User's Manual

2807740

Version 1.0

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NOTE:

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact a Global American, Inc. sales representative, please send an email to salesinfo@globalamericaninc.com.

The items listed below should all be included in the 2807740 motherboard package.

- 1 x 2807740 Single Board Computer
- 1 x IDE Cable
- 2 x RS-232 Cable
- 1 x RS-232 Cable
- 1 x RS-422/485 Cable
- 2 x SATA Cable
- 1 x SATA Power Cable
- 1 x I/O Shielding
- 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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Glossary

AC'97	Audio Codec 97
ACPI	Advanced Configuration and Power Interface
APM	Advanced Power Management
ARMD	ATAPI Removable Media Device
ASKIR	Shift Keyed Infrared
ATA	Advanced Technology Attachments
BIOS	Basic Input/Output System
CFII	Compact Flash Type 2
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
Codec	Compressor/Decompressor
COM	Serial Port
DAC	Digital to Analog Converter
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DIO	Digital Input/Output
DMA	Direct Memory Access
EIDE	Enhanced IDE
EIST	Enhanced Intel SpeedStep Technology
FDD	Floppy Disk Drive
FDC	Floppy Disk Connector
FFIO	Flexible File Input/Output
FIFO	First In/First Out
FSB	Front Side Bus
IrDA	Infrared Data Association
HDD	Hard Disk Drive
IDE	Integrated Data Electronics
I/O	Input/Output
ICH5	I/O Controller Hub 5
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 2807740 Overview

The 2807740 motherboard is an LGA775 Intel® Pentium® 4/Intel® Pentium® D/Intel® Celeron® D CPU platform with an Intel® 865G Express Chipset and Intel® I/O Controller Hub 5 (ICH5) Southbridge. The 2807740 has a maximum front side bus (FSB) frequency of 800MHz, supports up to 4GB of dual channel 333/400MHz DDR RAM and comes with VGA, PS/2 keyboard/mouse, COM port, parallel port, serial port and audio interfaces as well as a Realtek/Intel® (GbE). The 2807740 supports up to two serial ATA (SATA 3Gb/s) hard disk drives and up to eight USB 2.0 devices.

1.1.1 2807740 Features

Some of the 2807740 features are listed below.

- RoHS compliant
- Support for the following CPUs:
  - LGA775 Intel® Pentium® 4
  - LGA775 Intel® Pentium® D
  - LGA775 Intel® Celeron® D
- Integrated Intel® Extreme 2 graphics engine
- Maximum FSB of 800MHz
- Four 184-pin dual channel 333/400MHz DDR SDRAM DIMMs support up to 4GB of memory
- High performance Realtek or Intel® Gigabit Ethernet chipset
- Two SATA 3Gb/s drives supported
- Four Ultra ATA 100, Ultra ATA 66 or Ultra ATA 33 IDE HDDs supported
- Eight USB 2.0 devices supported
- ATX power only
- Realtek ALC655 chipset with AC ’97 CODEC
- Expansion:
  - 1 x AGP 8X slot
  - 6 x PCI expansion slots

1.2 2807740 Overview

1.2.1 2807740 Overview Photo

The 2807740 has a wide variety of internal and external peripheral connectors. The peripheral connectors are connected to devices including storage devices, display devices and parallel communications devices. A labeled photo of the peripheral connectors is shown in **Figure 1-1**.

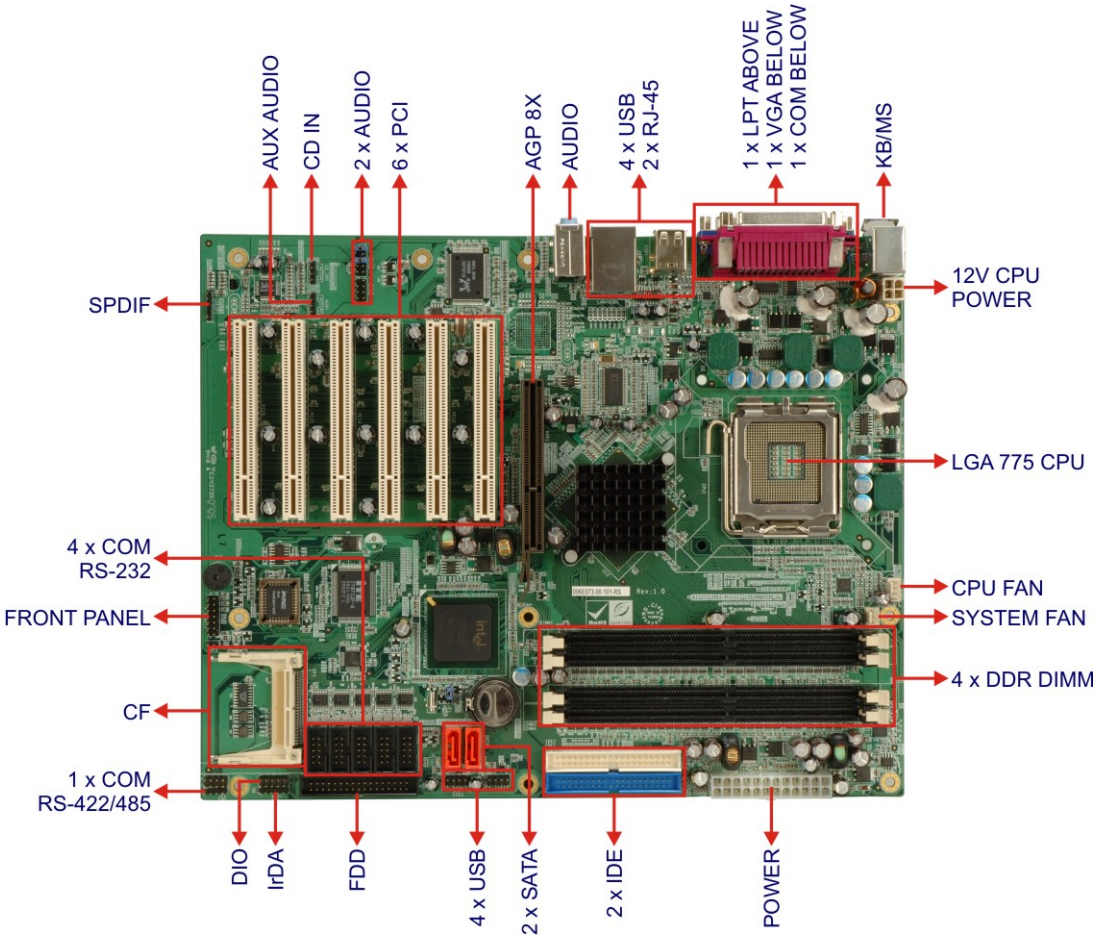

Figure 1-1: 2807740 Overview

1.2.2 2807740 Peripheral Connectors and Jumpers

The 2807740 has the following on-board connectors:

- 1 x 12V power connector
- 1 x AGP slot
- 1 x ATX power connector
- 1 x Audio connector
- 1 x Aux. Audio connector
- 1 x CD-in connector
- 1 x CompactFlash slot
- 4 x DDR DIMM slots
- 1 x DIO connector
- 2 x Fan connectors
- 1 x Floppy disk connector
- 1 x Front panel connector
- 2 x IDE disk drive connectors
- 1 x Infrared interface connector
- 6 x PCI slots
- 2 x Serial ATA (SATA) drive connectors
- 7 x Serial port connectors
- 1 x SPDIF connector
- 4 x USB connectors

The 2807740 has the following external peripheral interface connectors on the board rear panel:

- 1 x PS/2 dual keyboard/mouse connector
- 1 x parallel port connector
- 1 x serial port connector
- 1 x VGA connector
- 1x Ethernet connectors
- 4 x USB connectors
- 3 x audio connectors

The 2807740 has the following on-board jumpers:

- CF Master/Slave Selection
- Clear CMOS
- COM3 RS-422/485 Selection

1.2.3 Technical Specifications

2807740 technical specifications are listed in **Table 1-1**. Detailed descriptions of each specification can be found in Chapter 2.

Specification	2807740
Form Factor	ATX motherboard
System CPU	LGA775 Intel® Pentium® 4 (up to 3.8GHz) LGA775 Intel® Pentium® D (up to 3.6GHz) LGA775 Intel® Celeron® D (up to 3.6GHz) (Hyperthreading Technology supported)
Front Side Bus	533MHz or 800MHz
System Chipset	Northbridge: Intel® 865G Express Southbridge: Intel® ICH5
Memory	Four 184-pin DDR DIMM slots support four 4GB, 333MHz or 400MHz DDR SDRAM DIMMs
Display	Intel integrated graphics accelerator
BIOS	AMI BIOS
Audio	Realtek ALC655 with AC'97 codec
LAN	- Intel® 82541 GbE chipset (IMBA-8650GN) with ASF2.0 support - Realtek 8110SC GbE chipset (IMBA-8650GR)
COM	Six on-board serial ports: Five on-board RS-232 serial ports One on-board RS-232/422/485 serial port (by jumper setting)
USB 2.0	Eight USB 2.0 devices supported

Specification	2807740
IDE	Two 40-pin IDE connects up to four Ultra ATA33/66/100 devices
Floppy Disk	One FDD connector supports one floppy disk drive
SATA	Two SATA 3Gb/s drives supported
Keyboard/mouse	One PS/2 connector supports mouse and keyboard connectivity
Watchdog Timer	Software programmable 1-255 sec. by supper I/O
Power Supply	12V@8.57A, 5V@5.9A, 3.3V@0.7A, -12V@0.2A, 5VSB@0.7A (Pentium® D 3.6GHz/800 MHz CPU with 1GB DDR 400MHz)
Temperature	0ºC ~ 60ºC (32ºF ~140ºF)
Humidity (operating)	5%~95% non-condensing
Dimensions	305mm x 244mm
Weight (GW/NW)	1.2kg/0.6kg

Table 1-1: Technical Specifications

Chapter

2

Detailed Specifications

2.1 Overview

This chapter describes the specifications and on-board features of the 2807740 in detail.

2.2 Dimensions

2.2.1 Board Dimensions

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

- **Length**: 305 mm
- **Width**: 244 mm

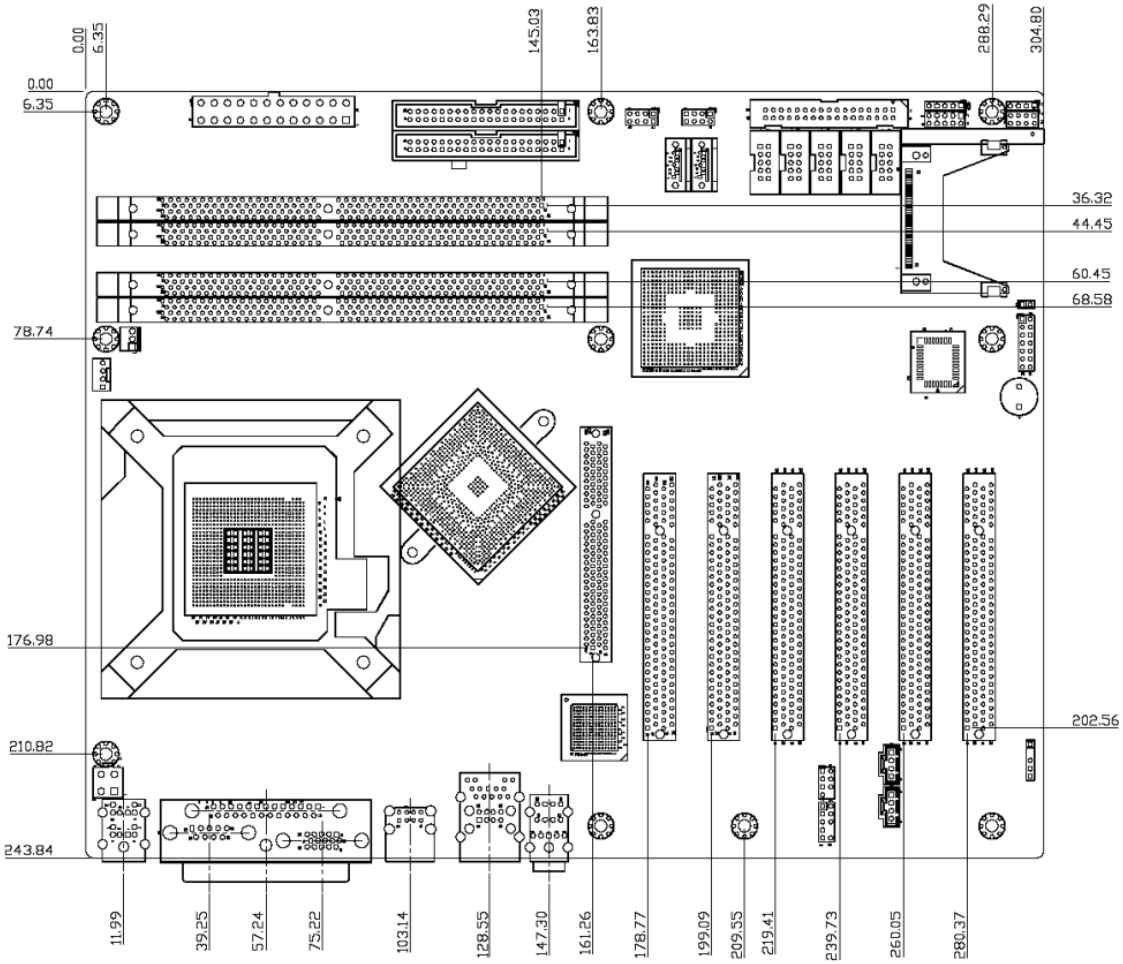

Figure 2-1: 2807740 Dimensions (mm)

2.2.2 External Interface Panel Dimensions

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

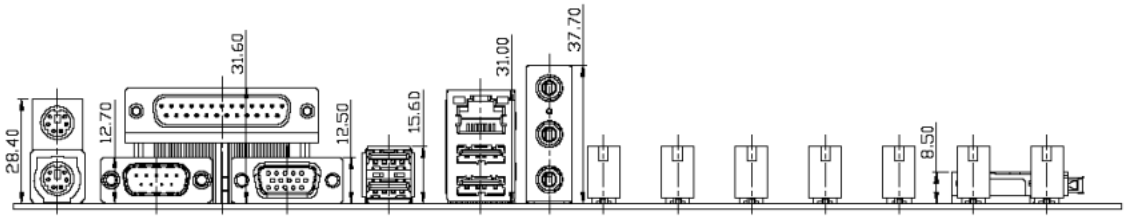

Figure 2-2: External Interface Panel Dimensions (mm)

2.3 Data Flow

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

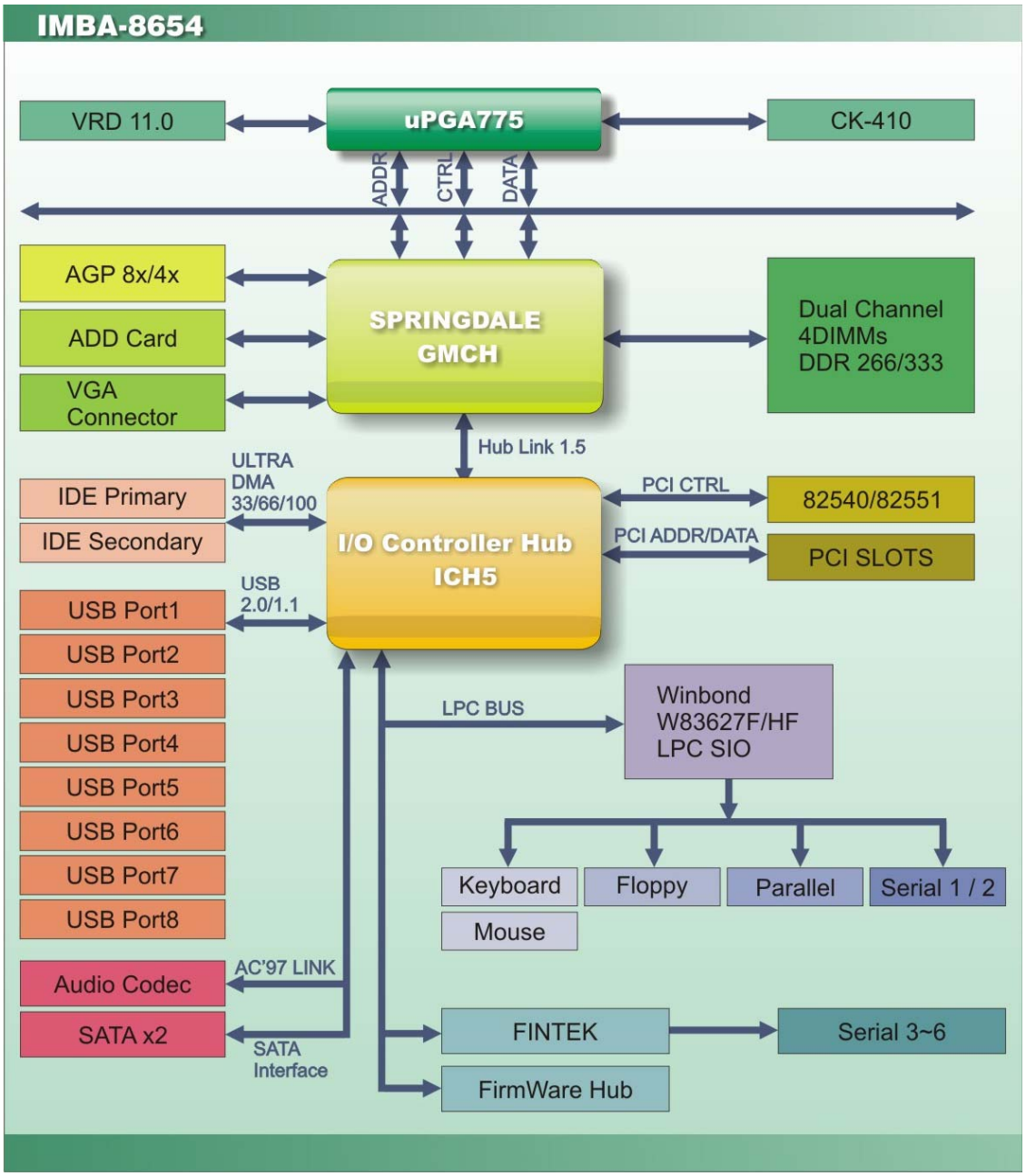

Figure 2-3: Data Flow Block Diagram

2.4 Compatible Processors

2.4.1 CPU Overview

LGA775 Intel® Pentium® 4, Intel® Pentium® D and Intel® Celeron® D processors can be installed on the 2807740 motherboard. The Intel® Pentium® 4 processors and the Intel® Celeron® D processors all have Intel® Extended Memory 64 Technology (Intel® EMT64T)

2.4.2 Supported Intel® Pentium® 4 Processors

Specifications for the compatible Intel® Pentium® 4 processors are listed in **Table 2-1**.

CPU Speed	Bus Speed	Mfg. Tech	Cache	Package	Processor No.
3.80 GHz	800 MHz	90 nm	2 MB	LGA775	672
3.80 GHz	800 MHz	90 nm	1 MB	LGA775	570J
3.80 GHz	800 MHz	90 nm	1 MB	LGA775	571

Table 2-1: Supported Intel® Pentium® 4 Processors

2.4.3 Supported Intel® Pentium® D Processors

Specifications for the compatible Intel® Pentium® D processors are listed in **Table 2-2**.

CPU Speed	Bus Speed	Mfg. Tech	Cache	Package	Processor No.
3.60 GHz	800 MHz	65 nm	4 MB	LGA775	960
3.40 GHz	800 MHz	65 nm	4 MB	LGA775	950
3.40 GHz	800 MHz	65 nm	4 MB	LGA775	945

Table 2-2: Supported Intel® Pentium® D Processors

2.4.4 Supported Intel® Celeron® D Processors

Specifications for the compatible Intel® Celeron® D processors are listed in **Table 2-3** below:

CPU Speed	Bus Speed	Mfg. Tech	Cache	Package	Processor No.
3.60 GHz	533 MHz	65 nm	512 KB	LGA775	365
3.46 GHz	533 MHz	65 nm	512 KB	LGA775	360
3.33 GHz	533 MHz	65 nm	512 KB	LGA775	356

Table 2-3: Supported Intel® Celeron® D Processors

2.5 Intel® 865G Northbridge Chipset

2.5.1 Intel® 865G Overview

The Intel® 865G northbridge chipset consists of a graphics and memory controller hub (GMCH). The GMCH on the Intel® 865G is interfaced to the Intel® I/O Controller Hub 5 (ICH5) through a Hub Interface (HI) chip-to-chip connection. Some of the features of the Intel® 865G are listed below.

- Host Interface Support
  - Intel® Pentium® 4 processors with 512-KB L2 cache on 0.13 micron process / Pentium 4 processor on 90 nm process
  - 64-bit FSB frequencies of 400 MHz (100 MHz bus clock), 533 MHz (133 MHz bus clock), and 800 MHz (200 MHz bus clock). Maximum theoretical BW of 6.4 GB/s.
  - FSB Dynamic Bus Inversion on the data bus
  - 32-bit addressing for access to 4 GB of memory space
  - Hyper-Threading Technology
- System Memory Controller Support
  - Dual-channel (128 bits wide) DDR memory interface
  - Single-channel (64 bits wide) DDR operation supported
  - Symmetric and asymmetric memory dual-channel upgrade supported
  - 128-Mb, 256-Mb, 512-Mb technologies implemented as x8, x16 devices
  - Up to 4 GB system memory
  - Supports up to 16 simultaneously-open pages (four per row) in dual-channel mode and up to 32 open pages in single-channel mode
  - DDR (Double Data Rate type 1) Support
    - Supports maximum of two DDR DIMMs per channel, single-sided and/or double-sided
    - Supports DDR266, DDR333, DDR400 DIMM modules
    - Supports DDR channel operation at 266 MHz, 333 MHz and 400 MHz with a Peak BW of 2.1 GB/s, 2.7 GB/s, and 3.2GB/s respectively per channel
- Communication Streaming Architecture (CSA) Interface
  - Gigabit Ethernet (GbE) communication devices supported on the CSA interface
  - Supports 8-bit Hub Interface 1.5 electrical/transfer protocol
  - 266 MB/s point-to-point connection
  - 1.5 V operation
- Hub Interface (HI)
  - Supports Hub Interface 1.5 electrical/transfer protocol
  - 266 MB/s point-to-point connection to the ICH5
  - 66 MHz base clock
  - 1.5 V operation

- AGP Interface Support
  - A single AGP device
  - AGP 3.0 with 4X / 8X AGP data transfers and 4X / 8X fast writes, respectively
  - 32-bit 4X/8X data transfers and 4X/8X fast writes
  - Peak BW of 2 GB/s.
  - AGP 2.0 1X/4X AGP data transfers and 4X fast writes
- Integrated Graphics
  - Core Frequency of 266 MHz
  - VGA/UMA Support
  - High Performance 3D Setup and Render Engine
  - 2D Graphics
  - Video DVD/PC-VCR
  - Video Mixer Render Supported (VMR)
  - Bi-Cubic Filter Support
- Display Interfaces
  - AGP signals multiplexed with two DVO ports (ADD card supported)
  - Multiplexed Digital Display Channels (Supported with ADD Card)
- Analog Display Support
  - 350 MHz Integrated 24-bit RAMDAC
  - Up to 2048x1536 @ 75 Hz refresh
  - Simultaneous Display options with digital display
- Digital Display Channels
  - Two channels multiplexed with AGP
  - 165 MHz dot clock on each 12-bit interface
  - Can combine two, 12-bit channels to form one, 24-bit interface Supports flat panels up to 2048x1536 @ 60 Hz or digital CRT/HDTV at 1920x1080 @ 85 Hz
  - Supports Hot Plug and Display
  - Supports LVDS, TMDS transmitters or TV-out encoders
  - ADD card utilizes AGP connector
  - Three Display Control interfaces (I2C/DDC) multiplexed on AGP

2.5.2 Intel® 865G Memory Support

The Intel® 865G supports four, 1GB, 333/400MHz dual channel DDR SDRAM DIMMs. Four 184-pin memory sockets on the 2807740 enable a maximum of 4GB of memory to be installed on the system. The memory sockets are shown in **Figure 2-4**.

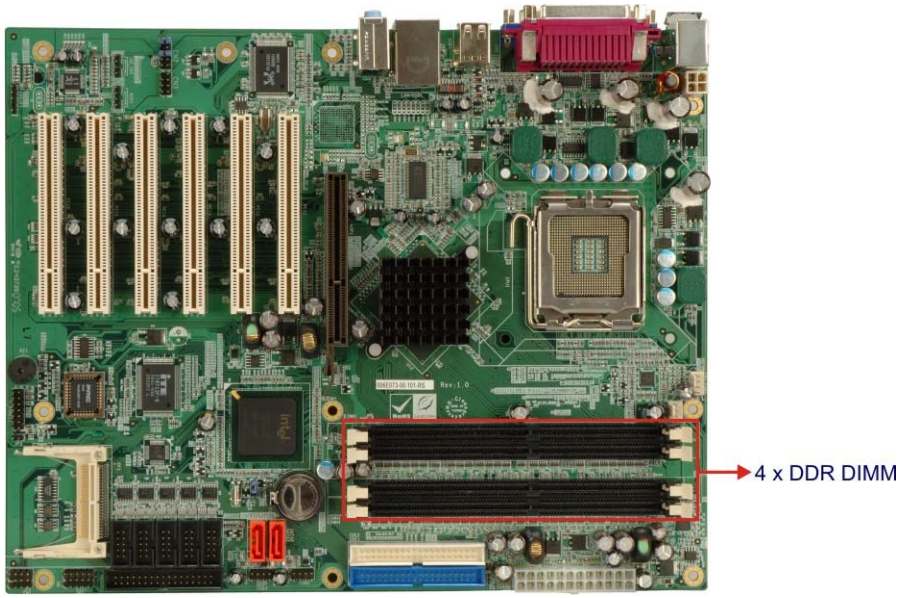

Figure 2-4: 184-pin DIMM Sockets

2.5.3 Intel® 865G Integrated Graphics

Some of the features of the Intel® 865G integrated graphics accelerator are listed below.

- Core Frequency of 266 MHz
- VGA/UMA Support
- High Performance 3D Setup and Render Engine
  - Setup matching processor geometry delivery rates
  - Triangle Lists, Strips and Fans Support
  - Indexed Vertex and Flexible Vertex Formats
  - Vertex Cache
  - Pixel Accurate Fast Scissoring and Clipping Operation
  - Backface Culling Support
  - Supports D3D and OGL Pixelization Rules

- Anti-aliased Lines Support
- Sprite Points Support

- High-Quality/Performance Texture Engine
  - Per Pixel Perspective Corrected Texture Mapping
  - Single Pass Quad Texture Compositing
  - Enhanced Texture Blending Functions
  - 12 Level of Detail MIP Map Sizes from 1x1 to 2Kx2K
  - All texture formats including 32-bit RGBA and 8-bit palettes
  - Alpha and Luminance Maps
  - Texture Color-keying/ChromaKeying
  - Bilinear, Trilinear and Anisotropic MIP-Mapped Filtering
  - Cubic Environment Reflection Mapping
  - Embossed and DOT3 Bump-Mapping
  - DXTn Texture Decompression
  - FXT1 Texture Compression
  - Non-power of 2 Texture
  - Render to Texture
- 2D Graphics
  - Optimized 256-bit BLT Engine
  - Alpha Stretch Blitter
  - Anti-aliased Lines
  - 32-bit Alpha Blended Cursor
  - Color Space Conversion
  - Programmable 3-Color Transparent Cursor
  - 8-, 16- and 32-bit Color
  - ROP Support
- 3D Graphics Rendering Enhancements
  - Flat and Gouraud Shading
  - Color Alpha Blending For Transparency
  - Vertex and Programmable Pixel Fog and Atmospheric Effects
  - Color Specular Lighting
  - Z Bias Support
  - Dithering
  - Line and Full-scene Anti-Aliasied
  - 16- and 24-bit Z Buffering

- 16- and 24-bit W Buffering
- 8-bit Stencil Buffering
- Double and Triple Render Buffer Support
- 16- and 32-bit Color
- Destination Alpha
- Vertex Cache
- Maximum 3D Resolution Supported: 1600x1200x32 @ 85Hz
- Fast Clear Support

- Video DVD/PC-VCR
  - Hardware Motion Compensation for MPEG2
  - Dynamic Bob and Weave Support for Video Streams
  - Synclock Display and TV-out to video source
  - Source Resolution up to 1280x720 with 3-vertical taps and 1920x1080 with 2-vertical taps
  - Software DVD At 30 fps, Full Screen
  - Supports 720x480 DVD Quality Encoding at low processor Utilization for PC-VCR or home movie recording and editing
  - Video Overlay
  - Single High Quality Scalable Overlay
  - Multiple Overlay Functionality provided via Stretch Blitter (PIP, Video Conferencing, etc.)
  - 5-tap Horizontal, 3-tap Vertical Filtered Scaling
  - Independent Gamma Correction
  - Independent Brightness/Contrast/Saturation
  - Independent Tint/Hue Support
  - Destination Color-keying
  - Source ChromaKeying
  - Maximum Source Resolution: 720x480x32
  - Maximum Overlay Display Resolution: 2048x1536x32
- Video Mixer Render Supported (VMR)
- Bi-Cubic Filter Support

2.6 Intel® ICH5 Southbridge Chipset

2.6.1 Intel® ICH5 Overview

The ICH5 southbridge chipset on the 2807740 has the features are listed below.

