound Effects Manager

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

Step 9: Install the audio CODEC driver.

Step 10: Click either:

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

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

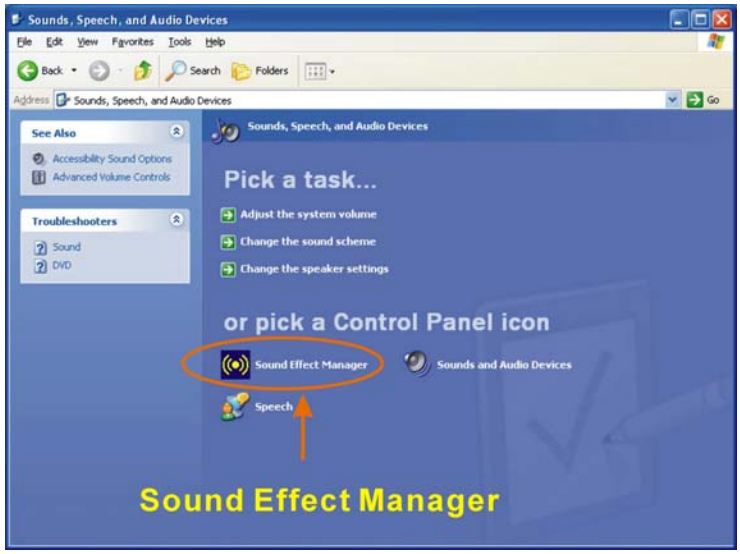

Figure E-3: Sound Effect Manager Icon [Control Panel]

Step 11: The sound effect manager appears.

Note:

The Sound Effect Manager shown above 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.

E.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**.

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.

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