- PCI Local Bus Specification, Revision 2.3 with support for 33 MHz PCI operations.
- PCI slots (supports up to 6 Req/Gnt pairs)
- ACPI power management logic support
- Enhanced DMA controller, interrupt controller, and timer functions
- Integrated IDE controller supports Ultra ATA100/66/33
- Integrated SATA controller
- USB host interface with support for eight USB ports; four UHCI host controllers; one EHCI high-speed USB 2.0 host controller
- Integrated LAN controller
- Integrated ASF controller
- System Management Bus (SMBus) Specification, Version 2.0 with additional support for I2C devices
- Supports Audio Codec ‘97 Component Specification, Version 2.3 (also known as AC ’97 v2.3 Specification) link for audio and telephony codecs (up to seven channels)
- Low Pin Count (LPC) interface
- Firmware Hub (FWH) interface support

2.6.2 Intel® ICH5 Audio Codec ’97 Controller

The Audio Codec ’97 (AC’97) controller integrated into the ICH5 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 optional 5.1 channel or 7.1 channel 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

2.6.3 Intel® ICH5 IDE Interface

The integrated IDE interface on the ICH5 southbridge supports up to four 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:

- **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

Table 2-4 shows the supported HDD specifications.

Specification	Ultra ATA/100	Ultra ATA/66	Ultra ATA/33
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 2-4: Supported HDD Specifications

2.6.4 Intel® ICH5 Low Pin Count (LPC) Interface

The ICH5 LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH5 is connected to the following components:

- BIOS chipset
- Super I/O chipset

2.6.5 Intel® ICH5 PCI Interface

The PCI interface on the ICH5 is compliant with the PCI Revision 2.3 implementation. Some of the features of the PCI interface are listed below.

- PCI Revision 2.3 compliant
- 33MHz
- 5V tolerant PCI signals (except PME#)
- Integrated PCI arbiter supports up to seven PCI bus masters

Three of the seven PCI bus masters are interfaces to the following onboard components:

- PCI slot connector on the bottom of the motherboard
- Broadcom PCI Express GbE interface
- ITE PCI-to-ISA bridge interface

The remaining four PCI bus masters are reserved for four PCI expansion boards that can be installed on the backplane.

2.6.6 Intel® ICH5 Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818A real time clock (RTC) integrated into the ICH5. The RTC operates on a 3V battery and 32.768KHz crystal. The RTC keeps track of the time and stores system data even when the system is turned off.

2.6.7 Intel® ICH5 SATA Controller

The integrated SATA controller on the ICH5 southbridge supports four SATA drives with independent DMA operations. SATA controller specifications are listed below.

- Supports four SATA drives
- Supports 1.5Gb/s data transfer speeds
- Supports Serial ATA Specification, Revision 1.0a and supports several optional sections of the Serial ATA II: Extensions to Serial ATA 1.0 Specification, Revision 1.0 (AHCI support is required for some elements).

2.6.8 Intel® ICH5 USB Controller

Up to eight high-speed, full-speed or low-speed USB devices are supported by the ICH5. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ICH5 integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the four ICH5 integrated Universal Host Controller Interface (UHCI) controller.

2.7 PCI Bus Components

2.7.1 PCI Bus Overview

The PCI bus controller on the ICH5 southbridge is compliant with PCI Revision 2.3 specifications and has a 33MHz PCI clock. The components listed below are all connected to the PCI bus:

- PCI slots on the motherboard
- GbE interface

2.7.2 Realtek GbE interface

The Realtek 8110SC GbE controller is a 10/100/1000BASE-T Ethernet LAN controller. The Realtek 8110SC combines a triple-speed IEEE 802.3 compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, a 32-bit PCI bus controller, and embedded memory. Some of the Realtek 8110SC controller features are listed below:

- Integrated 10/100/1000 transceiver
- Auto-Negotiation with Next Page capability
- Supports PCI rev.2.3, 32-bit, 33/66MHz
- Supports CLKRUNB and MinPCI vl.0
- 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. IP Layer 2 Priority Encoding
- Supports IEEE 802. IQ VLAN tagging
- Serial EEPROM
- 3.3V signaling, 5V PCI I/O tolerant
- Transmit/Receive FIFO support
- Supports power down/link down power saving
- Supports PCI Message Signaled Interrupt (MSI)

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 Winbond W83697HG Super I/O chipset is connected to the ICH5 southbridge through the LPC bus. The Winbond W83697HG 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, DPM and ACPI Compliant
- Hardware Monitor
- Fan Speed Controller
- Two 16C550 UARTs for serial port control
- One IEEE 1284 Parallel Port
- Floppy Disk Controller
- Supports IrDA and ASKIR protocols
- 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 LPC Interface

The LPC interface on the Super I/O complies with the Intel® Low Pin Count Specification Rev. 1.0. The LPC interface supports both LDRQ# and SERIRQ protocols as well as PCI PME# interfaces.

2.8.3.2 Super I/O 16C550 UARTs

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

- Two standard serial ports
- IrDa 1.0 and ASKIR protocols
- SPP, BPP, EPP and ECP compatible parallel port
- 48 programmable general purpose I/O ports

2.8.3.3 Super I/O Hardware Monitor

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

2.8.3.4 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.

2.8.3.5 Super I/O Parallel Port

The Super I/O parallel port (LPT) supports standard mode, enhanced mode and high-speed mode parallel port devices. The LPT is compliant with the following LPT modes.

- Standard mode
  - Bi-directional SPP compliant
- Enhanced mode
  - EPP, IEEE 1284 compliant
- High-speed mode
  - ECP, IEEE 1284 compliant

2.9 Environmental and Power Specifications

2.9.1 System Monitoring

Three thermal inputs on the 2807740 Super I/O Enhanced Hardware Monitor the following temperatures:

- CPU Temperature
- System Temperature #1
- System Temperature #2

Eight voltage inputs on the 2807740 Super I/O Enhanced Hardware Monitor the following voltages:

- CPU Core
- GMCH VTT
- +2.50V
- +3.30V

- +5.00V
- +12.0V
- +1.50V
- 5VSB

The 2807740 Super I/O Enhanced Hardware Monitor also monitors the following voltages internally:

- VBAT

The 2807740 Super I/O Enhanced Hardware Monitor also monitors the following fan speeds:

- CPU Fan speed
- System Fan speed

The values for the above environmental parameters are all recorded in the BIOS Hardware Health Configuration menu.

2.9.2 Operating Temperature and Temperature Control

The maximum and minimum operating temperatures for the 2807740 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 2-5 shows the power consumption parameters for the 2807740 running with an Intel® Pentium® D 3.6GHz/800 MHz CPU with 1GB DDR 400MHz of memory.

Voltage	Current
+3.3V	0.7A
5VSB	0.7A
+5V	5.9A
+12V	8.57A
-12V	0.2A

Table 2-5: Power Consumption

Chapter

3

Unpacking

3.1 Anti-static Precautions

WARNING!

Failure to take ESD precautions during the installation of the 2807740 may result in permanent damage to the 2807740 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 2807740. Dry climates are especially susceptible to ESD. It is critical that the following anti-static precautions are strictly adhered to whenever handling the 2807740 or any other electrical component.

- ***Wear an anti-static wristband*** - Wearing a simple anti-static wristband can help to prevent ESD from damaging the 2807740.
- ***Self-grounding*** - Touch a grounded conducting material before handling and periodically while handling the 2807740.
- ***Use an anti-static pad*** - When configuring the 2807740, place it on an antic-static pad to reduce the possibility of ESD damage.
- ***Only handle the edges of the 2807740*** - When handling the 2807740, hold it by its edges.

3.2 Unpacking

3.2.1 Unpacking Precautions

When the 2807740 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 2807740 does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

3.3 Unpacking Checklist

NOTE:

If any components listed in the checklist below are missing, do not proceed with the installation. Contact the GLOBAL AMERICAN, INC. reseller or vendor the 2807740 was purchased from or contact an GLOBAL AMERICAN, INC. sales representative directly by sending an email to www.globalamericaninc.com.

3.3.1 Package Contents

The 2807740 is shipped with the following components:

Quantity	Item and Part Number	Image
1	2807740	
1	ATA 66/100 flat cable	

Quantity	Item and Part Number	Image
2	Dual RS-232 cable	
1	RS-232 cable	
1	RS-422/485 cable	
2	SATA cables	
1	SATA power cable	
1	I/O Shielding	
1	Mini jumper Pack	
1	Quick Installation Guide	
1	Utility CD	

Table 3-1: Package List Contents

3.3.2 Optional Components

The following optional components are available from GLOBAL AMERICAN, INC..

Item and Part Number	Image
CPU cooling kit (P/N: 2107695)	
FDD cable	
Dual USB cable	

Table 3-2: Optional Components

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Chapter

4

Connector Pinouts

4.1 Peripheral Interface Connectors

Section 4.1.1 shows peripheral interface connector locations. **Section 4.1.2** lists all the peripheral interface connectors seen in **Section 4.1.1**.

4.1.1 2807740 Layout

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

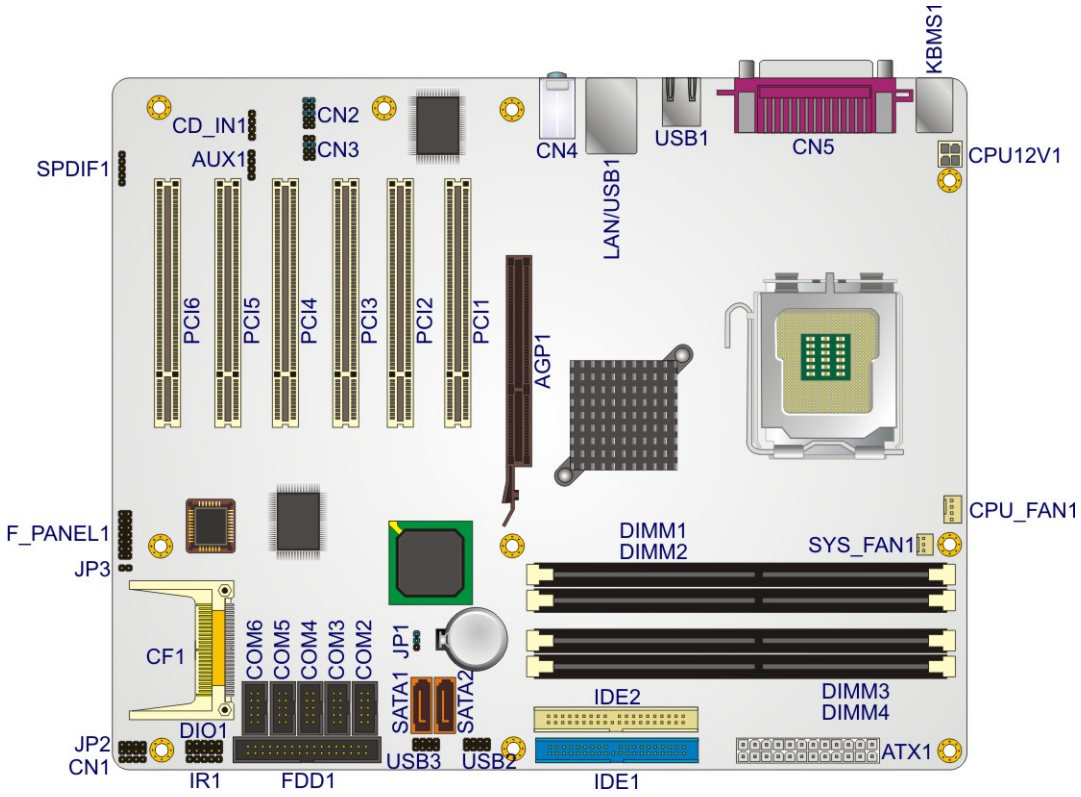


Figure 4-1: Connector and Jumper Locations

4.1.2 Peripheral Interface Connectors

Table 4-1 shows a list of the peripheral interface connectors on the 2807740. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
+12V ATX power connector	4-pin header	CPU12V1
AGP slot	66-pin AGP 8X slot	AGP1
ATX power connector	24-pin header	ATX1
Audio connector	8-pin header	CN3
Auxiliary audio connector	4-pin header	AUX1
CD-in connector	4-pin header	CD_IN1
CompactFlash connector	50-pin CF slot	CF1
Digital input/output connector	10-pin header	DIO1
Fan connector - CPU	4-pin wafer	CPU_FAN1
Fan connector - System	3-pin wafer	SYS_FAN1
Floppy disk drive connector	34-pin box header	FDD1
Front panel connector	14-pin header	F_PANEL1
Front Panel audio connector	10-pin header	CN2
IDE Interface connector	40-pin box header	IDE1
IDE Interface connector	40-pin box header	IDE2
Infrared connector	5-pin header	IR1
PCI slot	124-pin PCI slot	PCI1
PCI slot	124-pin PCI slot	PCI2
PCI slot	124-pin PCI slot	PCI3
PCI slot	124-pin PCI slot	PCI4
PCI slot	124-pin PCI slot	PCI5
PCI slot	124-pin PCI slot	PCI6
SATA drive connector	7-pin SATA	SATA1
SATA drive connector	7-pin SATA	SATA2
Serial port connector (RS-232)	10-pin box header	COM2
Serial port connector (RS-232)	10-pin box header	COM4
Serial port connector (RS-232)	10-pin box header	COM5

Connector	Type	Label
Serial port connector (RS-232)	10-pin box header	COM6
Serial port connector (RS-232/422/485)	10-pin box header	COM3
Serial port connector (RS-422/485)	4-pin header	CN1
SPDIF connector	5-pin header	SPDIF1
USB connector	8-pin header	USB2
USB connector	8-pin header	USB3

Table 4-1: Peripheral Interface Connectors

4.1.3 External Peripheral Interface Panel Connectors

Table 4-2 lists the external peripheral interface panel connectors on the 2807740. Detailed descriptions of these connectors can be found in.

Connector	Type	Label
Keyboard/Mouse	PS/2	KBMS1
Parallel port connector	DB-25 (female)	CN5
VGA connector	DB-15 (female)	CN5
Serial connector	DB-9 (male)	CN5
USB connector	Dual USB port connector	USB1
Ethernet/USB connector	RJ-45/USB port combo connector	LAN/USB1
Audio connector	3 x Audio jacks	LAN2

Table 4-2: External Peripheral Interface 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 2807740.

4.2.1 ATX Power Supply Connector (4-pins)

CN Label: CPU12V1

CN Type: 4-pin ATX power connector (1x4)

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

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

The 4-pin ATX power supply connector is connected to a +12V ATX power supply.

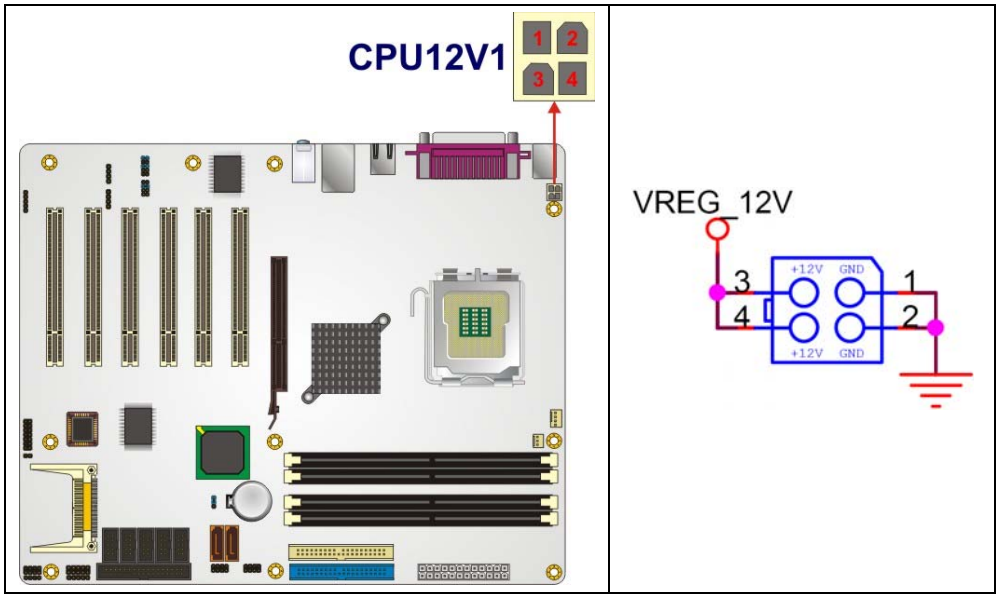


Figure 4-2: ATX Power Supply Connector (4-pins) Location

PIN	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 4-3: ATX Power Supply Connector (4-pins) Pinouts

4.2.2 AGP Connector (66-pins)

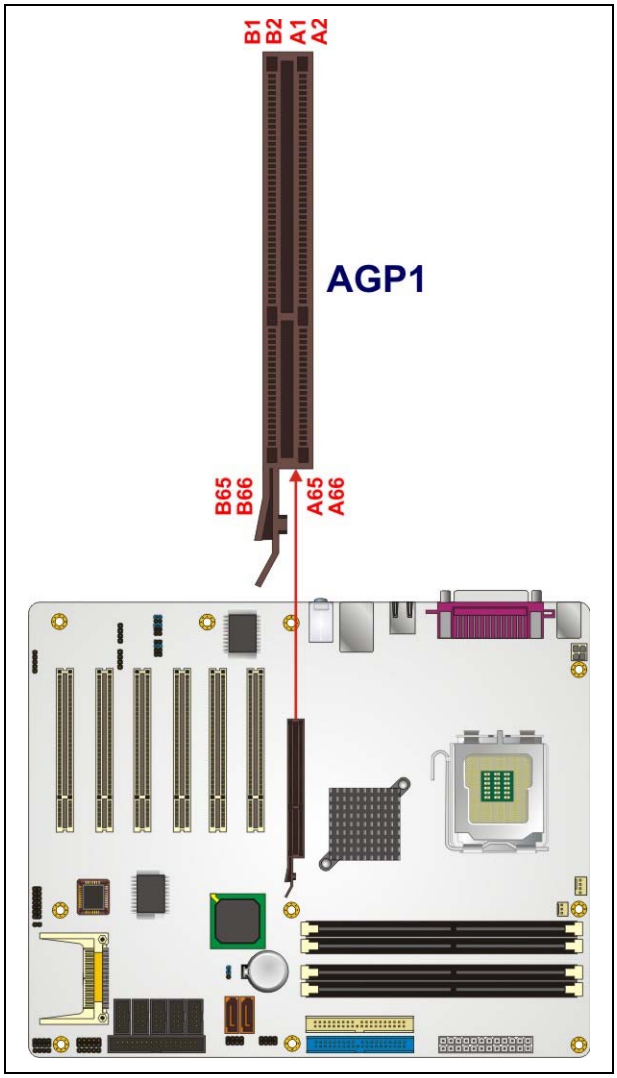
CN Label: AGP1

CN Type: 66-pin AGP slot

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

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

Use the 66-pin AGP slot to connect an AGP 3.0 compliant graphics card.



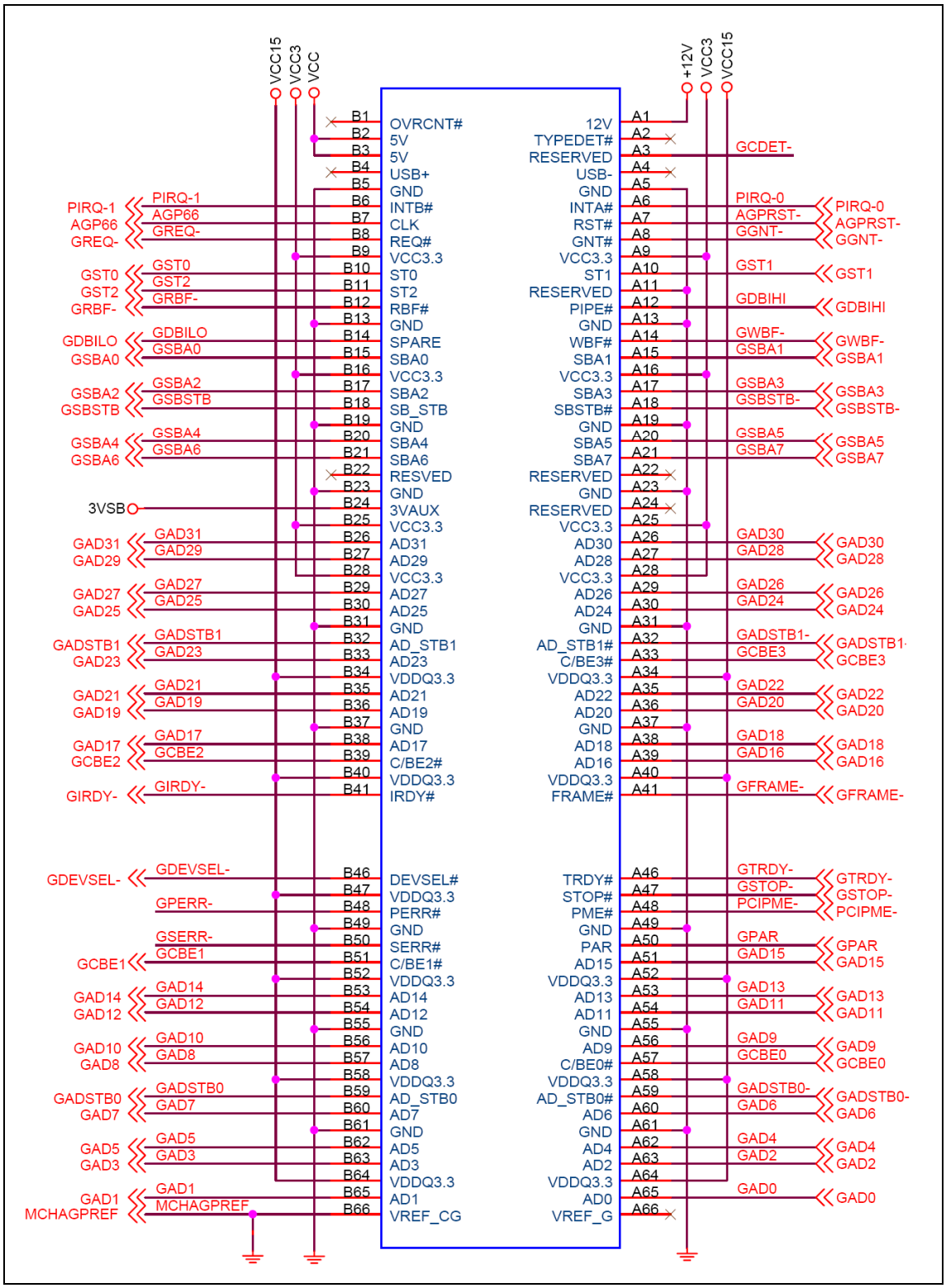


Figure 4-3: AGP Slot Location

PIN	B	A	PIN	B	A
1	OVRCNT#	12V	34	Vddq1.5	Vddq1.5
2	5.0V	TYPEDET#	35	AD21	AD22
3	5.0V	GC_DET#	36	AD19	AD20
4	USB+	USB-	37	GND	GND
5	GND	GND	38	AD17	AD18
6	INTB#	INTA#	39	C#/BE2	AD16
7	CLK	RST#	40	Vddq1.5	Vddq1.5
8	REQ	GNT	41	IRDY	FRAME
9	VCC3.3	VCC3.3	42	KEY	KEY
10	ST0	ST1	43	KEY	KEY
11	ST2	MB _DET#	44	KEY	KEY
12	RBF	DBI_HI	45	KEY	KEY
13	GND	GND	46	DEVSEL	TRDY
14	DBI_LO	WBF	47	Vddq1.5	STOP
15	SBA0#	SBA1#	48	PERR	PME#
16	VCC3.3	VCC3.3	49	GND	GND
17	SBA2#	SBA3#	50	SERR	PAR
18	SB_STBF	SB_STBS	51	C#/BE1	AD15
19	GND	GND	52	Vddq1.5	Vddq1.5
20	SBA4#	SBA5#	53	AD14	AD13
21	SBA6#	SBA7#	54	AD12	AD11
22	Reserved	Reserved	55	GND	GND
23	GND	GND	56	AD10	AD9
24	3.3V AUX	Reserved	57	AD8	C#/BE0
25	VCC3.3	VCC3.3	58	Vddq1.5	Vddq1.5
26	AD31	AD30	59	AD_STBF0	AD_STBS0
27	AD29	AD28	60	AD7	AD6
28	VCC3.3	VCC3.3	61	GND	GND
29	AD27	AD26	62	AD5	AD4
30	AD25	AD24	63	AD3	AD2
31	GND	GND	64	Vddq1.5	Vddq1.5
32	AD_STBF1	AD_STBS1	65	AD1	AD0

PIN	B	A	PIN	B	A
33	AD23	C# / BE3	66	AGPVrefcg	AGPVrefgc

Table 4-4: AGP Slot Pinouts

4.2.3 ATX Power Supply Connector (24-pins)

CN Label: PWR1

CN Type: 24-pin ATX power connector (2x12)

CN Location: See Figure 4-4

CN Pinouts: See Table 4-5

The 24-pin ATX power supply connector is connected to a ATX power supply.

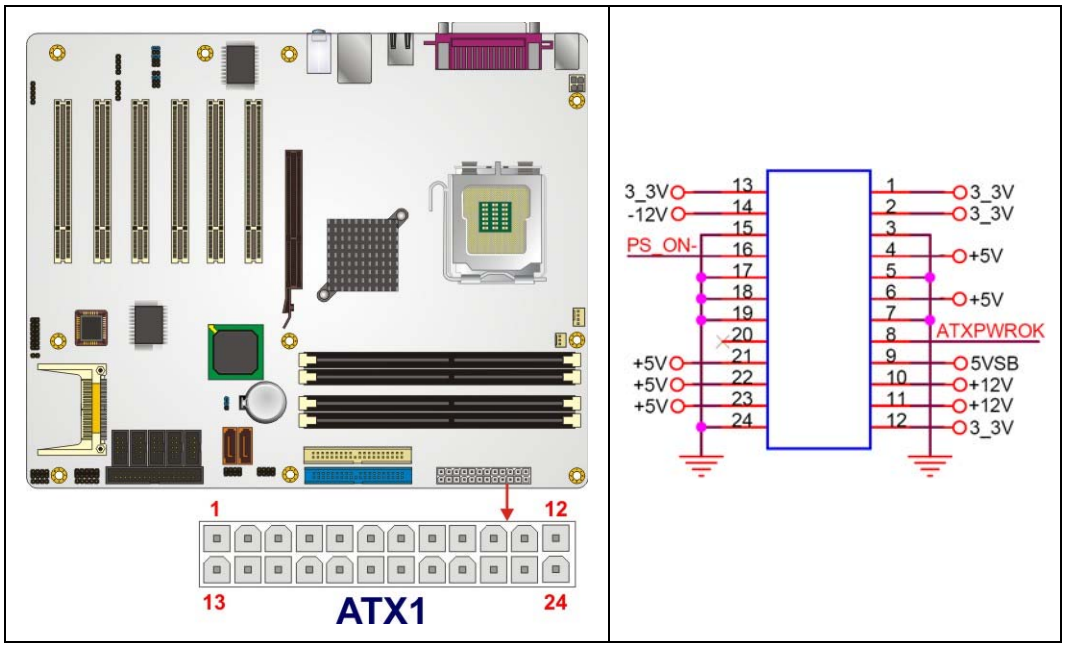


Figure 4-4: ATX Power Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	3.3V01	13	3.3V04
2	3.3V02	14	-12V
3	COM01	15	COM
4	+5V01	16	PS-ON
5	COM02	17	COM04
6	+5V02	18	COM05
7	COM03	19	COM06
8	PWR-OK	20	-5V
9	5VSB	21	+5V03
10	+12V01	22	+5V04
11	+12V02	23	+5V05
12	3.3V03	24	COM07

Table 4-5: ATX Power Connector Pinouts

4.2.4 Audio Connector (8-pin)

CN Label: CN3

CN Type: 7-pin header

CN Location: See Figure 4-5

CN Pinouts: See Table 4-6

The 8-pin audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

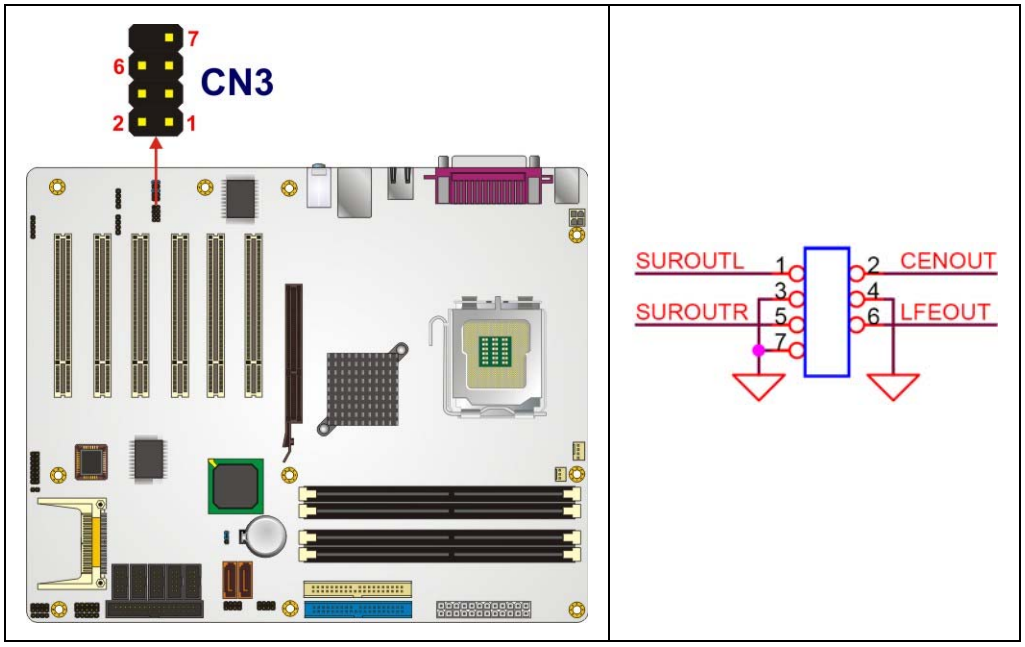


Figure 4-5: Audio Connector Location (8-pin)

PIN	DESCRIPTION	PIN	DESCRIPTION
1	SUROUTL	2	CENOUT
3	GND	4	GND
5	SUROUTL	6	LFEOUT
7	GND		

Table 4-6: Audio Connector Pinouts (8-pin)

4.2.5 Auxiliary Audio Connector (4-pin)

CN Label: AUX1

CN Type: 4-pin header

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

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

The 4-pin auxiliary audio connector provides a second audio input to the system.

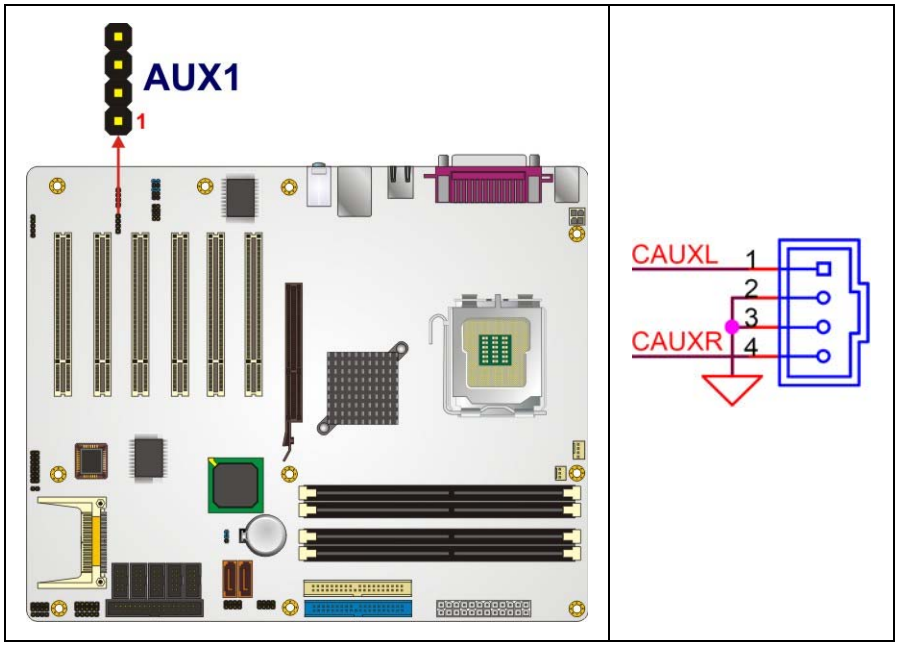


Figure 4-6: Auxiliary Audio Connector Location (4-pin)

PIN	DESCRIPTION
1	CAUXL
2	GND
3	GND
4	CAUXR

Table 4-7: Auxiliary Audio Connector Pinouts (4-pin)

4.2.6 CD-In Connector

CN Label: CD_IN1

CN Type: 4-pin header

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

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

The 4-pin CD-in connector connects a CD to the system.

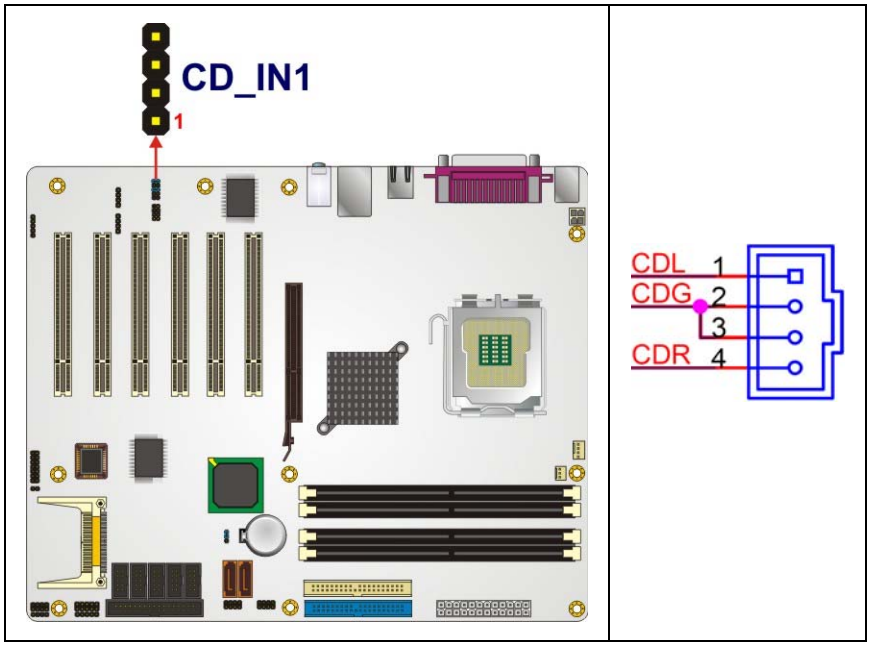


Figure 4-7: CD-In Connector

PIN	DESCRIPTION
1	CDL
2	GND
3	GND
4	CDR

Table 4-8: CD-In Connector

4.2.7 Compact Flash Socket

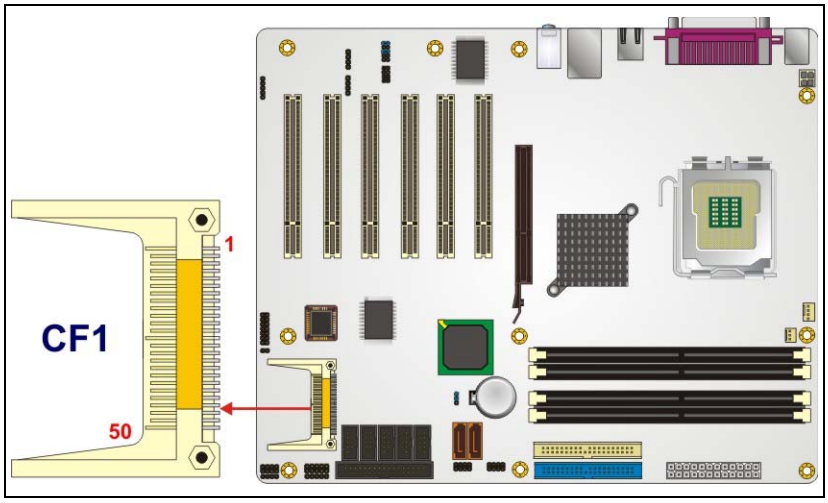
CN Label: **CF1**

CN Type: 50-pin header (2x25)

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

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

A CF Type I or Type II memory card inserts into the CF socket on the motherboard.



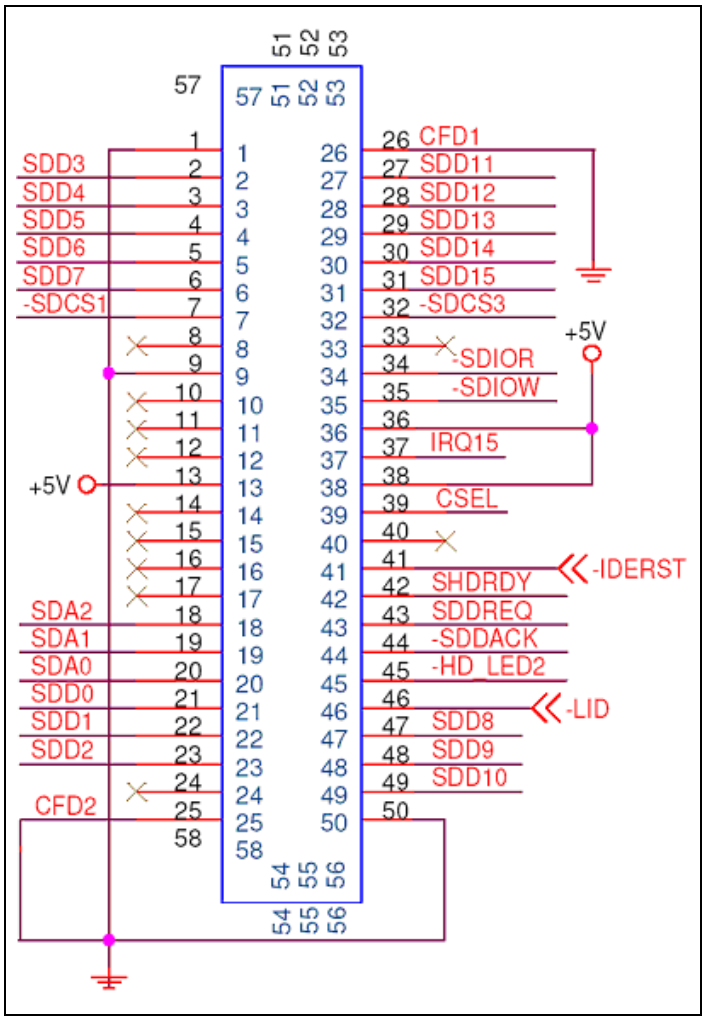


Figure 4-8: CF Card Socket Location

PIN	DESCRIPTION	PIN	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#

PIN	DESCRIPTION	PIN	DESCRIPTION
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 4-9: CF Card Socket Pinouts

4.2.8 Digital Input/Output (DIO) Connector

CN Label: DIO1

CN Type: 10-pin header (2x5)

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

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

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

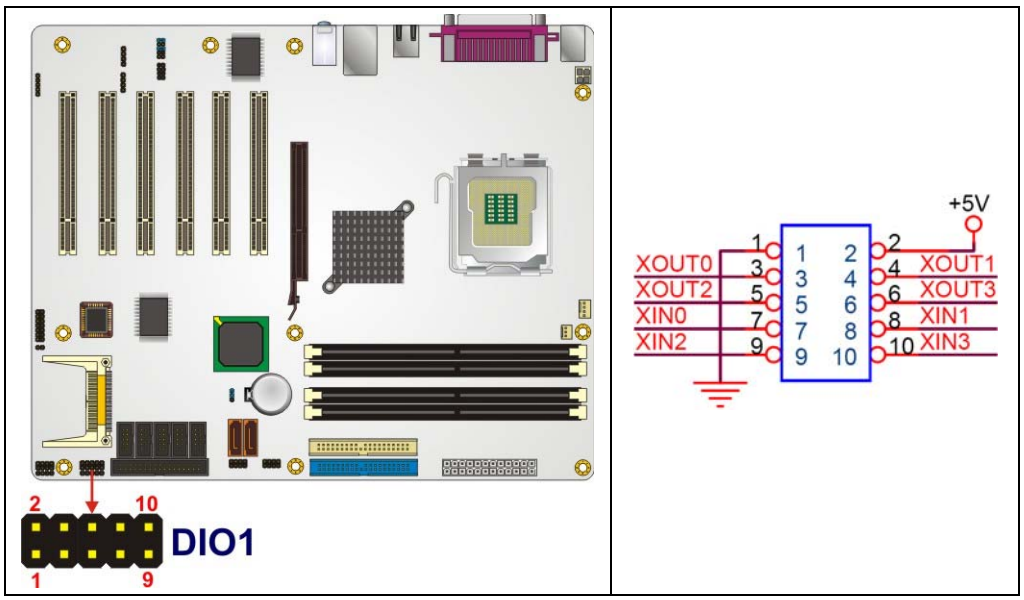


Figure 4-9: DIO Connector Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	PWR (+5V)
3	XOUT0	4	XOUT1
5	XOUT3	6	XOUT4
7	XIN0	8	XIN1
9	XIN2	10	XIN3

Table 4-10: DIO Connector Pinouts

4.2.9 Fan Connectors

CN Label:	CPU_FAN1, SYS_FAN1
CN Type:	CPU_FAN1: 4-pin wafer connector SYS_FAN1: 3-pin wafer connector
CN Location:	See **Figure 4-10**
CN Pinouts:	See **Table 4-11**

The FAN1, FAN2 and FAN3 cooling fan connectors provide a 12V current to the cooling fans. The connector has a "rotation" pin to get rotation signals from the fan and notify the system so the system BIOS can recognize the fan speed. Please note that only certain fans can issue the rotation signals.

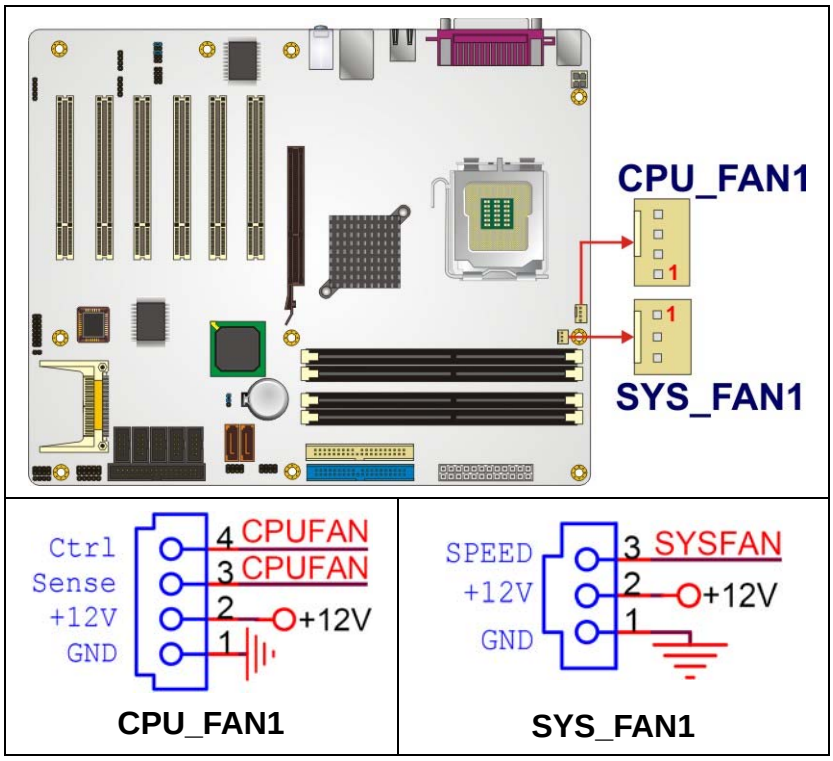


Figure 4-10: Fan Connectors Locations

PIN	CPU_FAN1	SYS_FAN1
1	GND	GND
2	+12V	+12V
3	Rotation Signal	Rotation Signal
4	Control	

Table 4-11: Fan Connectors Pinouts

4.2.10 Floppy Disk Connector

CN Label: FDD1

CN Type: 34-pin header (2x17)

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

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

The floppy disk connector is connected to a floppy disk drive.

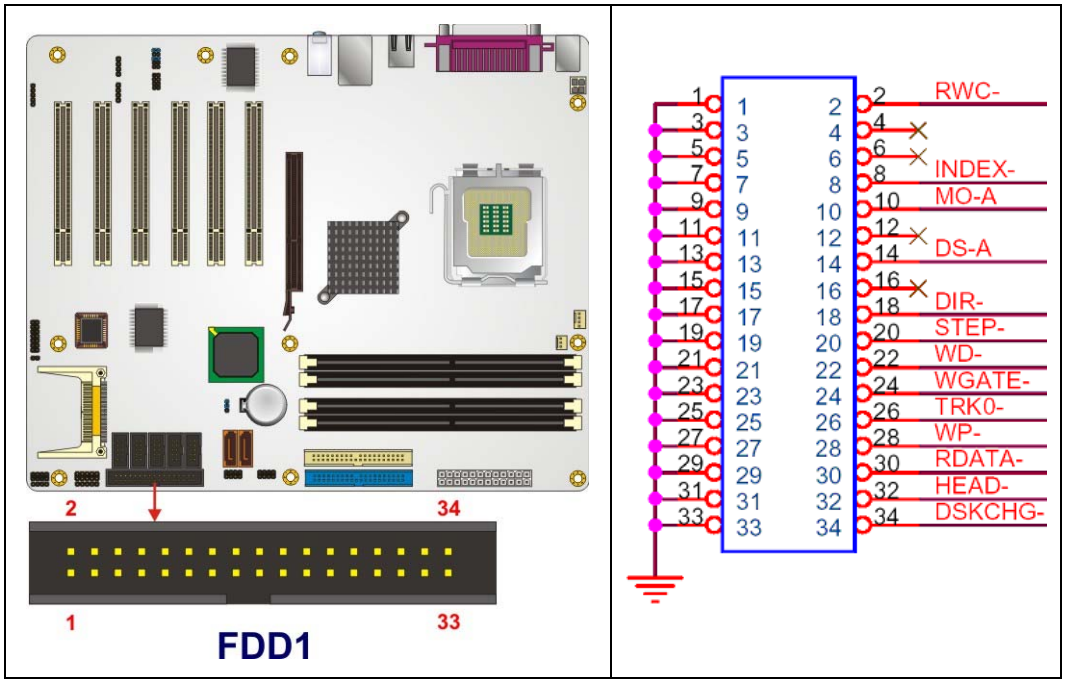


Figure 4-11: FDC Connector Location

PIN	DESCRIPTION	PIN	DESCRIPTION
1	GND	2	REDUCE WRITE
3	GND	4	N/C
5	N/C	6	N/C
7	GND	8	INDEX#
9	GND	10	MOTOR ENABLE A#
11	GND	12	DRIVE SELECT B#
13	GND	14	DRIVE SELECT A#
15	GND	16	MOTOR ENABLE B#
17	GND	18	DIRECTION#
19	GND	20	STEP#
21	GND	22	WRITE DATA#
23	GND	24	WRITE GATE#
25	GND	26	TRACK 0#
27	GND	28	WRITE PROTECT#
29	GND	30	READ DATA#
31	GND	32	SIDE 1 SELECT#
33	GND	34	DISK CHANGE#

Table 4-12: FDC Connector Pinouts

4.2.11 Front Panel Audio Connector

CN Label: CN2

CN Type: 10-pin header (2x5)

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

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

The front panel audio connector connects to external audio devices via a system's front panel audio interfaces.

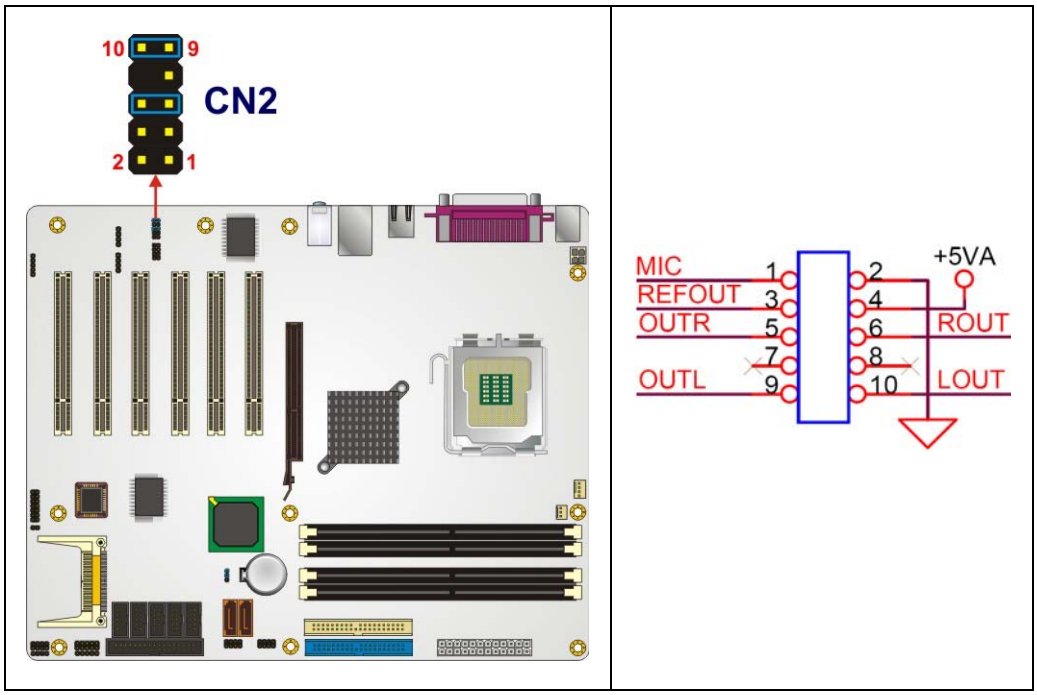


Figure 4-12: Front Panel Audio Connector Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MIC IN	2	GROUND
3	MIC BIAS	4	5V
5	LINE OUT (R)	6	LINE OUT (R) Return
7	NC		
9	LINE OUT (L)	10	LINE OUT (L) Return

Table 4-13: Front Panel Audio Connector Pinouts

4.2.12 Front Panel Connector (14-pin)

CN Label: **F_PANEL1**

CN Type: 14-pin header (2x7)

CN Location: See Figure 4-13

CN Pinouts: See Table 4-14

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

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

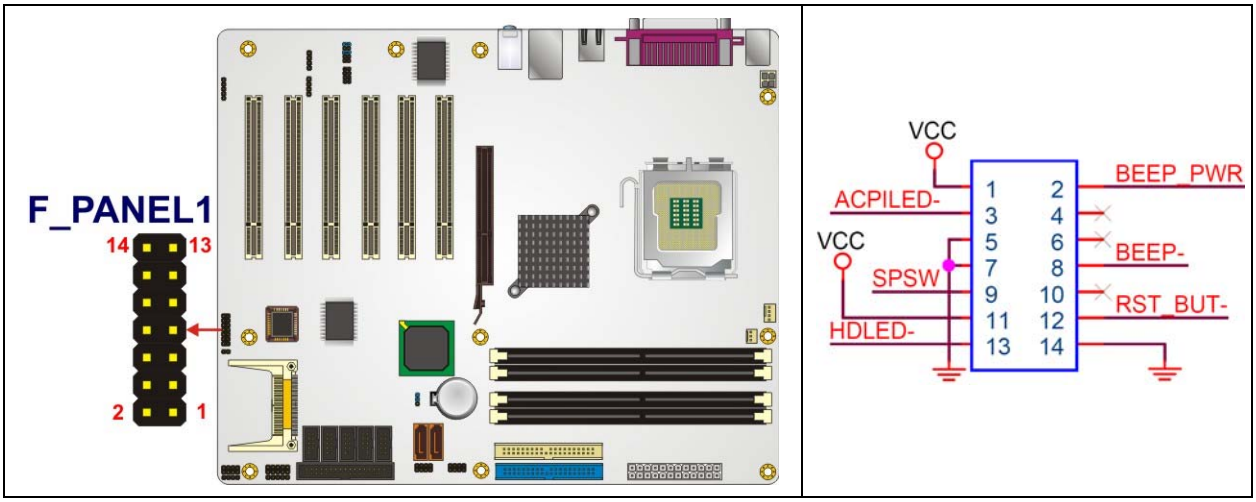


Figure 4-13: Front Panel Connector Pinout Locations

FUNCTION	PIN	DESCRIPTION
BUZZER	2	VCC
	4	NC
	6	NC
	8	BUZZER-
RESET	12	RESET
	14	GROUND
HDD LED	11	IDE_LED+
	13	IDE_LED-
POWER LED	1	PWR_LED+
	3	NC
	5	PWR_LED-
POWER BUTTON	7	GROUND
	9	POWER BUTTON

Table 4-14: Front Panel Connector Pinouts

4.2.13 IDE Connector (40-pin)

CN Label: IDE1, IDE2

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

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

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

One 40-pin IDE device connector on the 2807740 supports connectivity to two hard disk drives.

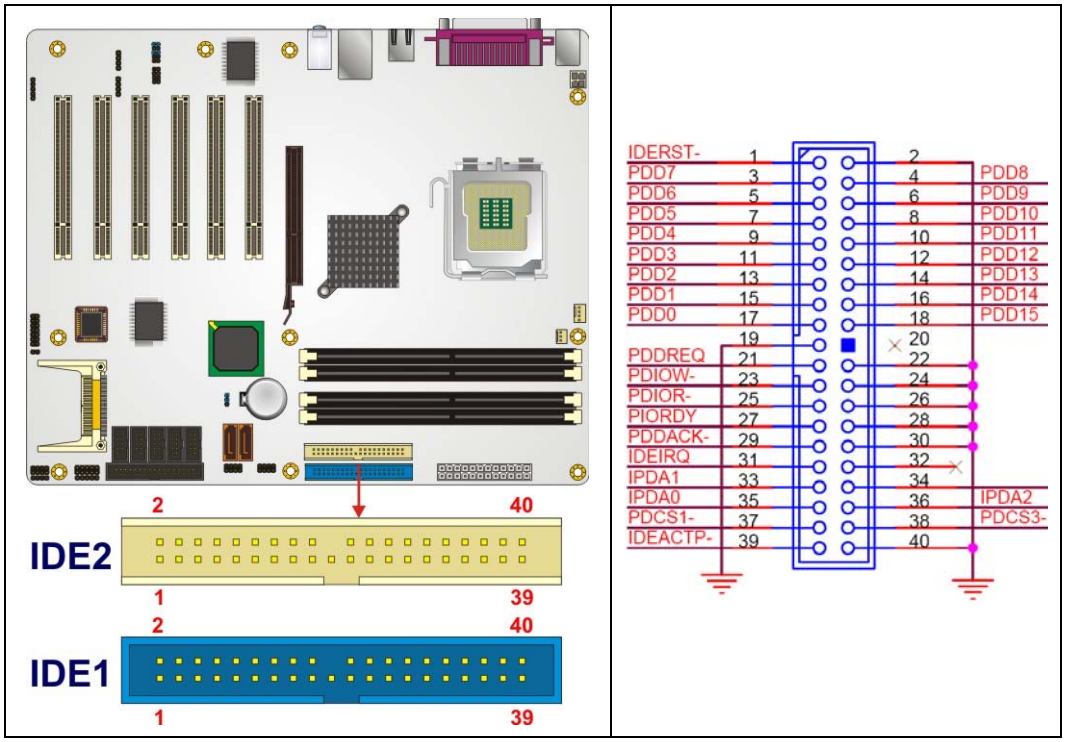


Figure 4-14: IDE Device Connector Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	IDE DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE CHRDY	28	GROUND
29	IDE DACK	30	GROUND–DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

Table 4-15: IDE Connector Pinouts

4.2.14 Infrared Interface Connector (5-pin)

CN Label: IR1

CN Type: 5-pin header (1x5)

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

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

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

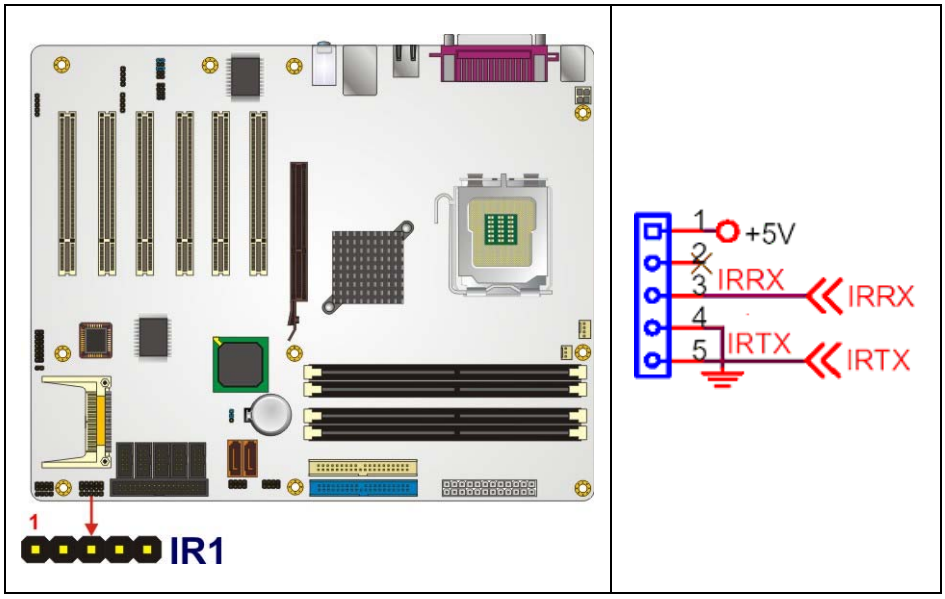


Figure 4-15: Infrared Connector Pinout Locations

PIN	DESCRIPTION
1	VCC
2	NC
3	IR-RX
4	GND
5	IR-TX

Table 4-16: Infrared Connector Pinouts

4.2.15 PCI Slot

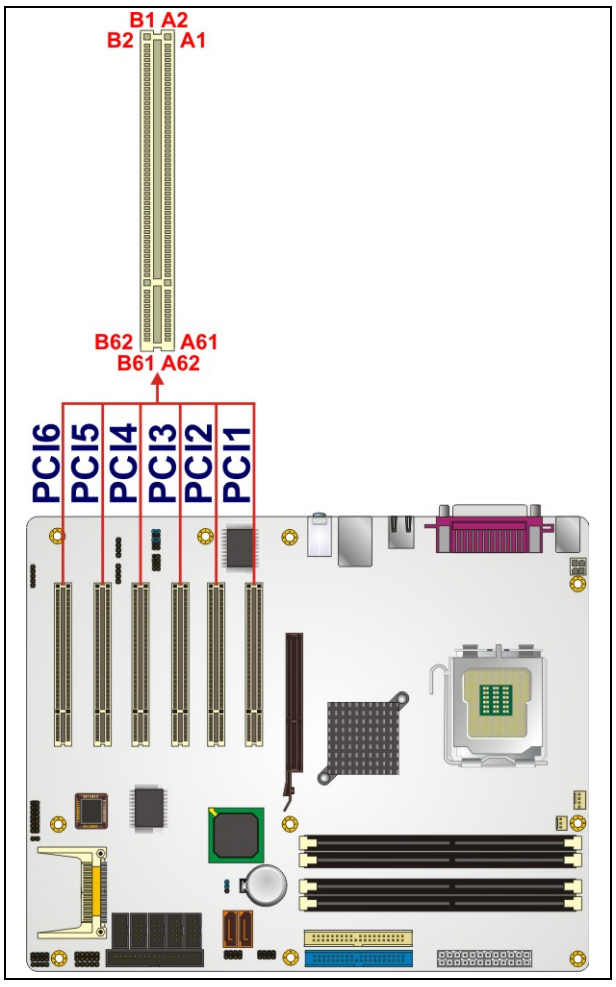
CN Label: **PCI1** to **PCI6**

CN Type: PCI Slot

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

CN Pinouts: See **Table 4-17**

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



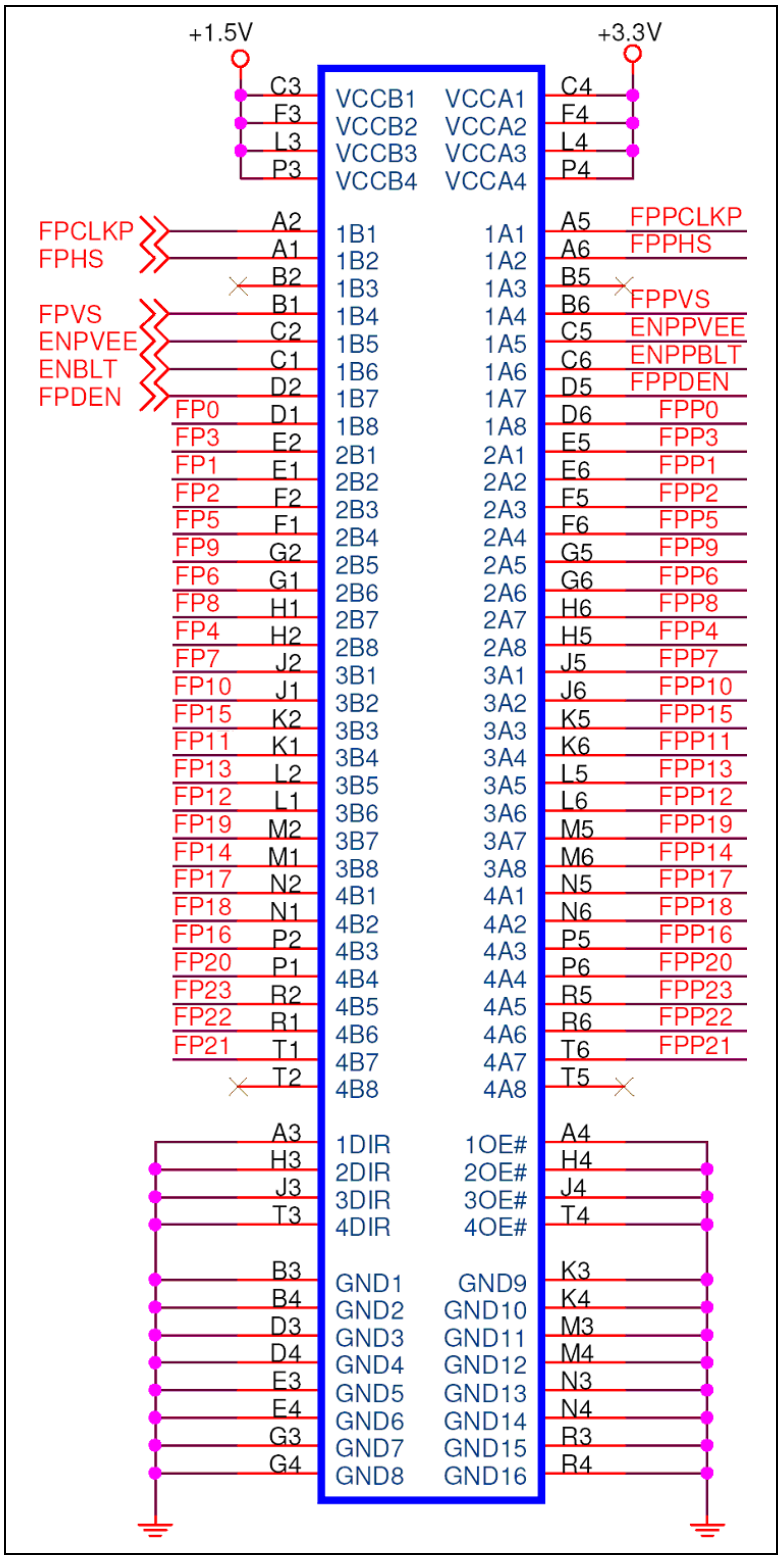


Figure 4-16: PCI Slot Location

PIN	DESCRIPTION	PIN	DESCRIPTION
A1	TRST	B1	-12V
A2	+12V	B2	TCK
A3	TMS	B3	GND
A4	TDI	B4	TDO
A5	+5V	B5	+5V
A6	INTA	B6	+5V
A7	INTC	B7	INTB
A8	+5V	B8	INTD
A9	RESERVED3	B9	PRSNT1
A10	+5V	B10	RESERVED1
A11	RESERVED4	B11	PRSNT2
A12	GND	B12	GND
A13	GND	B13	GND
A14	3.3V_AUX	B14	RESERVED2
A15	RST	B15	GND
A16	+5V	B16	CLK
A17	GNT	B17	GND
A18	GND	B18	REQ
A19	PME	B19	+5V
A20	AD30	B20	AD31
A21	+3.3V	B21	AD29
A22	AD28	B22	GND
A23	AD26	B23	AD27
A24	GND	B24	AD25
A25	AD24	B25	+3.3V
A26	IDSEL	B26	C/BE3
A27	+3.3V	B27	AD23
A28	AD22	B28	GND
A29	AD20	B29	AD21
A30	GND	B30	AD19
A31	AD18	B31	+3.3V
A32	AD16	B32	AD17

PIN	DESCRIPTION	PIN	DESCRIPTION
A33	+3.3V	B33	C/BE2
A34	FRAME	B34	GND
A35	GND	B35	IRDY
A36	TRDY	B36	+3.3V
A37	GND	B37	DEVSEL
A38	STOP	B38	GND
A39	+3.3V	B39	LOCK
A40	SDONE	B40	PERR
A41	SBO	B41	+3.3V
A42	GND	B42	SERR
A43	PAR	B43	+3.3V
A44	AD15	B44	C/BE1
A45	+3.3V	B45	AD14
A46	AD13	B46	GND
A47	AD11	B47	AD12
A48	GND	B48	AD10
A49	AD9	B49	GND
A52	C/BE0	B52	AD8
A53	+3.3V	B53	AD7
A54	AD6	B54	+3.3V
A55	AD4	B55	AD5
A56	GND	B56	AD3
A57	AD2	B57	GND
A68	AD0	B68	AD1
A59	+5V	B59	+5V
A60	REQ64	B60	ACK64
A61	+5V	B61	+5V
A62	+5V	B62	+5V

Table 4-17: PCI Slot

4.2.16 SATA Drive Connectors

CN Label: SATA1, SATA2

CN Type: 7-pin SATA drive connectors

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

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

The SATA drive connectors are connected to SATA 3Gb/s disk drives that transfer data at speeds as high as 3.0Gb/s.

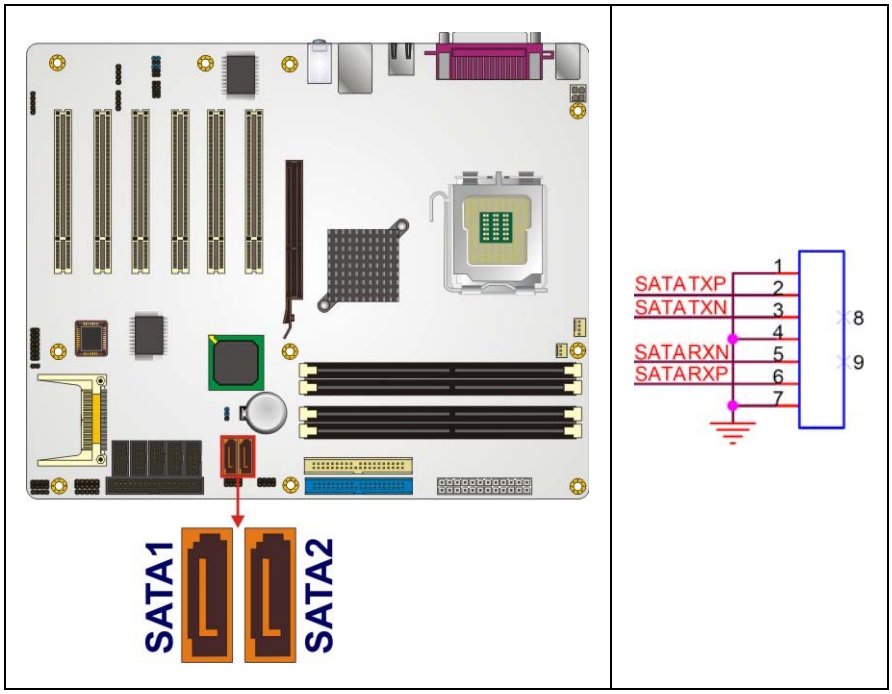


Figure 4-17: SATA Drive Connector Locations

PIN	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 4-18: SATA Drive Connector Pinouts

4.2.17 Serial Port Connector (RS-232/422/485)

CN Label:	RS-323: COM2, COM4, COM5, COM6 RS-232/422/485: COM3 (by jumper)
CN Type:	10-pin box header (2x5)
CN Location:	See **Figure 4-18**
CN Pinouts:	See **Table 4-19**

The 10-pin COM2, COM4, COM5 and COM6 serial port connectors provide RS-232 serial communications channels that can be connected to external RS-232 serial port devices. The RS-232/422/485 COM3 signal type is controlled via the JP2 jumper and is shared with the CN1 connector.

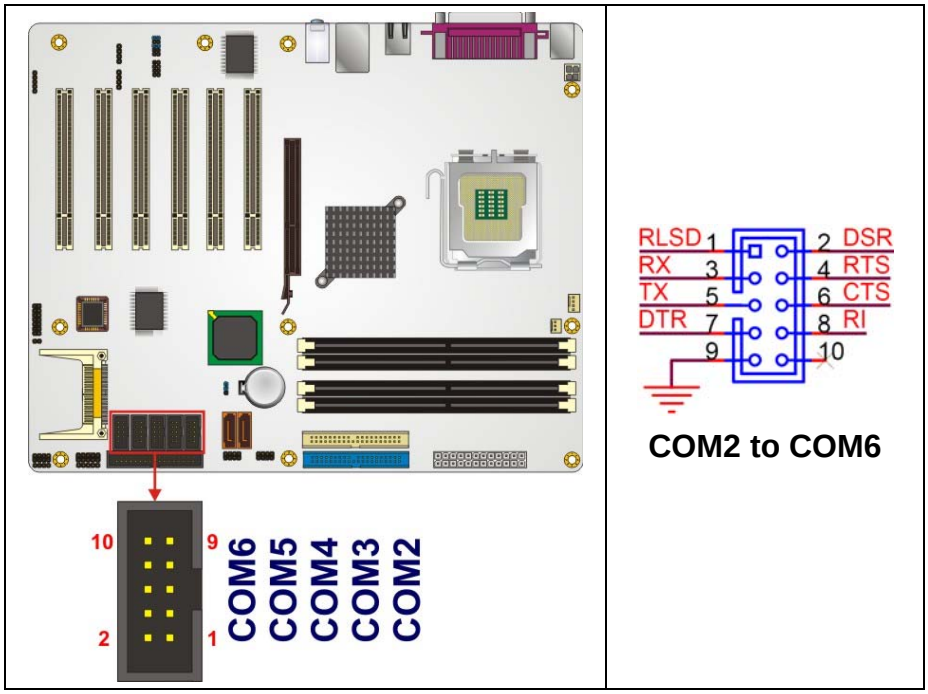


Figure 4-18: Serial Port Connector Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	DCD-	6	DSR-
2	SIN	7	RTS-

PIN	DESCRIPTION	PIN	DESCRIPTION
3	SOUT	8	CTS-
4	DTR-	9	RI
5	GND	10	GND

Table 4-19: Serial Port Connector Pinouts

4.2.18 Serial Port Connector (RS-422/485)

CN Label: CN1

CN Type: 4-pin header

CN Location: See **Figure 4-19**

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

The 4-pin serial port connector provides RS-422/485 serial communications channels that can be connected to external RS-422/485 serial port devices. The port is shared with the COM3 port.

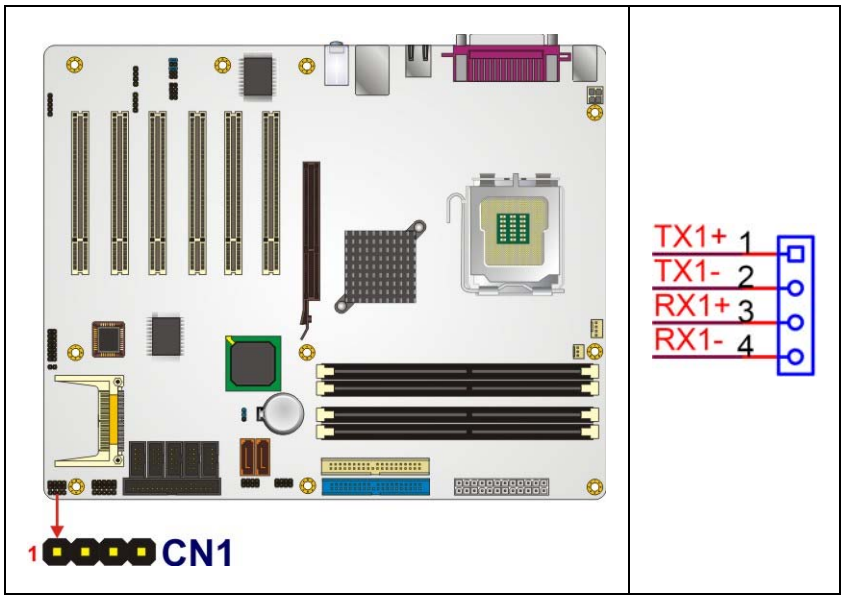


Figure 4-19: Serial Port Connector (RS-422/485) Pinout Locations

PIN	DESCRIPTION
1	TXD1+
2	TXD1-
3	RXD1+
4	RXD1-

Table 4-20: Serial Port Connector (RS-422/485) Pinouts

4.2.19 SPDIF Connector

CN Label: SPDIF1

CN Type: 5-pin header

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

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

Use the SPDIF connector to connect digital audio devices to the system.

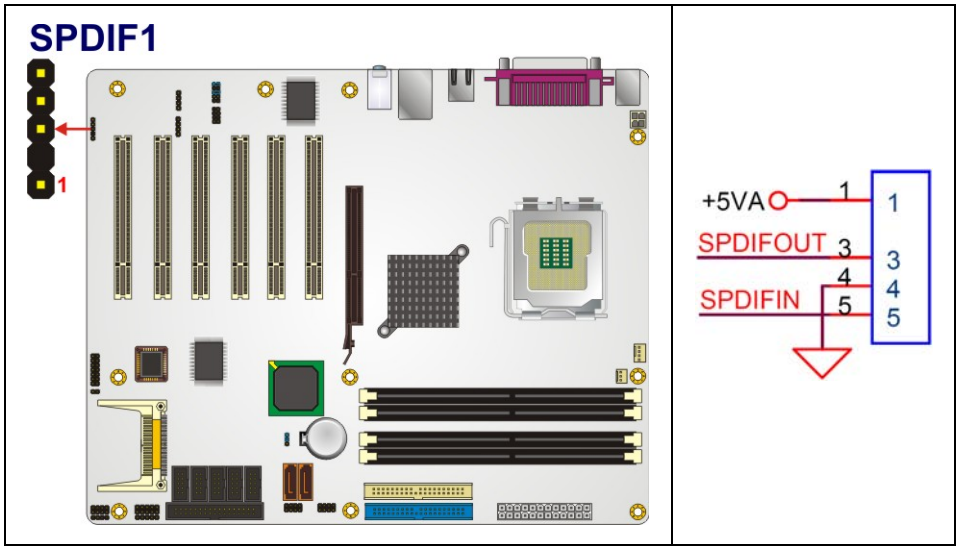


Figure 4-20: SPDIF Connector Pinout Locations

PIN	DESCRIPTION
1	VCC AUDIO
2	NC
3	SPDIF OUT
4	GND AUDIO
5	SPDIF IN

Table 4-21: SPDIF Connector Pinouts

4.2.20 USB Connectors (Internal)

CN Label: USB2, USB3

CN Type: 8-pin header (2x4)

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

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

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

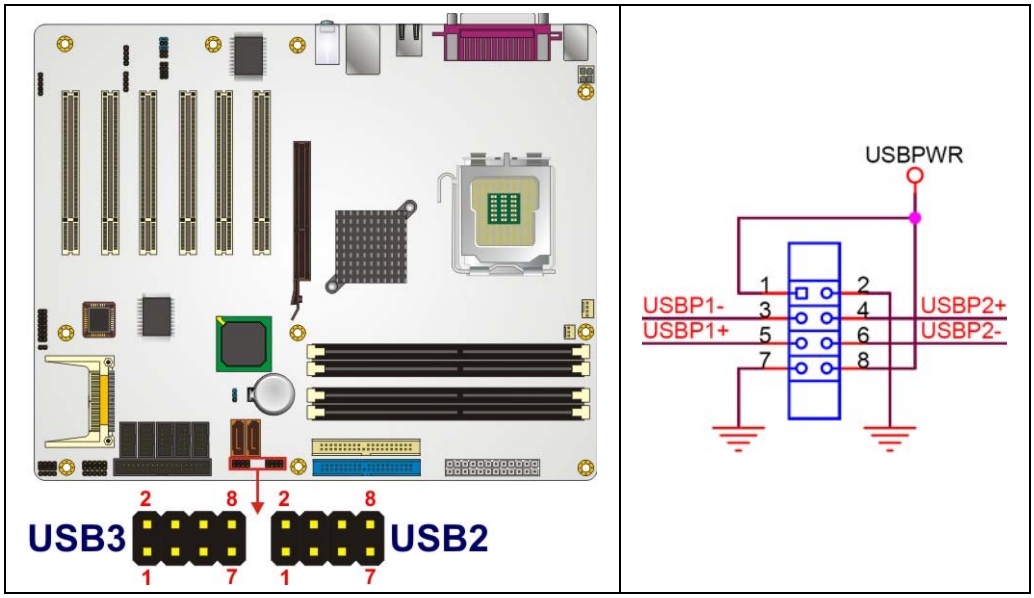


Figure 4-21: USB Connector Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	PWR (+5V)	2	GND
3	USBPB-	4	USBPB+
5	USBPA+	6	USBPB-
7	GND	8	PWR (+5V)

Table 4-22: USB Port Connector Pinouts

4.3 External Peripheral Interface Connectors

The external peripheral interface connectors on the back panel are connected to devices externally when the 2807740 is installed in a chassis. The peripheral connectors on the rear panel are:

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

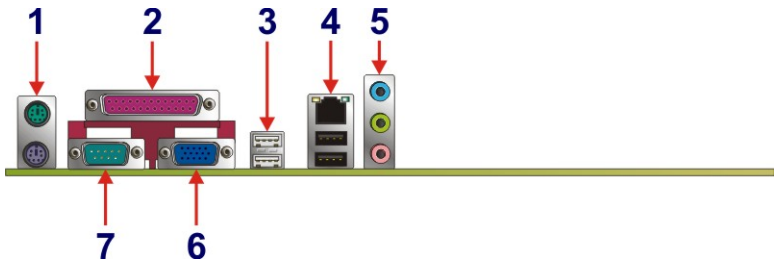


Figure 4-22: 2807740 External Interface Connectors

4.3.1 Keyboard/Mouse Connector

CN Label:	KBMS1
CN Type:	PS/2 connector
CN Location:	See Figure 4-22 (labeled number 1)
CN Pinouts:	See Figure 4-23 and Table 4-23

The 2807740 keyboard and mouse connectors are standard PS/2 connectors.

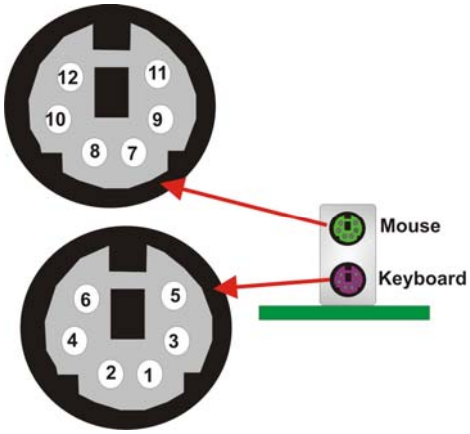


Figure 4-23: PS/2 Pinouts

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

Table 4-23: PS/2 Connector Pinouts

4.3.2 Parallel Port Connector

CN Label: CN5

CN Type: DB-25

CN Location: See Figure 4-22 (labeled number 2)

CN Pinouts: See Figure 4-24 and Table 4-24

These ports are usually connected to a printer. 2807740 includes one on-board parallel ports accessed through one 25-pin D-type female connector.

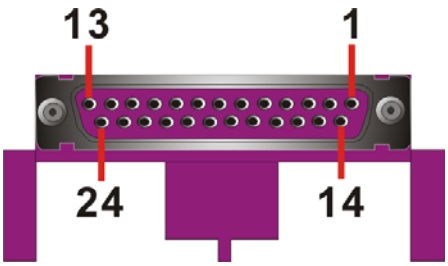


Figure 4-24: Parallel Port Connector Pinout Locations

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

Table 4-24: Parallel Port Connector Pinouts

4.3.3 USB Connectors

CN Label: USB1 and LAN/USB1

CN Type: Dual USB port

CN Location: See Figure 4-22 (labeled 3 and 4)

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

USB devices connect directly to the USB connectors on the external peripheral connector panel.

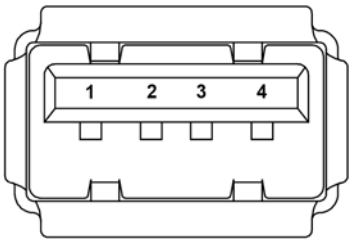


Figure 4-25: USB Connector Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	VCC	5	VCC
2	USBD0-	6	USBD0-
3	USBD0+	7	USBD0+
4	GND	8	GND

Table 4-25: USB Connector Pinouts

4.3.4 Ethernet Connector

CN Label: LAN/USB1

CN Type: RJ-45 ports

CN Location: See Figure 4-22 (labeled 4)

CN Pinouts: See Figure 4-26, **Table 4-26** and **Table 4-27**

A 1Gb connection can be made between the Ethernet connectors and a Local Area Network (LAN) through a network hub.

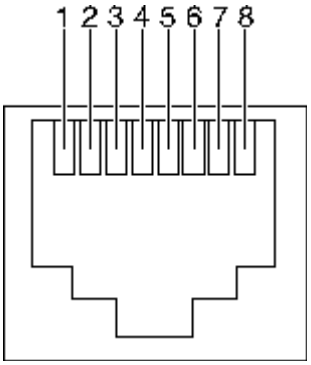


Figure 4-26: Ethernet Connector Pinout Locations

PIN	DESCRIPTION	PIN	DESCRIPTION
1	TX+ (or MDX0+)	5	N/C (or MDX2-)
2	TX- (or MDX0-)	6	RX- (or MDX1-)
3	RX+ (or MDX1+)	7	N/C (or MDX3+)
4	N/C (or MDX2+)	8	N/C (or MDX3-)
13	MDX0+	17	MDX2-
14	MDX0-	18	MDX1-
15	MDX1+	19	MDX3+
16	MDX2+	20	MDX3-
1	TX+ (or MDX0+)	5	N/C (or MDX2-)
2	TX- (or MDX0-)	6	RX- (or MDX1-)

Table 4-26: Ethernet Connector Pinouts

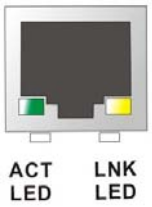


Figure 4-27: Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked (**Table 4-27**).

SPEED LED		LINK LED	
Status	**Description**	**Status**	**Description**
GREEN	ON: 100MB OFF: 10MB	YELLOW	ON: Linked Flashing: Activity

Table 4-27: Ethernet Connector LEDs

4.3.5 Audio Connectors

CN Label: CN4

CN Type: Audio jack

CN Location: See Figure 4-22 (labeled number 5)

CN Pinouts: See Figure 4-28

- **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.

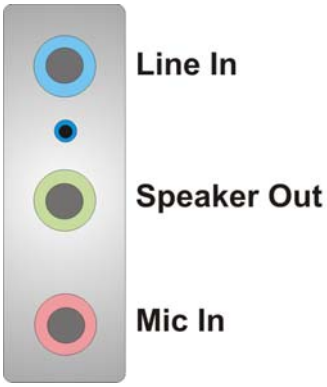


Figure 4-28: Audio Connector

4.3.6 VGA Connector

CN Label: CN5

CN Type: HD-D-sub 15 Female connector

CN Location: See Figure 4-22 (labeled 6)

CN Pinouts: See **Figure 4-29** and **Table 4-28**

The standard HD-D-sub 15 female connector connects to a CRT or LCD monitor.

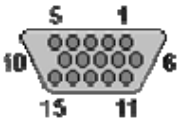


Figure 4-29: VGA Connector

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDC CLK		

Table 4-28: VGA Connector Pinouts

4.3.7 Serial Communications Connector

CN Label: CN5

CN Type: D-sub 9 Male connector

CN Location: See Figure 4-22 (labeled 7)

CN Pinouts: See **Figure 4-30** and **Table 4-29**

The serial connector on the external interface panel provides serial connection in the RS-232 mode.

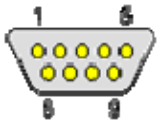


Figure 4-30: Serial Communications Connector Pinout Locations

PIN	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

Table 4-29: COM1 RS-232 Mode Connector Pinouts

4.4 On-board Jumpers

The NANO-4386A has fifteen on-board jumpers. Refer to **Section 5.4** for jumper configuration settings.

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Chapter

5

Installation

5.1 Anti-static Precautions

WARNING!

Failure to take ESD precautions during the installation of the 2807740 may result in permanent damage to the 2807740 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the 2807740. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the 2807740, 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 2807740, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the PCB***: When handling the PCB, hold it by its edges.

5.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the 2807740 is installed. All installation notices pertaining to the installation of the 2807740 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the 2807740 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 2807740 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 2807740 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 2807740 on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn off all power to the 2807740**:

- When working with the 2807740, 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 2807740 **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 2807740 is properly installed.

- All the items in the packing list are present (see **Chapter 3**)
- A CPU is installed
- A CPU cooling kit is properly installed
- Compatible memory modules are properly inserted into the memory slots
- The 2807740 is installed into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices (if applicable) are properly connected
  - IDE devices
  - SATA drives
  - Floppy disk drive
  - System front panel connector
  - Audio kit
  - Power supply
  - USB cable
  - Serial port cable
  - Parallel port cable
  - Keyboard/mouse cable
  - COM port cables
- The following external peripheral devices (if applicable) are properly connected to the chassis:

- VGA screen
- Keyboard
- Mouse
- USB devices
- LAN
- Audio jacks

5.3 CPU, CPU Cooling Kit and DIMM Installation

WARNING!

A CPU should never be turned on without the specified cooling kit being installed. If the cooling kit (heat sink and fan) is not properly installed and the system turned on, permanent damage to the CPU 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 2807740. If any of these components is not installed, the 2807740 cannot operate.

5.3.1 LGA775 CPU Installation

NOTE:

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

- **CPU**: An Intel® Pentium 4 Processor (or better) with HT Technology must be installed
- **Chipset**: An Intel® Chipset that supports HT Technology
- **OS**: An operating system that has optimizations for HT Technology

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.

The LGA775 is shown in Figure 5-1.

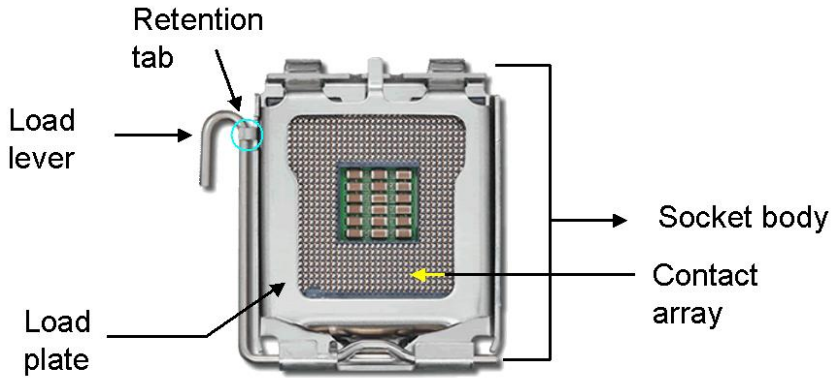

Figure 5-1: Intel LGA775

To install a LGA775 CPU onto the 2807740, 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: Remove the protective cover. Remove the black protective cover by prying it off the load plate. To remove the protective cover, locate the “REMOVE” sign and use your fingernail to pry the protective cover off. See **Figure 5-2**.

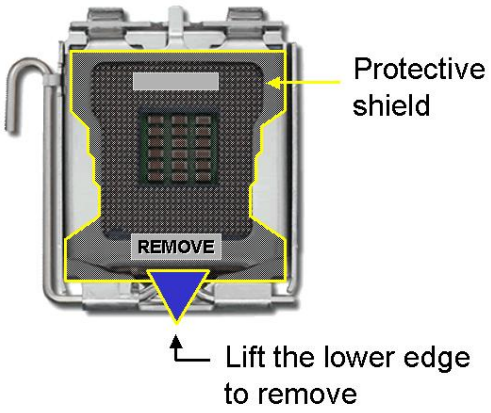

Figure 5-2: Remove the CPU Socket Protective Shield

Step 2: Open the socket. Disengage the load lever by pressing the lever down and slightly outward to clear the retention tab. Rotate the load lever to a fully open position. Then rotate the load plate towards the opposite direction.

See **Figure 5-3**.

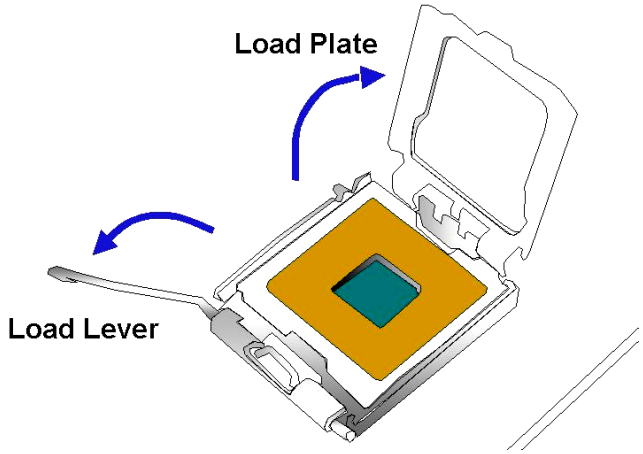

Figure 5-3: Open the CPU Socket Load Plate

Step 3: 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 4: Orientate the CPU properly. Make sure the IHS (Integrated Heat Sink) side is facing upward.

Step 5: Correctly position the CPU. Match the Pin 1 mark with the cut edge on the CPU socket.

Step 6: Align the CPU pins. Locate pin 1 and the two orientation notches on the CPU. Carefully match the two orientation notches on the CPU with the socket alignment keys.

Step 7: Insert the CPU. Gently insert the CPU into the socket. If the CPU pins are properly aligned, the CPU should slide into the CPU socket smoothly. See **Figure 5-4**.

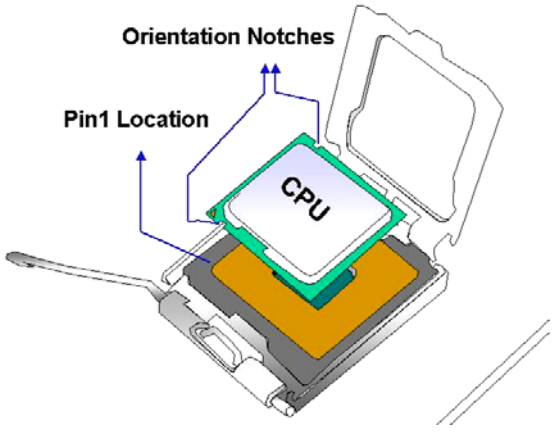

Figure 5-4: Insert the LGA775 CPU

Step 8: Close the CPU socket. Close the load plate and engage the load lever by pushing it back to its original position. Secure the load lever under the retention tab on the side of CPU socket.

Step 9: Connect the CPU 12V cable to the 12After the cooling kit is installed connect the CPU cable to the CPU 12V power connector.

5.3.2 LGA775 Cooling Kit Installation

WARNING!

It is strongly recommended that the original heat sink and cooler provided by Intel not be used on the 2807740.

GLOBAL AMERICAN, INC.'s cooling kit includes a support bracket that is combined with the heat sink mounted on the CPU to counterweigh and balance the load on both sides of the PCB.

2107695

Figure 5-5: GLOBAL AMERICAN, INC. Cooling Kit

The GLOBAL AMERICAN, INC. LGA775 CPU cooling kit shown in **Figure 5-5** can be purchased separately. The cooling kit comprise of 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 heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

Follow the instructions below to install a cooling kit.

Step 1: Place the cooling kit onto the LGA775 CPU. Make sure the CPU cable can be properly routed when the cooling kit is installed.

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

Step 3: Mount the cooling kit. Gently place the cooling kit on top of the CPU. Make sure the four threaded screws on the corners of the cooling kit properly pass through the predrilled holes on the bottom of the PCB.

Step 4: Secure the cooling kit. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 5-6**)

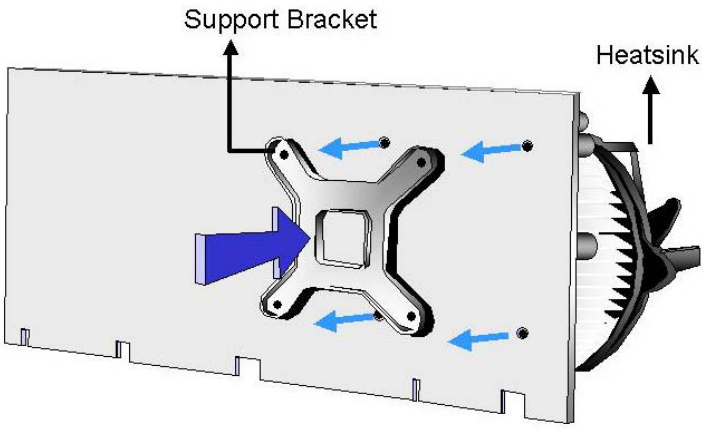

Figure 5-6: Securing the Heat sink to the PCB Board

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

Step 6: Connect the fan cable. Connect the cooling kit fan cable to the fan connector on the 2807740. Carefully route the cable and avoid heat generating chips and fan blades.

5.3.3 DIMM Installation

WARNING!

Using incorrectly specified DIMM may cause permanently damage the 2807740. Please make sure the purchased DIMM complies with the memory specifications of the 2807740. DIMM specifications compliant with the 2807740 are listed in **Chapter 2**.

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-7**.

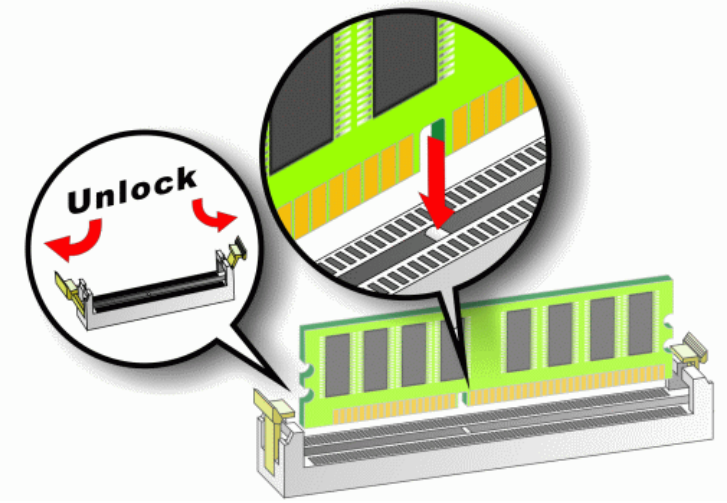

Figure 5-7: Installing a DIMM

Step 1: Open the DIMM socket handles. The DIMM socket has two handles that secure the DIMM into the socket. Before the DIMM can be inserted into the socket, the handles must be opened. See **Figure 5-7**.

Step 2: Align the DIMM with the socket. The DIMM must be oriented in such a way that the notch in the middle of the DIMM must be aligned with the plastic bridge in the socket. See **Figure 5-7**.

Step 3: Insert the DIMM. Once properly aligned, the DIMM can be inserted into the socket. As the DIMM is inserted, the white handles on the side of the socket will close automatically and secure the DIMM to the socket. See **Figure 5-7**.

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

5.4 Jumper Settings

NOTE:

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

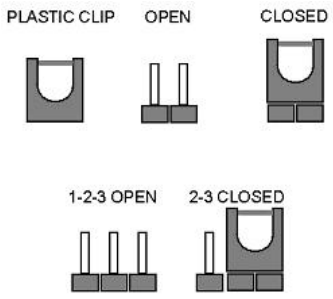

Figure 5-8: Jumper Locations

Before the 2807740 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the 2807740 are listed in **Table 5-1**.

Description	Label	Type
CF Master/Slave Selection	JP3	2-pin header
Clear CMOS	JP1	3-pin header
COM3 Mode Selection	JP2	8-pin header

Table 5-1: Jumpers

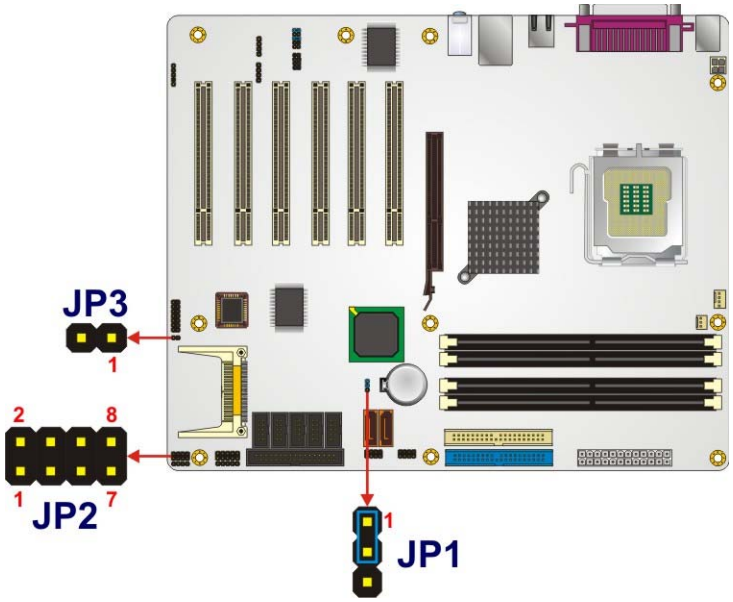

Figure 5-9: Jumper Locations

5.4.1 CF Master/Slave Selection

Jumper Label:	**JP3**
Jumper Type:	2-pin header
Jumper Settings:	See **Table 5-2**
Jumper Location:	See **Figure 5-9**

The CF Master/Slave Selection jumper sets the CF Type I card or CF Type II cards as either the slave device or the master device. CF Master/Slave Selection jumper settings are shown in **Table 5-2**.

Pins	Description	
Open	Slave	Default
Short	Master	

Table 5-2: CF Master/Slave Selection Settings

5.4.2 Clear CMOS Jumper

Jumper Label: **JP1**

Jumper Type: 3-pin header

Jumper Settings: See **Table 5-3**

Jumper Location: See **Figure 5-9**

If the 2807740 fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 2 and 3 for a few seconds then reinstall the jumper clip back to pins 1 and 2.

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

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

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

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

Pins	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 – 3	Clear CMOS Setup	

Table 5-3: Clear CMOS Jumper Settings

5.4.3 COM3 Mode Selection

Jumper Label: **JP2**

Jumper Type: 3-pin header

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

Jumper Location: See **Figure 5-9**

The COM3 Mode Selection jumper sets the communication protocol used by the second serial communications port (COM 3) as RS-232, RS-422 or RS-485. The COM3 Mode Selection settings are shown in **Table 5-4**.

Pins	Description	
Short 1-2	RS-232 (by COM3)	Default
Short 2-4	RS-422 (by CN1)	
Short 2-4 Short 3-5 Short 4-6	RS-485 (by CN1)	

Table 5-4: COM3 Mode Selection Jumper Settings

5.5 Chassis Installation

5.5.1 Airflow

WARNING!

Airflow is critical to the cooling of the CPU and other onboard components. The chassis into which the 2807740 is placed must have air vents to allow proper airflow to cool the system components.

The 2807740 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel over 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 over the board surface.

NOTE

GLOBAL AMERICAN, INC. has a wide range of chassis available. Please contact a GLOBAL AMERICAN, INC. sales representative at salesinfo@globalamericaninc.com or visit the GLOBAL AMERICAN, INC. website http://www.globalamericaninc.com/ to find out more about available chassis.

5.6 Internal Peripheral Device Connections

5.6.1 Peripheral Device Cables

The cables listed in **Table 5-5** are shipped with the 2807740.

Quantity	Type
1	ATA 66/100 flat cable
2	Dual RS-232 cables
1	Single RS-232 cable
1	Dual RS-422/485 cable
2	SATA drive cables
1	SATA drive power cable

Table 5-5: GLOBAL AMERICAN, INC. Provided Cables

5.6.2 ATA Flat Cable Connection

The ATA 66/100 flat cable connects to an IDE device. Follow the instructions below to connect an IDE HDD to the 2807740.

Step 1: Locate the IDE connector. The locations of the IDE device connectors are shown in Chapter 3.

Step 2: Insert the connector. Connect the IDE cable connector to the onboard connector. See **Figure 5-10**. A key on the front of the cable connector ensures it can only be inserted in one direction.

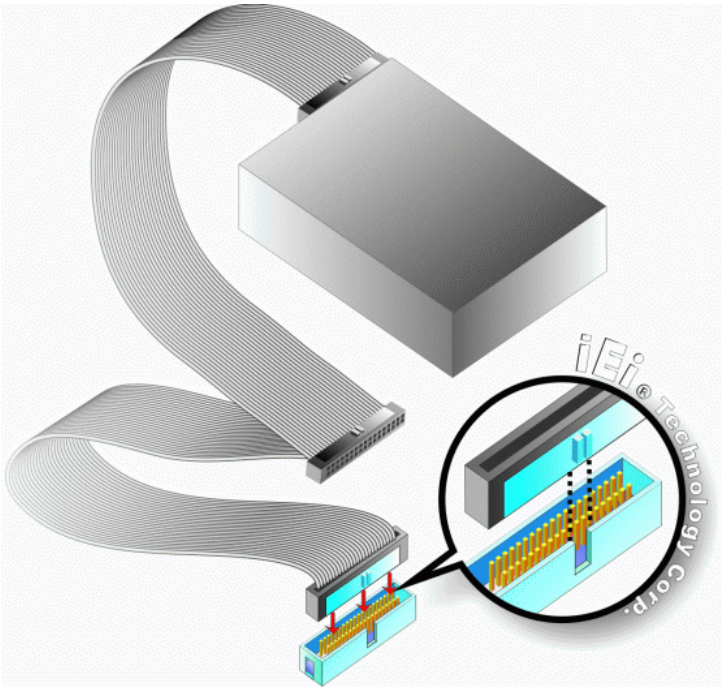

Figure 5-10: IDE Cable Connection

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

5.6.3 Dual RS-232 Cable with Slot Bracket

The dual RS-232 cable consists of two serial port connectors attached to a serial communications cable that is then attached to two bracket mounted D-sub 9 male connectors. To install the dual RS-232 cable, please follow the steps below.

Step 1: Locate the connector. The location of the RS-232 connector is shown in Chapter 3.

Step 2: Insert the cable connector. Insert the connectors into the serial port box headers. See **Figure 5-11**. A key on the front of the cable connectors ensures the connectors can only be installed in one direction.

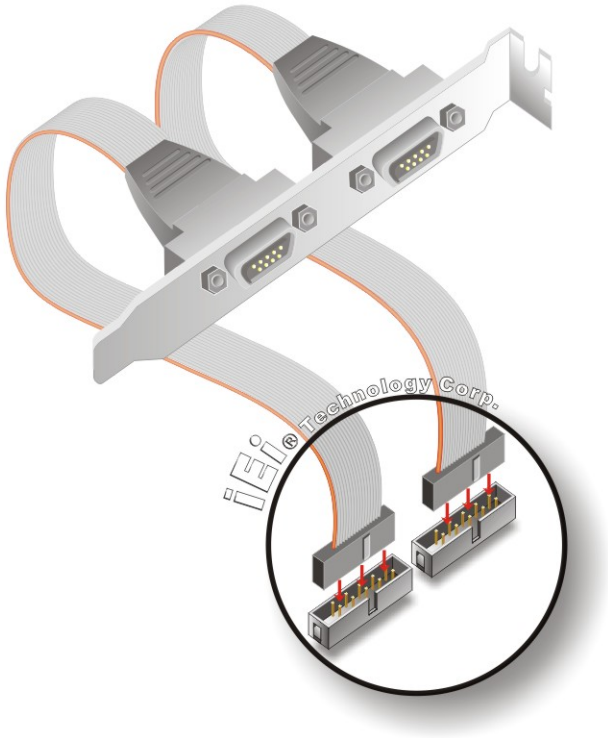

Figure 5-11: Dual RS-232 Cable Installation

Step 3: Secure the bracket. The dual RS-232 connector has two D-sub 9 male connectors secured to a bracket. To secure the bracket to a chassis please refer to the reference material that came with the chassis.

5.6.4 Single RS-232 Cable with Slot Bracket

The single RS-232 cable consists of one serial port connectors attached to a serial communications cable that is then attached to a D-sub 9 male connector that is mounted onto a bracket. To install the single RS-232 cable, please follow the steps below.

Step 1: **Locate the connector**. The location of the RS-232 connector is shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Insert the connector into the serial port box header. See **Figure 5-11**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

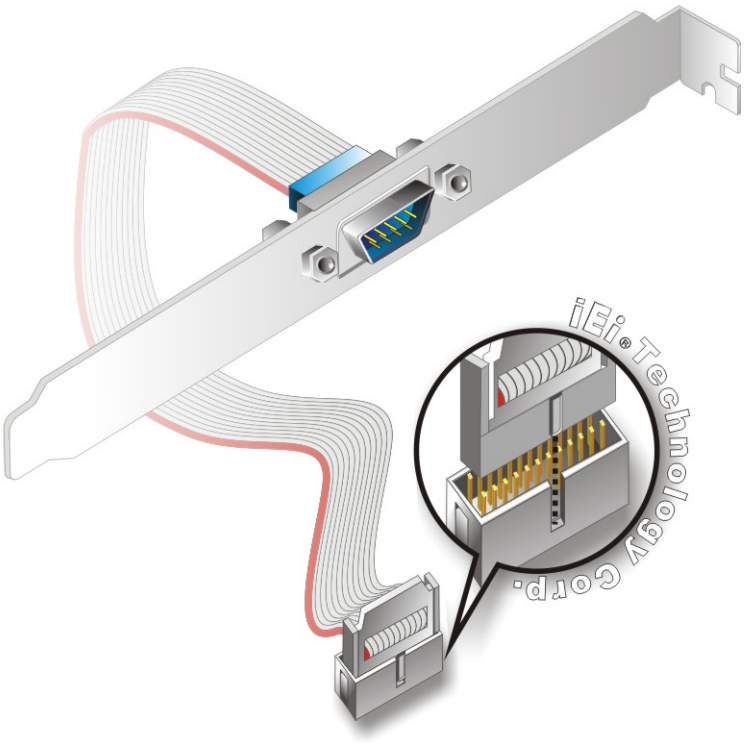

Figure 5-12: Single RS-232 Cable Installation

Step 3: **Secure the bracket**. The single RS-232 connector has one D-sub 9 male connector secured to a bracket. To secure the bracket to the chassis please refer to the reference material that came with the chassis

5.6.5 Dual RS-422/485 Cables

The 2807740 is shipped with one dual serial port connector cable. The dual serial port connector cable connects the serial port connectors on the cable to the RS-422/485 serial port connectors on the 2807740. Follow the steps below to connect the dual serial port connector cable.

Step 1: **Locate the serial port connector**. The location of the RS-422/485 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 2807740 COM3 serial port connector.

Step 3: **Insert the cable connectors** Once the cable connector is properly aligned with the COM3 serial port connector on the 2807740, connect the cable connector to the onboard connectors. See **Figure 5-13**.

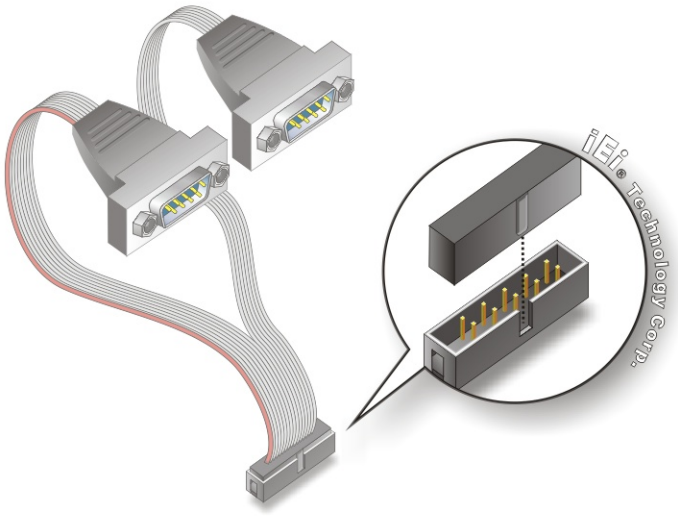

Figure 5-13: Dual Serial Port Connector Cable Connection

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

5.6.6 SATA Drive Connection

The 2807740 is shipped with SATA drive cables and SATA drive power cable. Follow the steps below to connect the SATA drives to the motherboard.

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

Step 2: Insert the cable connector. Press the clip on the connector at the end of the SATA cable and insert the cable connector into the onboard SATA drive connector. See **Figure 5-14**.

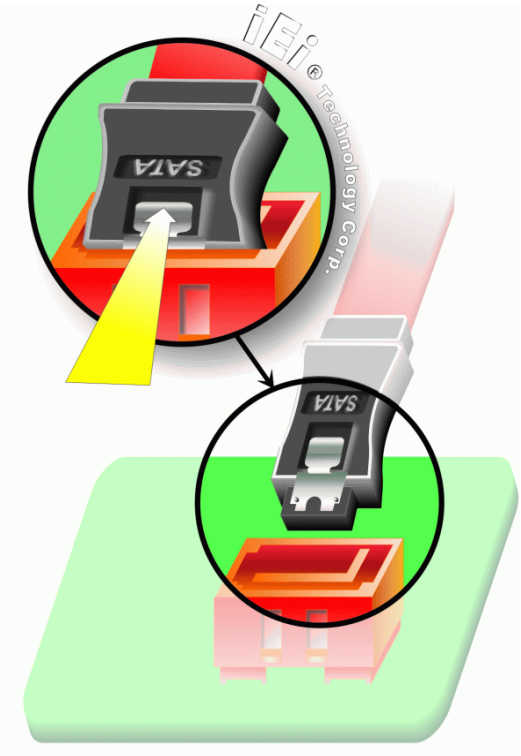

Figure 5-14: SATA Drive Cable Connection

Step 3: Connect the cable to the SATA disk. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 5-15**.

Step 4: Connect the SATA power cable. Connect the SATA power connector to the back of the SATA drive. See **Figure 5-15**.

Figure 5-15: SATA Power Drive Connection

5.7 External Peripheral Interface Connection

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

- Mouse and keyboard
- Parallel devices
- RJ-45 Ethernet cable connectors
- USB devices
- Audio devices
- VGA monitor
- Serial devices

To install these devices, connect the corresponding cable connector from the actual device to the corresponding 2807740 external peripheral interface connector making sure the pins are properly aligned.

5.7.1 PS/2 Keyboard/Mouse Connection

The 2807740 has a dual PS/2 connector on the external peripheral interface panel. The dual PS/2 connector is used to connect to a keyboard and mouse to the system. Follow the steps below to connect a keyboard and mouse to the 2807740.

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

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

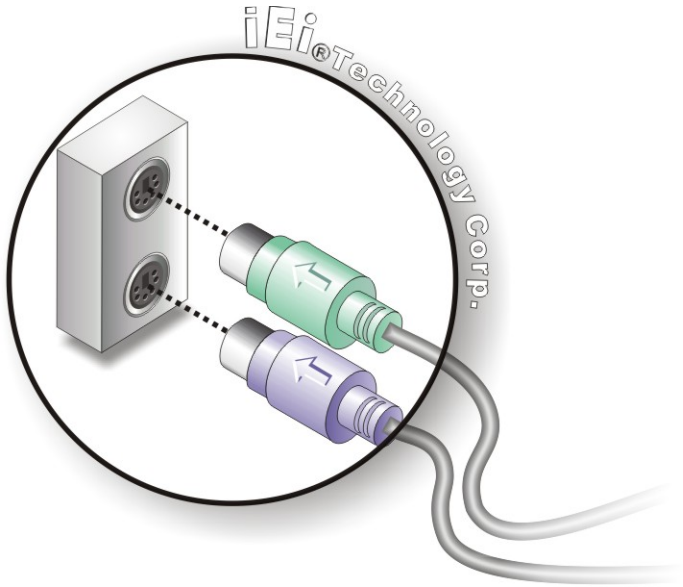

Figure 5-16: PS/2 Keyboard/Mouse Connector

5.7.2 Parallel Device Connection

The 2807740 has a single female DB-25 connector on the external peripheral interface panel for parallel devices. Follow the steps below to connect a parallel device to the 2807740.

Step 1: Locate the DB-25 connector. The location of the DB-25 connector is shown in **Chapter 3**.

Step 2: Insert the DB-25 connector. Insert the DB-25 connector of a parallel device into the DB-25 connector on the external peripheral interface. See **Figure 5-17**.

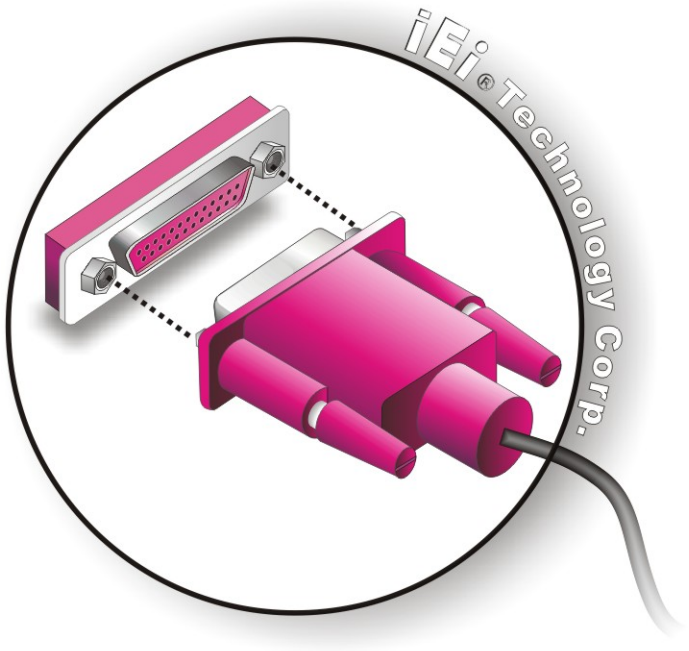

Figure 5-17: Parallel Device Connector

Step 3: Secure the connector. Secure the DB-25 connector to the external interface by tightening the two retention screws on either side of the connector.

5.7.3 RJ-45 Ethernet Connection

The 2807740 has one RJ-45 Ethernet connector on the external peripheral interface panel for LAN communications. Follow the steps below to connect an RJ-45 Ethernet connector to the 2807740.

Step 1: Locate the RJ-45 connector. The location of the RJ-45 connector is shown in **Chapter 3**.

Step 2: Insert an RJ-45 plug. Insert the RJ-45 plug of a LAN into the RJ-45 receptacle on the external peripheral interface. See **Figure 5-18**.

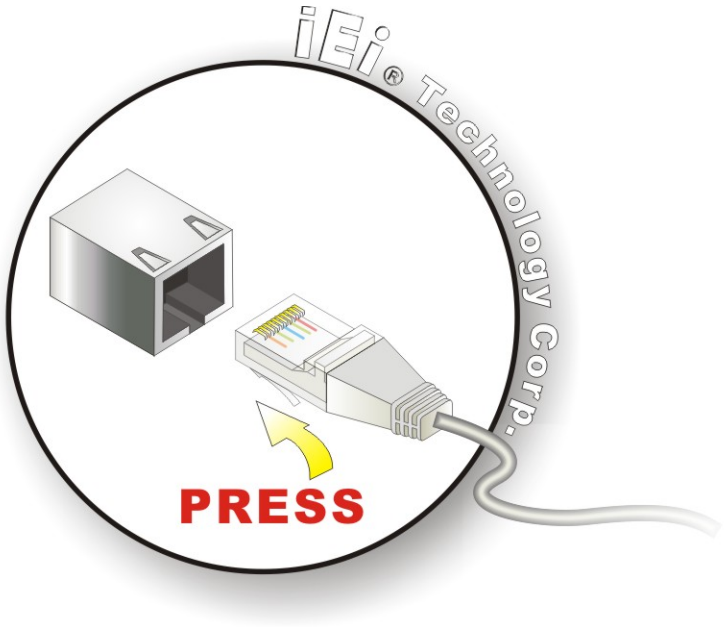

Figure 5-18: RJ-45 Ethernet Connector

5.7.4 USB Connection

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the 2807740.

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

Step 2: Insert a USB Series "A" plug. Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 5-19**.

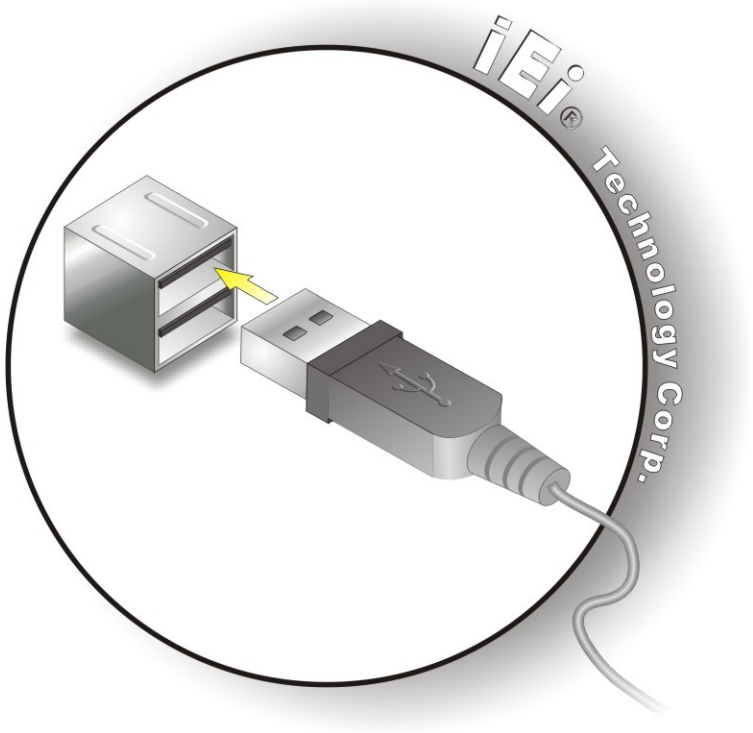

Figure 5-19: USB Connector

5.7.5 Audio Connection

Audio signals are interfaced through three phone jack connections. The red phone jack is for Mic In, blue is for Line In and green is for Speaker Out. Follow the steps below to connect audio devices to the 2807740.

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

Step 2: Insert audio phone jack plugs. Insert audio phone jack plugs into the audio phone jacks on the external peripheral interface. See **Figure 5-20**.

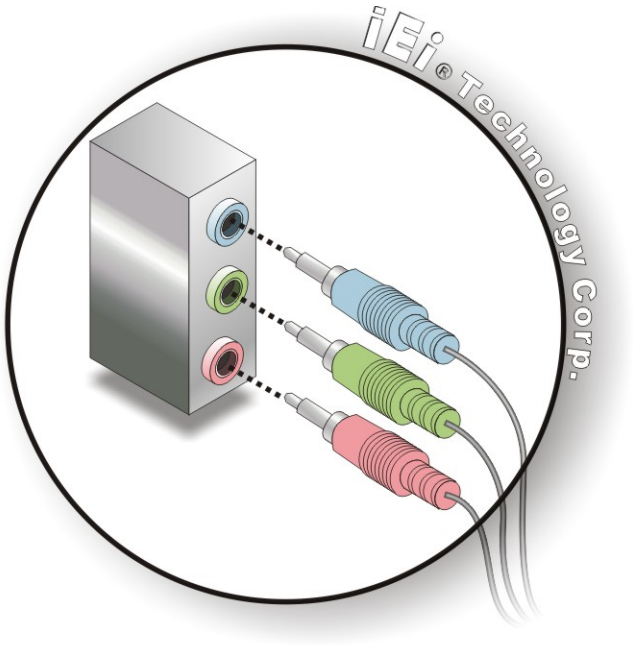

Figure 5-20: Audio Connectors

5.7.6 VGA Monitor Connection

The 2807740 has a single female DB-15 connector on the external peripheral interface panel for a VGA monitor. Follow the steps below to connect a VGA monitor to the 2807740.

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

Step 2: Insert the VGA connector. Insert the DB-15 connector of a VGA monitor into the DB-15 connector on the external peripheral interface. See **Figure 5-21**.

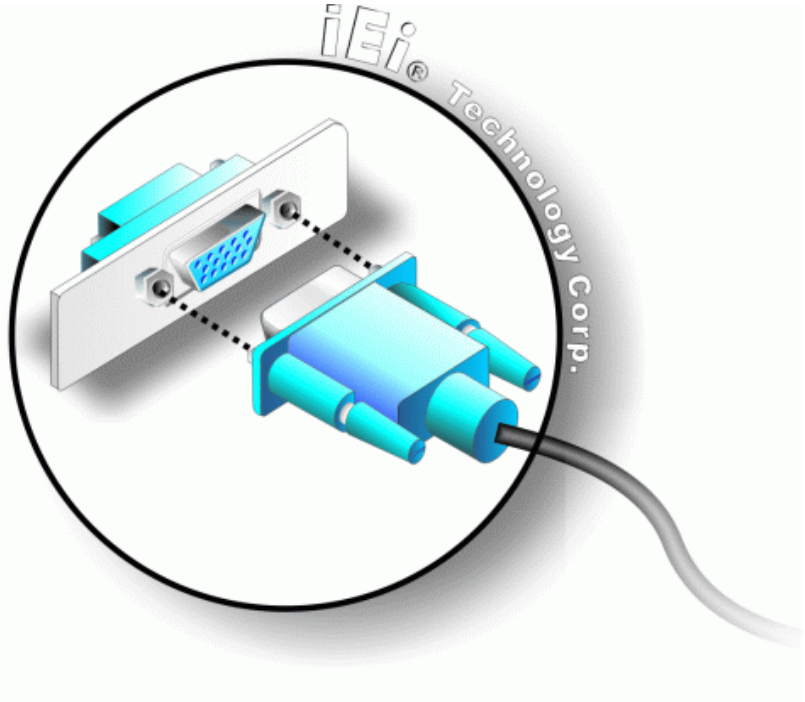

Figure 5-21: VGA Connector

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

5.7.7 Serial Device Connection

The 2807740 has a single female DB-9 connector on the external peripheral interface panel for a serial device. Follow the steps below to connect a serial device to the 2807740.

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

Step 2: Insert the serial connector. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 5-22**.

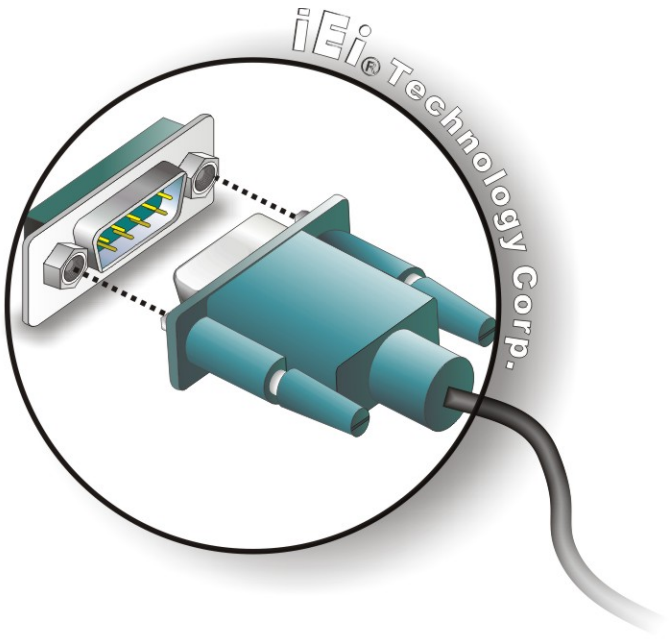

Figure 5-22: Serial Device Connector

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

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Chapter

6

AMI BIOS

6.1 Introduction

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

6.1.1 Starting Setup

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

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

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

6.1.2 Using Setup

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

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

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

Table 6-1: BIOS Navigation Keys

6.1.3 Getting Help

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

6.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in **Section 5.4**.

6.1.5 BIOS Menu Bar

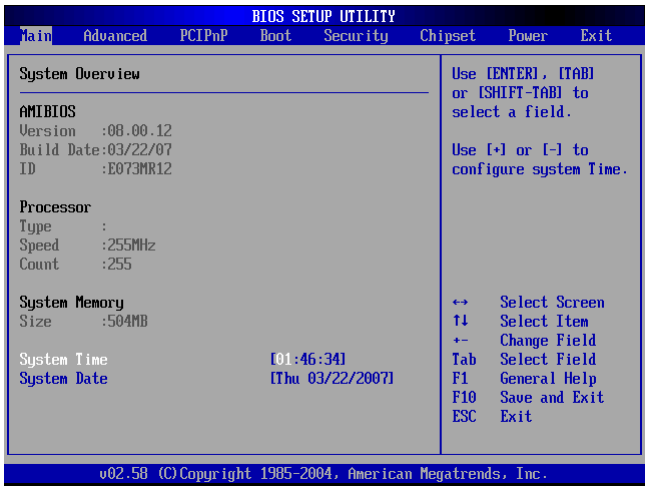
The menu bar on top of the BIOS screen has the following main items:

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

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

6.2 Main

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



BIOS Menu 1: Main

➔ System Overview

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

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

The System Overview field also has two user configurable fields:

➔ **System Time [xx:xx:xx]**

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

➔ **System Date [xx/xx/xx]**

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

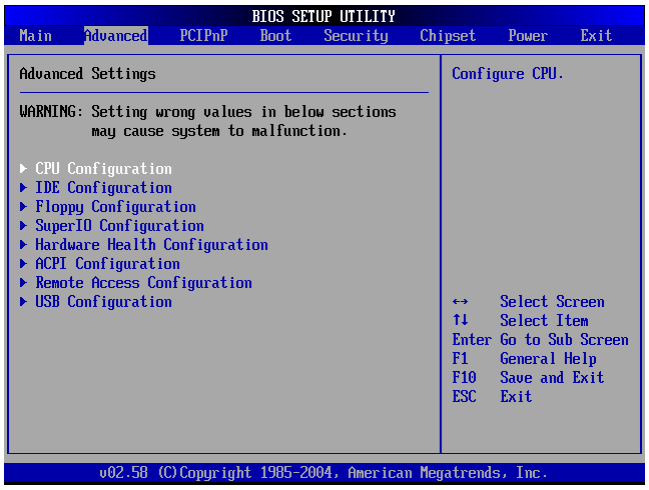
6.3 Advanced

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

WARNING!

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

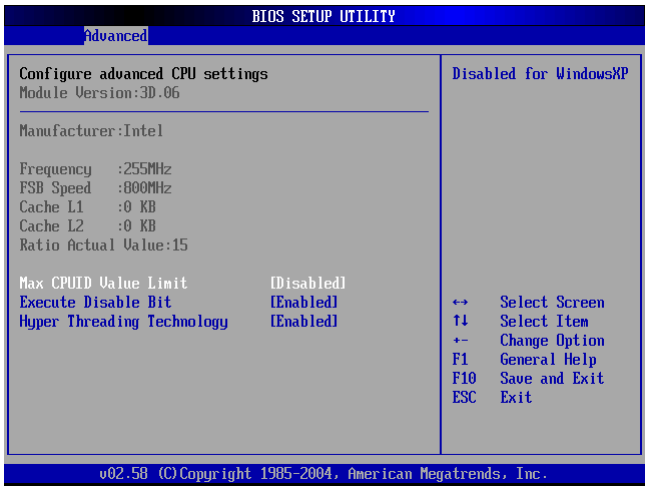
- **CPU Configuration** (see **Section 6.3.1**)
- **IDE Configuration** (see **Section 6.3.2**)
- **Floppy Configuration (see Section 6.3.3)**
- **Super IO Configuration** (see **Section 6.3.4**)
- **Hardware Health Configuration** (see **Section 6.3.5**)
- **ACPI Configuration** (see **Section 6.3.6**)
- **Remote Access Configuration** (see **Section 6.3.7**)
- **USB Configuration** (see **Section 6.3.8**)



BIOS Menu 2: Advanced

6.3.1 CPU Configuration

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



BIOS Menu 3: CPU Configuration

The CPU Configuration menu lists the following CPU details:

- **Module Version**: xx.xx
- **Manufacturer**: Lists the name of the CPU manufacturer
- **Frequency:** Lists the CPU processing speed
- **FSB Speed**: Lists the FSB speed

- **Cache L1**: Lists the CPU L1 cache size
- **Cache L2**: Lists the CPU L2 cache size
- **Ratio Actual Value**: Displays the ratio at which the CPU is actually operating

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

- Max CUPID Value Limit
- Hyper Threading Function
- Execute Disable Bit

➔ **Max CUPID Value Limit [Disabled]**

NOTE:

If the OS is NT, this value must be set to enabled.

Use the **Max CUPID Value Limit** BIOS option to disable or enable legacy Oses that can support a CPU with extended CUPID functions.

➔ **Disabled**	**DEFAULT**	Disables legacy OSes that cannot support CPUs with extended CUPID functions from booting up
➔ **Enabled**		Enables legacy OSes that cannot support CPUs with extended CUPID functions to boot up

➔ **Vanderpool Technology [Enabled]**

Use the **Vanderpool Technology** BIOS option to enable or disable the Intel Virtualization Technology (IVT) extension (a.k.a. Vanderpool). Vanderpool technology allows multiple operating systems to run on the same system simultaneously by creating virtual machines, each running an x86 operating system.

➔ **Disabled**		IVT extensions are disabled
➔ **Enabled**	**DEFAULT**	IVT extensions are enabled

➔ **Execute Bit Disable [Enabled]**

Use the **Execute Bit Disable** BIOS function to protect the system from buffer overflow attacks.

➔ **Disabled**		Code can be executed in any memory area.
➔ **Enabled**	**DEFAULT**	Code execution in data-only memory pages is prohibited.

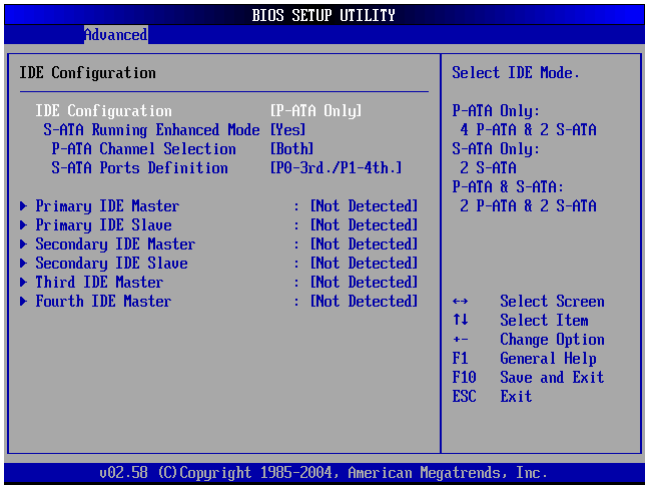
➔ **Hyper Threading Function [Enabled]**

Use the **Hyper Threading Function** to enable or disable the CPU hyper threading function.

➔ **Disabled**		Disables the use of hyper threading technology
➔ **Enabled**	**DEFAULT**	Enables the use of hyper threading technology

6.3.2 IDE Configuration

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



BIOS Menu 4: IDE Configuration

➔ **IDE Configuration [P-ATA Only]**

Use the **IDE Configuration** option to enable\disable PATA channel and SATA channel.

➔ **Disabled**		Disables all IDE ports.
➔ **P-ATA Only**	**DEFAULT**	Allows up to six devices, four parallel and two serial. The number of devices available depends on the setting of the **S-ATA Running Enhanced Mode** option.
➔ **S-ATA Only**		Only two serial ATA devices can be used.
➔ **P-ATA & S-ATA**		Four devices will be available, two parallel and two serial.

➔ **Combined Mode Option [P-ATA 1st Channel]**

Use the **Combined Mode Option** to to specify the configuration of the parallel and serial devices when the **IDE Configuration** option is set to **P-ATA & S-ATA**.

➔ **P-ATA 1st Channel**	**DEFAULT**	Enables the primary parallel IDE channel for use. The two devices on the primary IDE channel are then defined as primary master/slave, serial ATA devices are secondary master/slave, and the secondary IDE channel is disabled.
➔ **S-ATA 1st Channel**		Enables the secondary parallel IDE channel for use. The serial ATA devices are then defined as primary master/slave, the devices

on the secondary IDE channel are secondary master/slave, and the primary IDE channel is disabled.

➔ **S-ATA Running Enhanced Mode [Yes]**

Use the **S-ATA Running Enhanced Mode** option to configure the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

➔ **Yes**	**DEFAULT**	Enables six devices (four parallel devices, two serial devices).
➔ **No**		Enables only four devices (parallel devices only, no serial devices).

➔ **P-ATA Channel Selection [Both]**

Use the **P-ATA Channel Selection** option to enable\disable primary and secondary PATA channels.

➔ **Primary**		Enables the primary parallel IDE channel for use. This enables only two parallel devices, primary master and primary slave.
➔ **Secondary**		Enables the secondary parallel IDE channel for use. This enables only two parallel devices, secondary master and secondary slave.
➔ **Both**	**DEFAULT**	Enables both the primary and secondary parallel IDE channels for use. Four parallel devices are available as primary master/slave and secondary master/slave.

➔ **S-ATA Ports Definition [P0-3rd./P1-4th.]**

Use the **S-ATA Ports Definition** option to specify the definitions of the two serial ATA ports. This option is not available if the **S-ATA Running Enhanced Mode** option is set to **No**.

If the **IDE Configuration** is set to **P-ATA Only**, the serial ATA ports are defined as 3rd master and 4th master.

- ➔ **P0-3rd./P1-4th.** **DEFAULT** P27 = 3rd master/P28 = 4th master
- ➔ **P0-4th./P1-3rd.** P27 = 4th master/P28 = 3rd master

If the **IDE Configuration** is set to **S-ATA Only**, the serial ATA ports become 1st master and 2nd master.

- ➔ **P0-1st/P1-2nd** P27 = 1st master/P28 = 2nd master
- ➔ **P0-2nd/P1-1st** P27 = 2nd master/P28 = 1st master

If the **IDE Configuration** is set to **P-ATA & S-ATA**, the serial ATA ports are defined as master and slave. They will be defined as either primary or secondary master and slave, depending on the setting of the **Combined Mode Option** described above. The available options are:

- ➔ **P0-Master/P1-Slave** P27 = master/P28 = slave
- ➔ **P0-Slave/P1-Master** P27 = slave/P28 = master

➔ **IDE (Master) and IDE (Slave)**

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

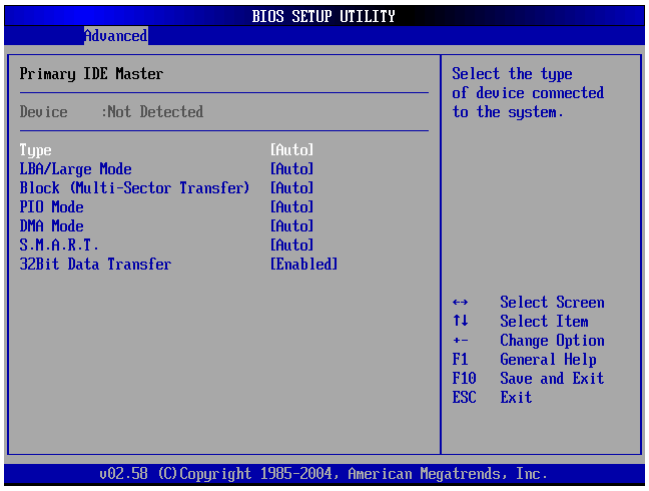
- Primary IDE (Master)

- Primary IDE (Slave)
- Secindary IDE (Master)
- Secondary IDE (Slave)
- Third IDE (Master)
- Fourth IDE (Master)

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

6.3.2.1 IDE Master, IDE Slave

Use the IDE Master and IDE Slave configuration menu (**BIOS Menu 5**) to view both primary and secondary IDE device details and configure the IDE devices connected to the system.



BIOS Menu 5: IDE Master and IDE Slave Configuration

➔ **Auto-Detected Drive Parameters**

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

- **Device**: Lists the device type (e.g. hard disk, CD-ROM etc.)
- **Type**: Indicates the type of devices a user can manually select
- **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.
- **DMA Mode**: Adjust the DMA mode options.
- **S.M.A.R.T.**: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- **32Bit Data Transfer**: Enables 32-bit data transfer.

➔ **Type [Auto]**

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

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.

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

- ➔ **ZIP**
- ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

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

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

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

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

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

➔ **PIO Mode [Auto]**

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

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

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

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

➔ **DMA Mode [Auto]**

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

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

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

➔ **S.M.A.R.T [Auto]**

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

- ➔ **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- ➔ **Disabled** Prevents BIOS from using the HDD SMART feature.
- ➔ **Enabled** Allows BIOS to use the HDD SMART feature

➔ **32Bit Data Transfer [Enabled]**

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

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

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

6.3.3 Floppy Configuration

Use the **Floppy Configuration menu** to configure the floppy disk drive connected to the system.

BIOS Menu 6: Floppy Configuration

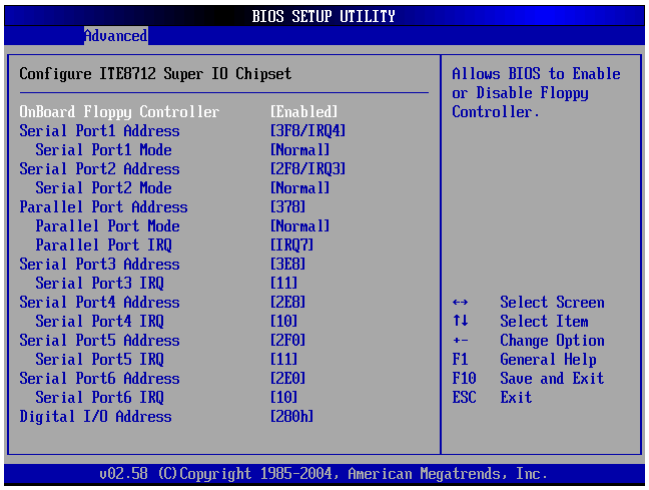
➔ **Floppy A**

Use the **Floppy A** option to configure the floppy disk drive. Options are:

- Disabled
- 360 KB 51/4”
- 1.2 MB 51/4”
- 720 KB 31/2”
- 1.44 MB 31/2” **DEFAULT**
- 2.88 MB 31/2”

6.3.4 Super IO Configuration

Use the IO Configuration menu (**BIOS Menu 7**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 7: Super IO Configuration

➔ **OnBoard Floppy Controller [Enabled]**

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

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

➔ **Serial Port1 Address [3F8/IRQ4]**

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

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

- ➔ **3E8/IRQ4** Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
- ➔ **2E8/IRQ3** Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

➔ **Serial Port1 Mode [Normal]**

Use the **Serial Port1 Mode** option to select the transmitting and receiving mode for the first serial port.

- ➔ **Normal** **DEFAULT** Serial Port 1 mode is normal
- ➔ **IrDA** Serial Port 1 mode is IrDA
- ➔ **ASK IR** Serial Port 1 mode is ASK IR

➔ **Serial Port2 Address [2F8/IRQ3]**

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

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

➔ **Serial Port2 Mode [Normal]**

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

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

➔ **Parallel Port Address [Disabled]**

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

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

➔ **Parallel Port Mode [Normal]**

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

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

➔ **Parallel Port IRQ [IRQ7]**

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

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

➔ **Serial Port3 Address [3E8]**

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

➔ **Disabled**		No base address is assigned to serial port 3
➔ **3E8**	**DEFAULT**	Serial port 3 I/O port address is 3E8
➔ **2E8**		Serial port 3 I/O port address is 2E8
➔ **2E0**		Serial port 3 I/O port address is 2E0

➔ **Serial Port3 IRQ [11]**

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

➔ **4**		Serial port 3 IRQ address is 4
➔ **9**		Serial port 3 IRQ address is 9
➔ **10**		Serial port 3 IRQ address is 10
➔ **11**	**DEFAULT**	Serial port 3 IRQ address is 11

➔ **Serial Port4 Address [2E8]**

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

➔ **Disabled**		No base address is assigned to serial port 3
➔ **3E8**		Serial port 4 I/O port address is 3E8

- ➔ **2E8** **DEFAULT** Serial port 4 I/O port address is 2E8
- ➔ **2E0** Serial port 4 I/O port address is 2E0

➔ **Serial Port4 IRQ [10]**

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

- ➔ **3** Serial port 4 IRQ address is 3
- ➔ **9** Serial port 4 IRQ address is 9
- ➔ **10** **DEFAULT** Serial port 4 IRQ address is 10
- ➔ **11** Serial port 4 IRQ address is 11

➔ **Serial Port5 Address [2F0]**

Use the **Serial Port5 Address** option to select the interrupt address 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
- ➔ **2E0** Serial port 5 I/O port address is 2E0
- ➔ **2D0** Serial port 5 I/O port address is 2D0

➔ **Serial Port5 IRQ [11]**

Use the **Serial Port5 IRQ** option to select 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]**

Use the **Serial Port6 Address** option to select the interrupt address 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 6I/O port address is 2E0
➔ **2D8**		Serial port 6 I/O port address is 2D8

➔ **Serial Port6 IRQ [10]**

Use the **Serial Port6 IRQ** option to select the interrupt address for serial port 6.

➔ **10**	**DEFAULT**	Serial port 6 IRQ address is 10
➔ **11**		Serial port 6 IRQ address is 11

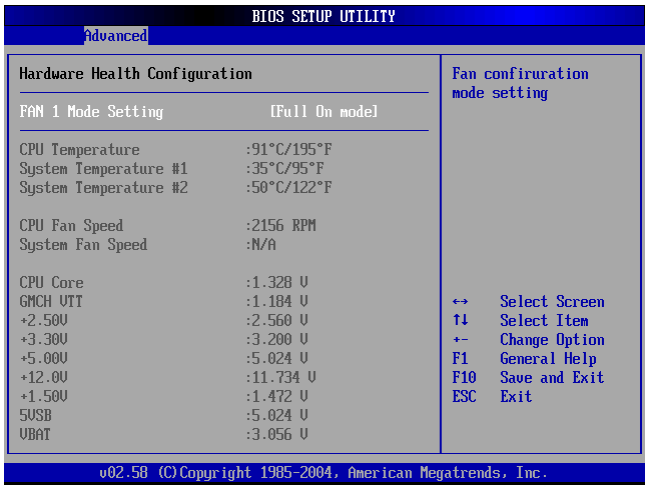
➔ **Digital I/O Address [280h]**

Use the **Digital I/O Address** option to select the digital I/O device base address.

➔ **200h**		The digital I/O device address is 200h
➔ **220h**		The digital I/O device address is 220h
➔ **240h**		The digital I/O device address is 240h
➔ **260h**		The digital I/O device address is 260h
➔ **280h**	**DEFAULT**	The digital I/O device address is 280h

6.3.5 Hardware Health Configuration

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



BIOS Menu 8: Hardware Health Configuration

➔ **FAN 1 Mode Setting [Full On Mode]**

Use the **FAN 1 Mode Setting** option to configure the second fan.

➔ **Full On Mode**	**DEFAULT**	Fan is on all the time
➔ **Automatic mode**		Fan is off when the temperature is low enough. Parameters must be set by the user.
➔ **PWM Manual mode**		Pulse width modulation set manually

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

- **System Temperatures**: The following system temperatures are monitored
  - CPU Temperature
  - System Temperature #1
  - System Temperature #2
- **Fan Speeds**: The following cooling fan speeds are monitored
  - CPU Fan
  - System Fan

- **Voltages**: The following system voltages are monitored
  - CPU Core
  - GMCH VTT
  - +2.50V
  - +3.30V
  - +5.00V
  - +12.0V
  - +1.50V
  - 5VSB
  - VBAT

6.3.6 ACPI Configuration

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

BIOS Menu 9: ACPI Configuration

➔ **ACPI Aware O/S [Yes]**

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

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

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

➔ **Suspend Mode [Auto]**

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** **DEFAULT** The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

➔ **Repost Video on S3 Resume [No]**

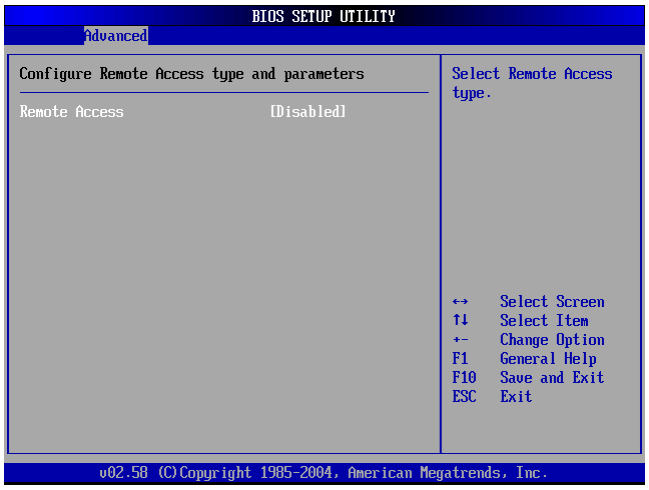
The **Repost Video on S3 Resume** BIOS option only appears if the S3 (STR) suspend mode state is selected. This option determine whether the VGA BIOS post will be invoked after the system is roused from an S3 (STR) suspend state.

➔ **No** **DEFAULT** The VGA BIOS post is not invoked

➔ **Yes** The VGA BIOS post is invoked

6.3.7 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 10**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 10: Remote Access Configuration

➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled** **DEFAULT** Remote access is disabled.

➔ **Enabled** Remote access configuration options shown below appear:

- ➔ **Serial Port Number**
- ➔ **Serial Port Mode**
- ➔ **Flow Control**
- ➔ **Redirection after BIOS POST**
- ➔ **Terminal Type**
- ➔ **VT-UTF8 Combo Key Support**
- ➔ **Sredir Memory Display Delay**

These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

Use the **Serial Port Number** option to select the serial port used for remote access.

➔ **COM1** **DEFAULT** System is remotely accessed through COM1

➔ **COM2** System is remotely accessed through COM2

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

➔ **Base Address, IRQ**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

➔ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

NOTE:

Identical baud rate setting must be set on the host (a management computer running a terminal software) and the slave.

➔ **Flow Control [None]**

Use the **Flow Control** option to report the flow control method for the console redirection application.

➔ **None**	**DEFAULT**	No control flow,
➔ **Hardware**		Hardware is set as the console redirection
➔ **Software**		Software is set as the console redirection

➔ **Redirection After BIOS POST [Always]**

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

➔ **Disabled**		The console is not redirected after POST
➔ **Boot Loader**		Redirection is active during POST and during Boot Loader
➔ **Always**	**DEFAULT**	Redirection is always active (Some OSes may not work if set to Always)

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** BIOS option to specify the remote terminal type.

➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI
➔ **VT100**		The target terminal type is VT100
➔ **VT-UTF8**		The target terminal type is VT-UTF8

➔ **VT-UTF8 Combo Key Support [Disabled]**

Use the **VT-UFT8 Combo Key Support** option to enable additional keys that are not provided by VT100 for the PC 101 keyboard.

The VT100 Terminal Definition is the standard convention used to configure and conduct emergency management tasks with UNIX-based servers. VT100 does not support all keys on the standard PC 101-key layout, however. The VT-UTF8 convention makes available additional keys that are not provided by VT100 for the PC 101 keyboard.

➔ **Disabled** **DEFAULT** Disables the VT-UTF8 terminal keys

➔ **Enabled** Enables the VT-UTF8 combination key. Support for ANSI/VT100 terminals

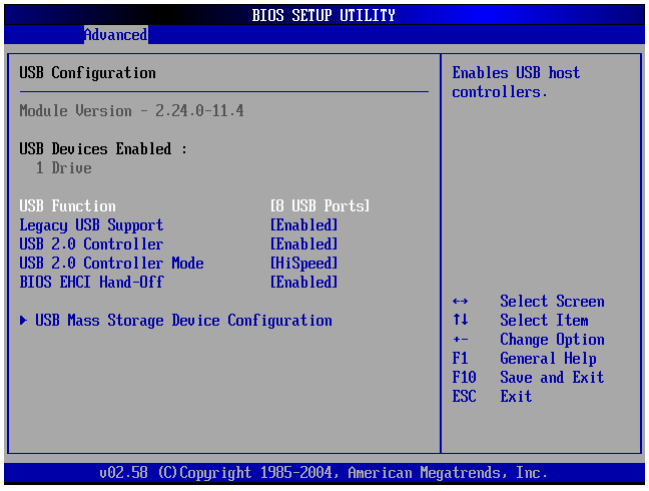
➔ **Sredir Memory Display Delay [Disabled]**

Use the **Sredir Memory Display Delay** option to select the delay before memory information is displayed. Configuration options are listed below

- No Delay **DEFAULT**
- Delay 1 sec
- Delay 2 sec
- Delay 4 sec

6.3.8 USB Configuration

Use the USB Configuration menu (**BIOS Menu 11**) to read USB configuration information and configure the USB settings.



BIOS Menu 11: USB Configuration

➔ **USB Configuration**

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

- Module Version: x.xx.x-xx.x

➔ **USB Devices Enabled**

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

➔ **USB Function [8 USB Ports]**

Use the USB Function BIOS option to enable or disable a specified number of USB ports. If only two USB ports are being used, disabling the remaining six USB frees up system resources that can be redirected elsewhere.

➔	**Disabled**		USB function support disabled
➔	**2 USB Ports**		Two USB ports are enabled
➔	**4 USB Ports**		Four USB ports are enabled
➔	**6 USB Ports**		Six USB ports are enabled
➔	**8 USB Ports**	**DEFAULT**	Eight USB ports are enabled

➔ **Legacy USB Support [Enabled]**

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

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

➔	**Disabled**	Legacy USB support disabled

➔ **Enabled** **DEFAULT** Legacy USB support enabled

➔ **Auto** Legacy USB support disabled if no USB devices are connected

➔ **USB 2.0 Controller [Enabled]**

Use the USB 2.0 Controller BIOS option to enable or disable the USB 2.0 controller

➔ **Disabled** USB 2.0 controller disabled

➔ **Enabled** **DEFAULT** USB 2.0 controller enabled

➔ **USB 2.0 Controller Mode [HiSpeed]**

The **USB 2.0 Controller Mode** BIOS option sets the speed of the USB 2.0 controller.

➔ **FullSpeed** The controller is capable of operating at full speed (12Mbits/second)

➔ **HiSpeed** **DEFAULT** The controller is capable of operating at high speed (480Mbits/second)

➔ **BIOS EHCI Handoff [Enabled]**

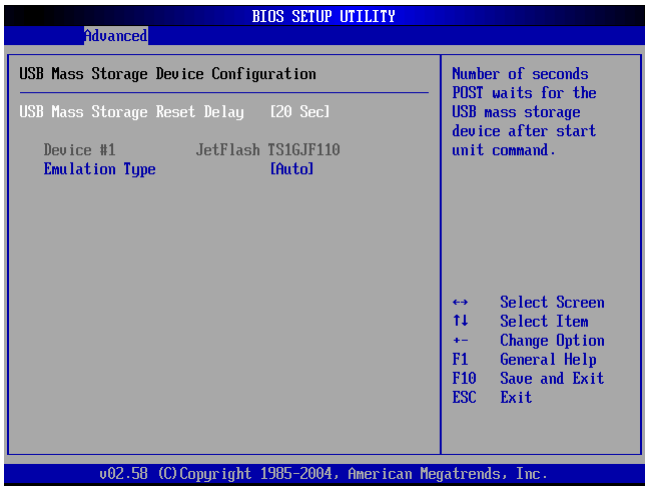
Use the **BIOS EHCI Handoff** option for systems running OSes that do not have EHCI hand-off support. The EHCI ownership change is managed by the EHCI driver.

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

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

6.3.8.1 USB Mass Storage Device Configuration

Use the USB Mass Storage Device Configuration menu (**BIOS Menu 12**) lists the USB mass storage class devices.



BIOS Menu 12: USB Mass Storage Device Configuration

➔ **Device ##**

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

➔ **Emulation Type [Auto]**

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

NOTE:

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

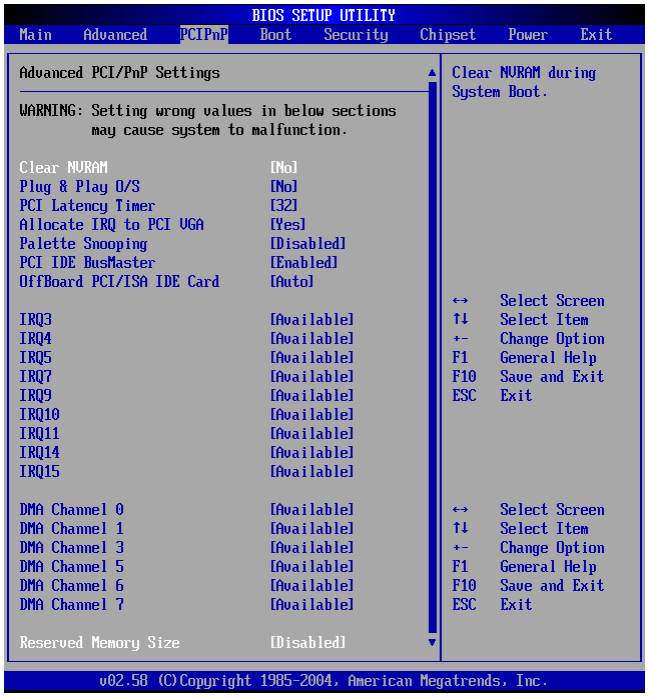
➔	**Auto**	**DEFAULT**	BIOS auto-detects the current USB.
➔	**Floppy**		The USB device will be emulated as a floppy drive. The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.
➔	**Forced FDD**		Allows a hard disk image to be connected as a floppy image.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

6.4 PCI/PnP

Use the PCI/PnP menu (BIOS Menu 13) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCI/PnP BIOS menu may cause the system to malfunction.



BIOS Menu 13: PCI/PnP Configuration

➔ Clear NVRAM [No]

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

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

➔ Plug & Play O/S [No]

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

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

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

➔ **PCI Latency Timer [32]**

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

➔ **Allocate IRQ to PCI VGA [Yes]**

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

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

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

➔ **Palette Snooping [Disabled]**

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

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

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

➔ **PCI IDE BusMaster [Enabled]**

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

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

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

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

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

➔ **PCI Slot 3** PCI Slot 3 is selected as the location of the OffBoard PCI IDE adapter card. Only select this slot if the adapter card is installed in PCI Slot 3.

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

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

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

➔ **IRQ# [Available]**

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

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

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

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9

- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

➔ **DMA Channel# [Available]**

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

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

Available DMA Channels are:

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

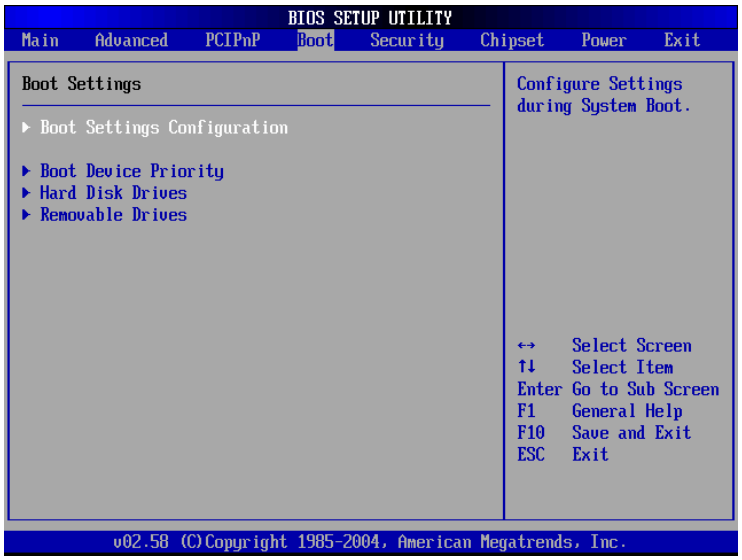
➔ **Reserved Memory Size [Disabled]**

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

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

6.5 Boot

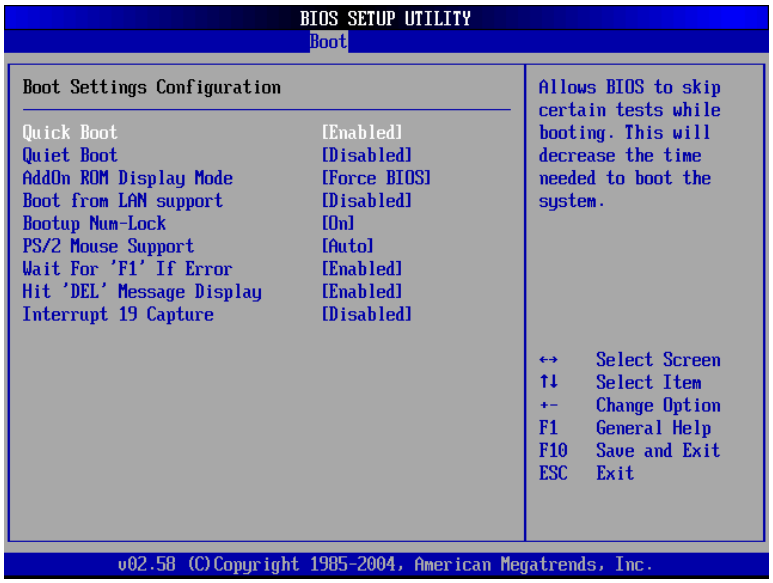
Use the Boot menu (BIOS Menu 14) to configure system boot options.



BIOS Menu 14: Boot

6.5.1 Boot Settings Configuration

Use the Boot Settings Configuration menu (BIOS Menu 15) to configure advanced system boot options.



BIOS Menu 15: Boot Settings Configuration

➔ **Quick Boot [Enabled]**

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

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

➔ **Quiet Boot [Disabled]**

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

➔ **Disabled**	**DEFAULT**	Normal POST messages displayed
➔ **Enabled**		OEM Logo displayed instead of POST messages

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

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

➔ **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display during system boot.
➔ **Keep Current**		The system displays normal information during system boot.

➔ **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**		Can be booted from a remote system through the LAN

➔ **Bootup Num-Lock [On]**

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

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

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

➔ **PS/2 Mouse Support [Auto]**

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

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

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

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

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

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

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

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

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

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

➔ **Disabled** No message displayed during POST

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

➔ **Interrupt 19 Capture [Disabled]**

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

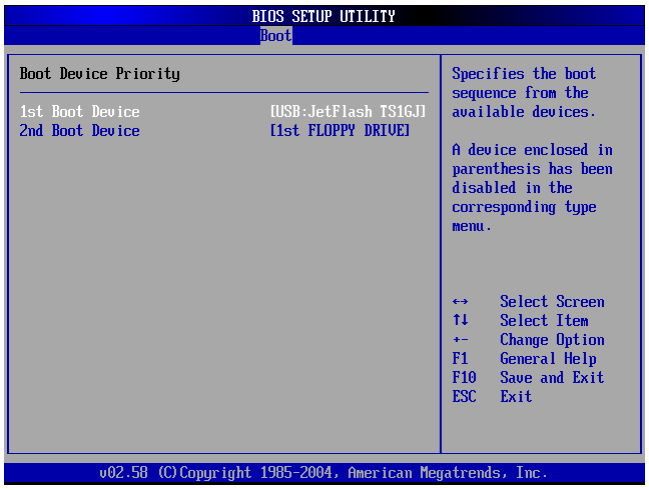
➔ **Disabled** **DEFAULT** Does not allow optional ROM to trap interrupt 19

➔ **Enabled** Allows optional ROM to trap interrupt 19

6.5.2 Boot Device Priority

Use the Boot Device Priority menu (**BIOS Menu 16**) to specify the boot sequence from the available devices. Possible boot devices may include:

- 1st FLOPPY DRIVE
- HDD
- CD/DVD



BIOS Menu 16: Boot Device Priority Settings

6.5.3 Hard Disk Drives

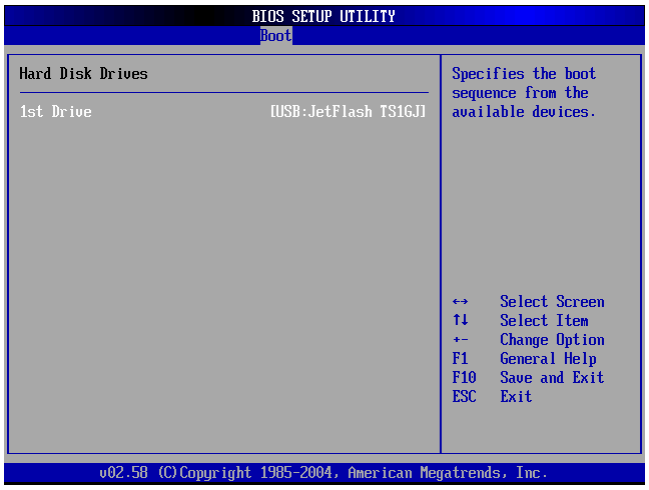
Use the **Hard Disk Drives** menu (**BIOS Menu 17**) to specify the boot sequence of the available HDDs. When the menu is opened, the HDDs connected to the system are listed as shown below:

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

NOTE:

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

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



BIOS Menu 17: Hard Disk Drives

6.5.4 Removable Drives

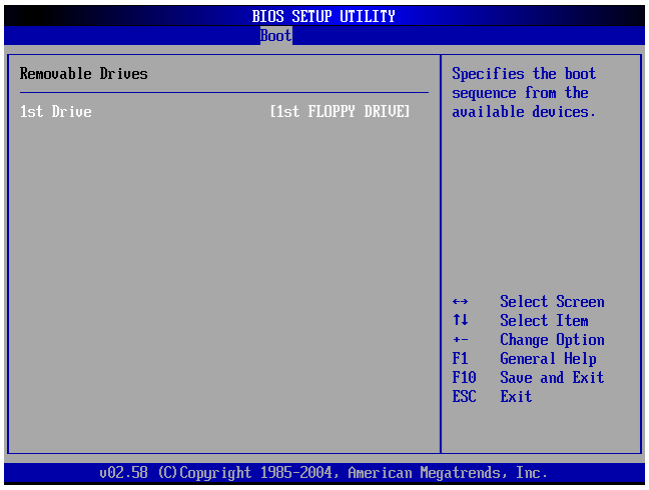
Use the Removable Drives menu (**BIOS Menu 18**) to specify the boot sequence of the available FDDs. When the menu is opened, the FDDs connected to the system are listed as shown below:

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

NOTE:

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

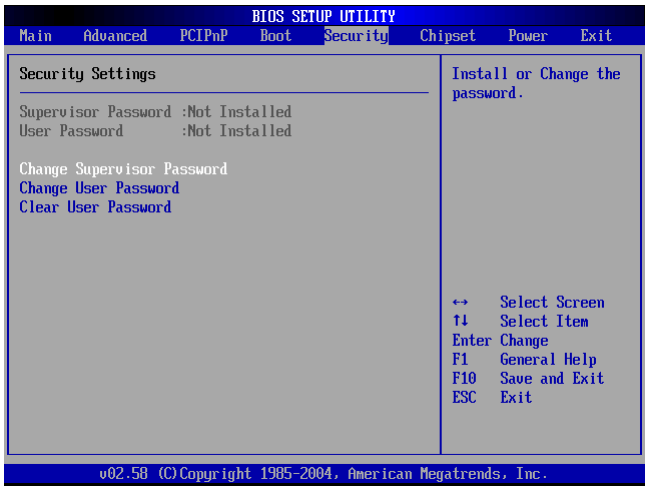
The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available FDDs is shown. Select the first FDD the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.



BIOS Menu 18: Removable Drives

6.6 Security

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



BIOS Menu 19: Security

➔ Change Supervisor Password

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

➔ **User Access Level [Full Access]**

A supervisor password must be installed to make this option available. The **User Access Level** option specifies the access a normal user has to the BIOS settings.

➔	**No Access**		Users have no access to the **Setup Utility**
➔	**View Only**		Users can only view the **Setup Utility**
➔	**Limited**		Users can change limited fields like date and time
➔	**Full Access**	**DEFAULT**	Users have full access to the **Setup Utility**

➔ **Change User Password**

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

➔ **Clear User Password**

A user password must be installed to make this option available. Use the **Clear User Password** option to delete a user password.

➔ **Password Check [Setup]**

A supervisor password must be installed to make this option available. The **Password Check** option specifies when a user is prompted for the password.

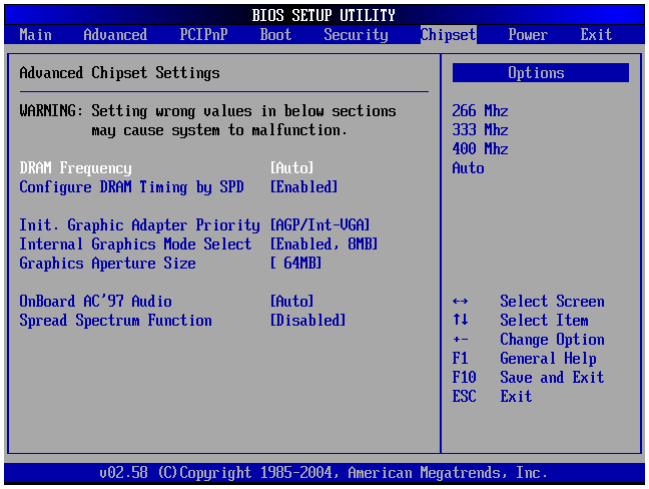
➔	**Setup**	**DEFAULT**	Users have to enter their password only when they enter the **Setup Utility**
➔	**Always**		Users have to enter their password whenever they boot the computer

6.7 Chipset

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

WARNING!

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



BIOS Menu 20: Chipset

➔ **DRAM Frequency [Auto]**

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

➔	**266MHz**		Sets the DRAM frequency to 266MHz
➔	**333MHz**		Sets the DRAM frequency to 333MHz
➔	**400MHz**		Sets the DRAM frequency to 400MHz
➔	**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 [4 clocks]
- DRAM RAS# to CAS# Delay [4 clocks]
- DRAM Precharge Delay [8 clocks]
- DRAM Burst Length [4]

➔ **DRAM CAS# Latency [2.5]**

The **DRAM CAS# Latency** option refers to the Column Address Strobe (CAS) delay time. To be able to change this configuration option the **Configure DRAM Timing by SPD** configuration option must be set to "**Disabled**." The following configuration options are available.

- 2.5 nanoseconds **DEFAULT**
- 2 nanoseconds
- 3 nanoseconds

➔ **DRAM RAS# Precharge [4 Clocks]**

Use the **DRAM RAS# Precharge** option to set the speed at which the RAM terminates the access of one row and start accessing another. To be able to change this configuration option the **Configure DRAM Timing by SPD** configuration option must be set to "**Disabled**." The following configuration options are available

- 4 DRAM Clocks **DEFAULT**
- 3 DRAM Clocks
- 2 DRAM Clocks

➔ **DRAM RAS# to CAS# Delay [4 Clocks]**

Use the **DRAM RAS# to CAS# Delay** option to specify the number of clock cycles must elapse between sending a RAS (row address strobe) signal and the CAS (column address strobe) signal. A pause is required between the RAS signal and the CAS signal to ensure the memory is correctly addressed. To be able to change this configuration option the **Configure DRAM Timing by SPD** configuration option must be set to "**Disabled**." Configuration options are listed below:

- 4 DRAM Clocks **DEFAULT**
- 3 DRAM Clocks
- 2 DRAM Clocks

➔ **DRAM RAS# Precharge Delay [8 Clocks]**

Use the **DRAM RAS# Precharge Delay** option to specify the length of the delay between the activation and precharge commands for the RAS signal. That is how long after activation can the access cycle be started again. This influences row activation time that is considered when memory has hit the last column in a specific row, or when an entirely different memory location is requested. To be able to change this configuration option the **Configure DRAM Timing by SPD** configuration option must be set to "**Disabled**." The following configuration options are available:

- 8 DRAM Clocks **DEFAULT**
- 7 DRAM Clocks

- 6 DRAM Clocks
- 5 DRAM Clocks

➔ **DRAM Burst Length [4]**

The **DRAM Burst Length** BIOS option selects the reads/writes per burst transaction. The following options are available:

- 4 read or writes per burst transaction **DEFAULT**
- 8 read or writes per burst transaction

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

➔ **Internal Graphics Mode Select [Enable, 8MB]**

Use the **Internal Graphic Mode Select** option to specify 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**	**DEFAULT**	8MB of memory used by internal graphics device
➔ **Enable, 16MB**		16MB of memory used by internal graphics device
➔ **Enable, 32MB**		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.

➔	**4MB**		Graphics aperture size set as 4MB
➔	**8MB**		Graphics aperture size set as 8MB
➔	**16MB**		Graphics aperture size set as 16MB
➔	**32MB**		Graphics aperture size set as 32MB
➔	**64MB**	**DEFAULT**	Graphics aperture size set as 64MB
➔	**128MB**		Graphics aperture size set as 128MB
➔	**256MB**		Graphics aperture size set as 256MB

➔ **OnBoard AC97 Audio DEVICE [Auto]**

Use the **OnBoard AC97 Audio DEVICE** option to enable or disable the AC'97 CODEC.

➔	**Auto**	**DEFAULT**	The onboard AC'97 automatically detected and enabled
➔	**Disabled**		The onboard AC'97 is disabled

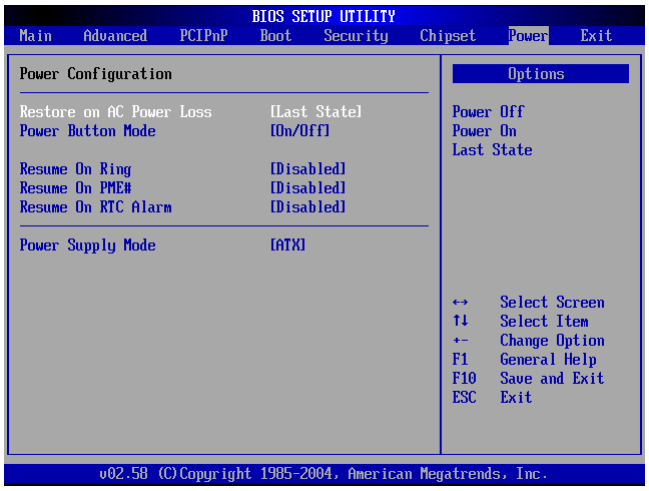
➔ **Spread Spectrum Function [Disabled]**

Use the **Spread Spectrum Function** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔	**Disabled**	**DEFAULT**	EMI not reduced
➔	**Enabled**		EMI reduced

6.8 Power

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



BIOS Menu 21: Power

➔ **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.

➔ **Power Button Mode [On/Off]**

Use the **Power Button Mode** BIOS to specify 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

➔ **Resume on Ring [Disabled]**

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

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

➔ **Resume on PME# [Disabled]**

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

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

➔ **Resume On RTC Alarm [Disabled]**

Use the **Resume On RTC Alarm** option to specify the time the system should be 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.

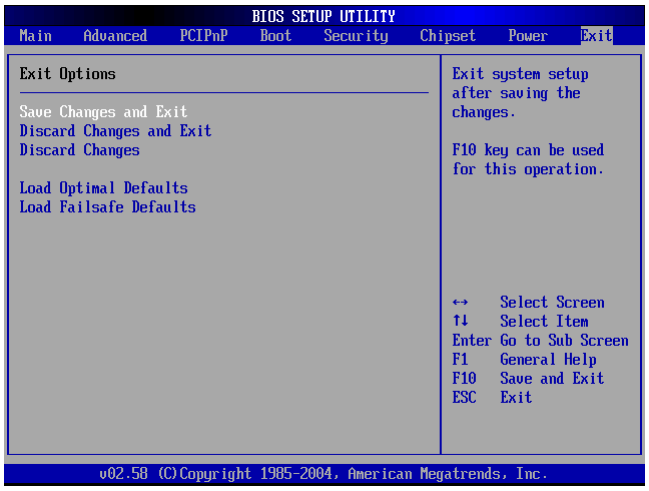
➔ **Power Supply Mode [ATX]**

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

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

6.9 Exit

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



BIOS Menu 22:Exit

➔ **Save Changes and Exit**

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

➔ **Discard Changes and Exit**

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

➔ **Discard Changes**

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

➔ **Load Optimal Defaults**

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

➔ **Load Failsafe Defaults**

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

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Chapter

7

Driver Installation

7.1 Available Software Drivers

NOTE:

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

The following drivers can be installed on the system:

- Chipset driver
- VGA driver
- LAN driver
- USB 2.0 driver
- Audio driver

Installation instructions are given below.

7.2 Driver CD Auto-run

All the drivers for the 2807740 are on the CD that came with the system. To install the drivers, please follow the steps below.

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

NOTE:

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

Step 2: The driver main menu appears.

Step 3: Click **2807740**.

Step 4: A new screen with a list of available drivers appears.

Step 5: Select the driver to install from the list. Detailed driver installation instructions follow below.

7.3 Chipset Driver Installation

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

Step 1: Select **INF** from the list in Error! Reference source not found..

Step 2: A new window opens (**Figure 7-1**).

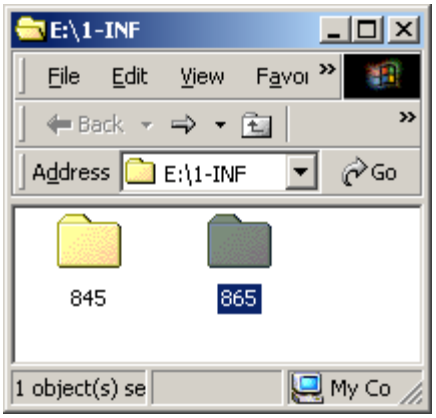

Figure 7-1: Chipset Folder

Step 3: Select **865** from the list in **Figure 7-1**.

Step 4: A new window opens (Figure 7-2).

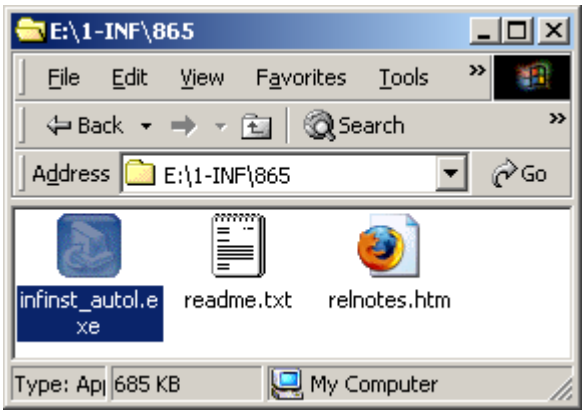

Figure 7-2: Chipset Driver Installation Program

Step 5: Double-click the **infinst_autol.exe** icon.

Step 6: The welcome screen in **Figure 7-3** appears.

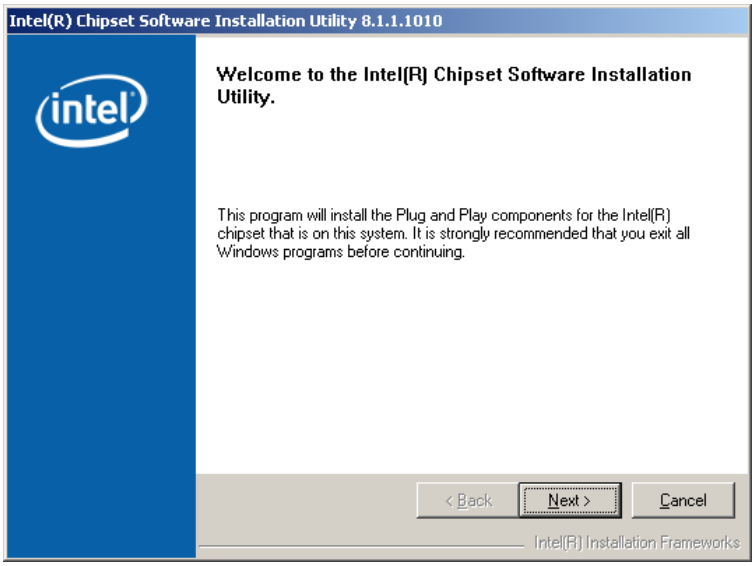

Figure 7-3: Chipset Driver Installation Welcome Screen

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

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

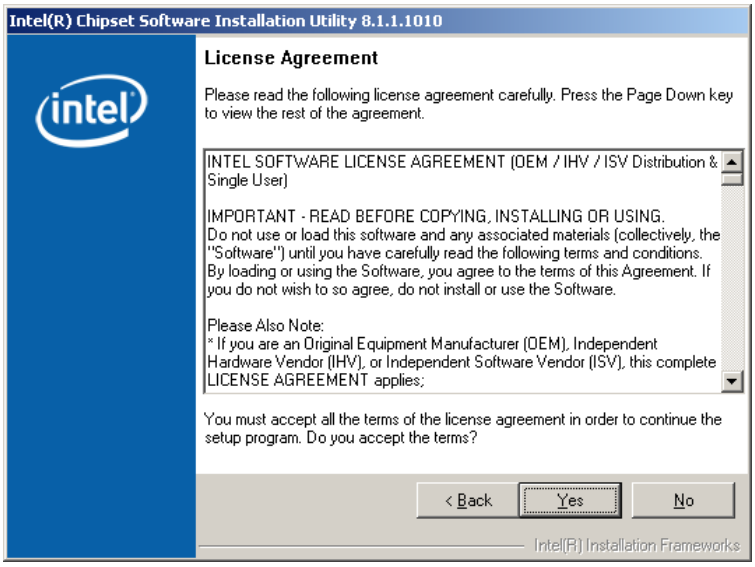

Figure 7-4: Chipset Driver Installation License Agreement

Step 9: Read the license agreement. To accept the terms and conditions stipulated in the agreement, click **YES**.

Step 10: The **Readme** file in **Figure 7-5** appears.

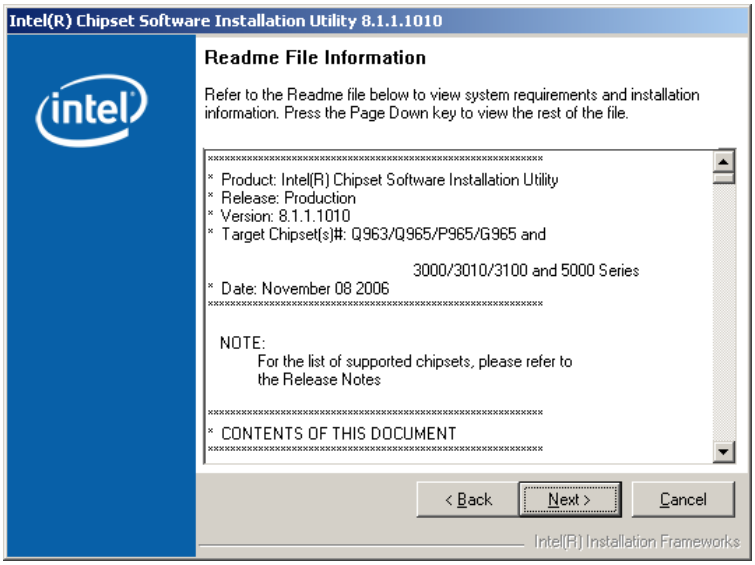

Figure 7-5: Chipset Driver Readme File Information

Step 11: Read the Readme file information and then click **NEXT** to start the driver installation.

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

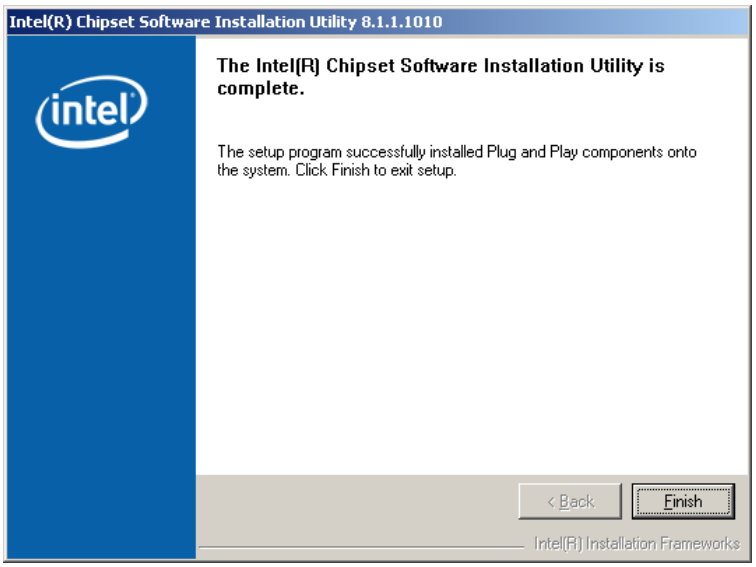

Figure 7-6: Chipset Driver Installation Complete

Step 13: Click **FINISH** to complete the driver installation.

7.4 Intel Graphics Media Accelerator Driver

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

Step 1: Select the **VGA** driver from the list in Error! Reference source not found..

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

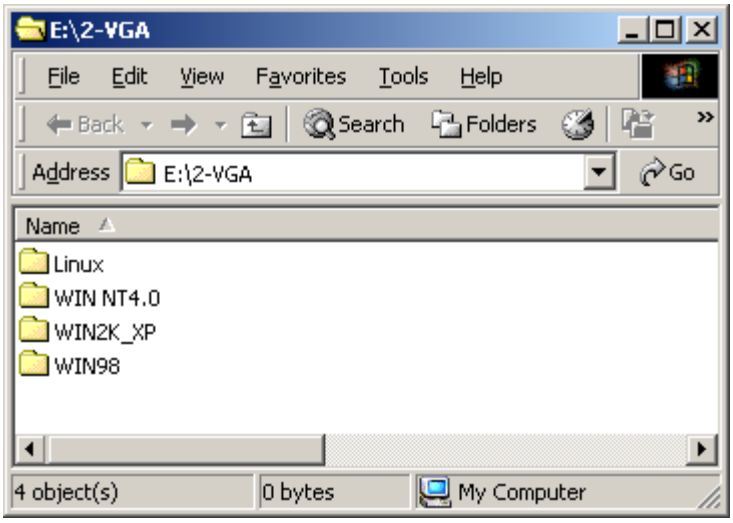

Figure 7-7: VGA OS Folders

Step 3: Double-click the appropriate operating system folder.

Step 4: A new window appears (**Figure 7-8**).

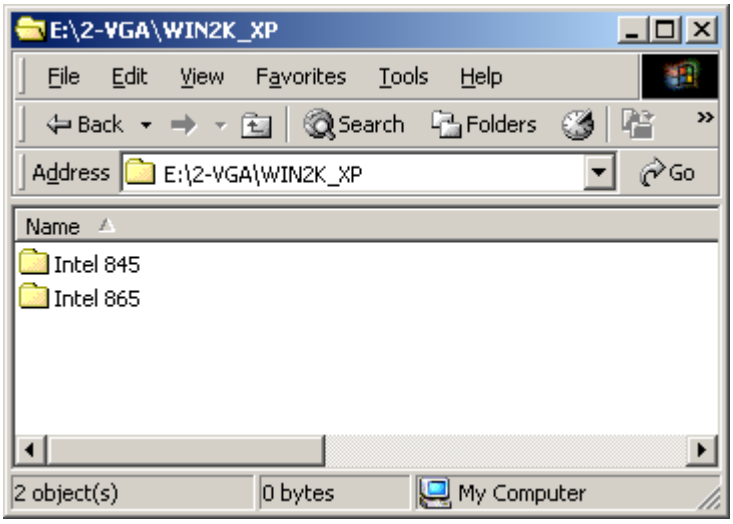

Figure 7-8: VGA Chipset Folder

Step 5: Double-click the **Intel 865** folder.

Step 6: A new window appears (Figure 7-11).

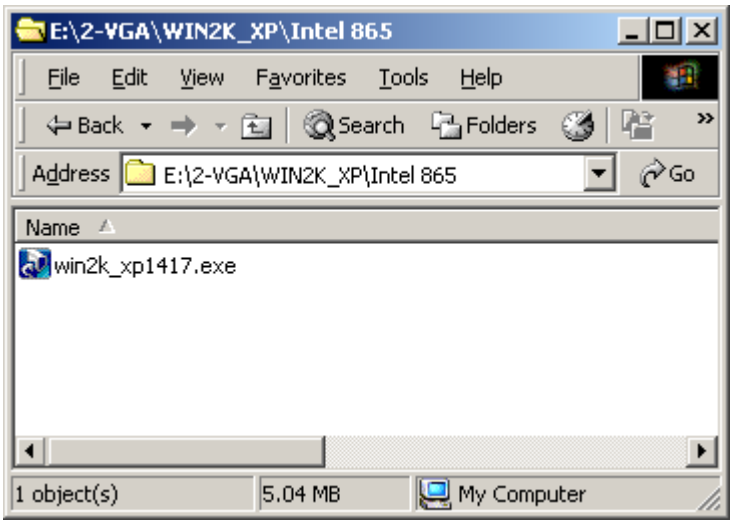

Figure 7-9: VGA Driver File

Step 7: Double-click the installation program icon to continue the installation process.

Step 8: The **Readme** information file shown in **Figure 7-10** appears.

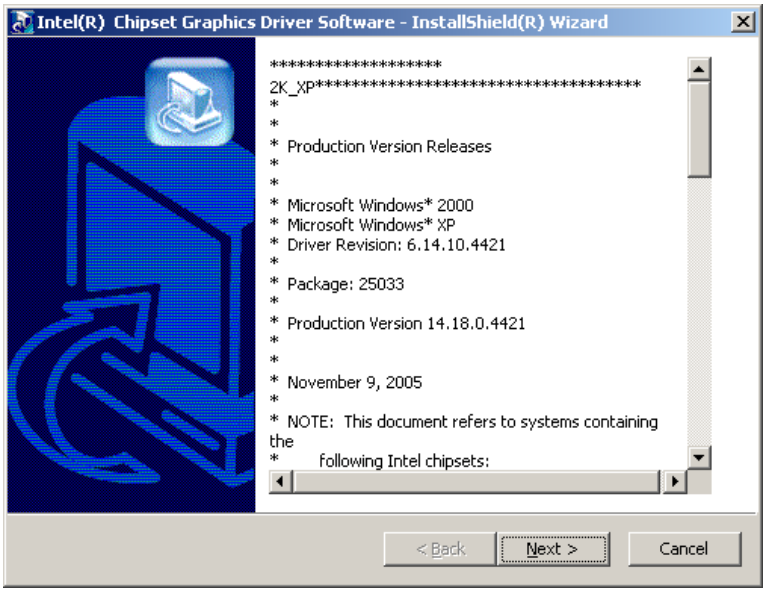

Figure 7-10: Intel® Graphics Media Accelerator InstallShield Wizard

Step 9: Read the Readme file information and click **NEXT** to begin extracting files (**Figure 7-11**).

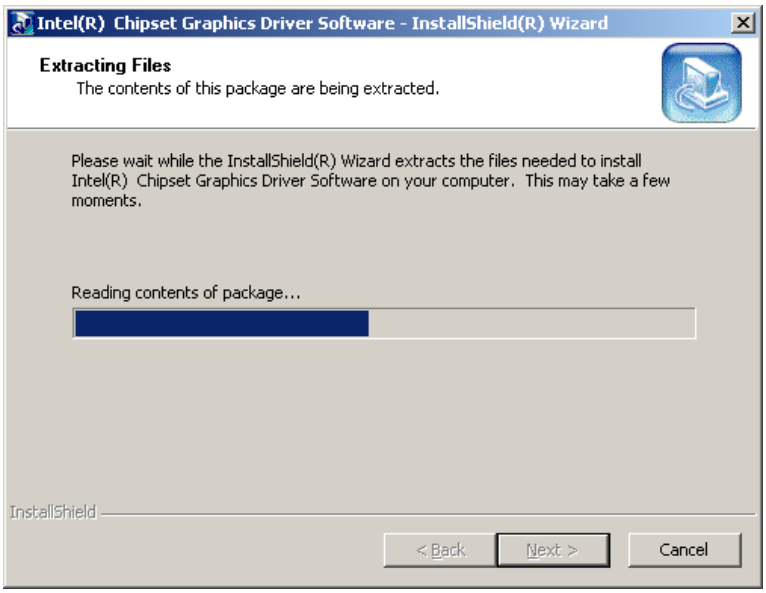

Figure 7-11: InstallShield Wizard Extracting Files

Step 10: The **Graphics Media Accelerator Driver Welcome** screen appears (**Figure 7-12**).

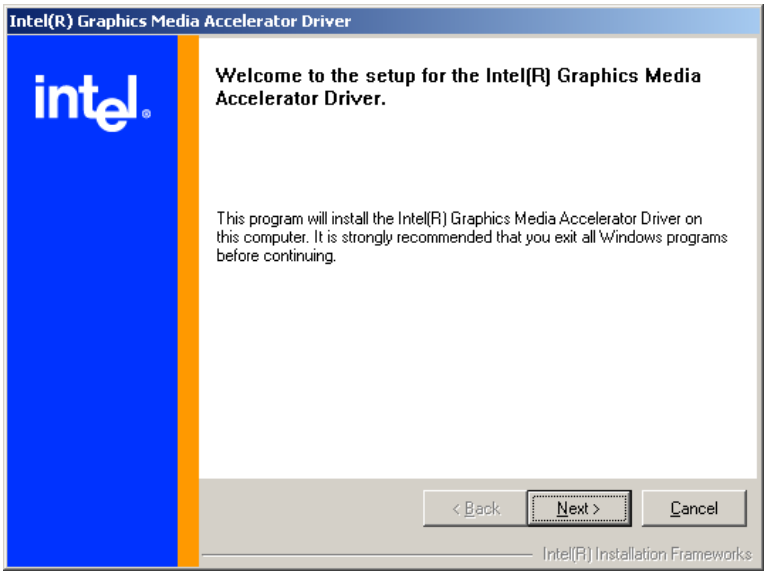

Figure 7-12: Intel® Graphics Media Accelerator Driver Welcome Screen

Step 11: Click **NEXT** and a license agreement appears (**Figure 7-13**).

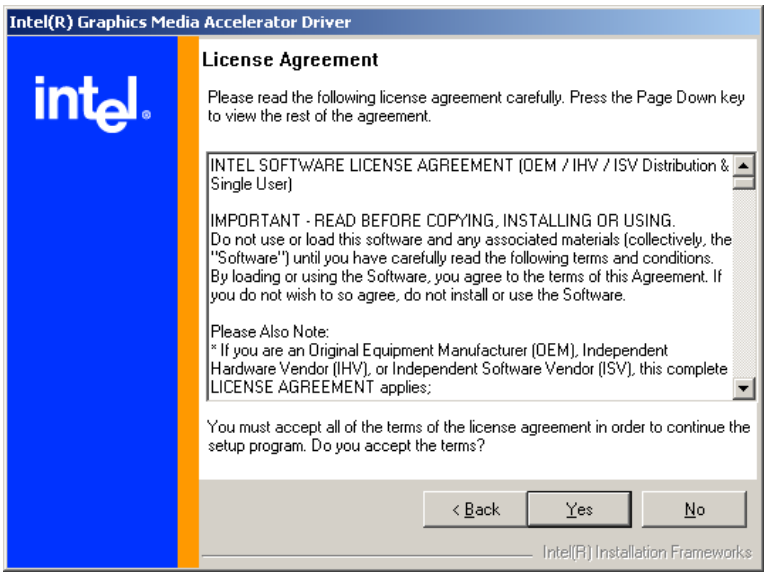

Figure 7-13: Intel® Graphics Media Accelerator Driver License Agreement

Step 12: Read the license agreement. To accept the terms and conditions stipulated in the license agreement shown, click **YES** and the installation notice appears (**Figure 7-14**) as the driver is installed.

Figure 7-14: Intel® Graphics Media Accelerator Driver Installing Notice

Step 13: After the driver installation process is complete, a confirmation screen appears (**Figure 7-15**).

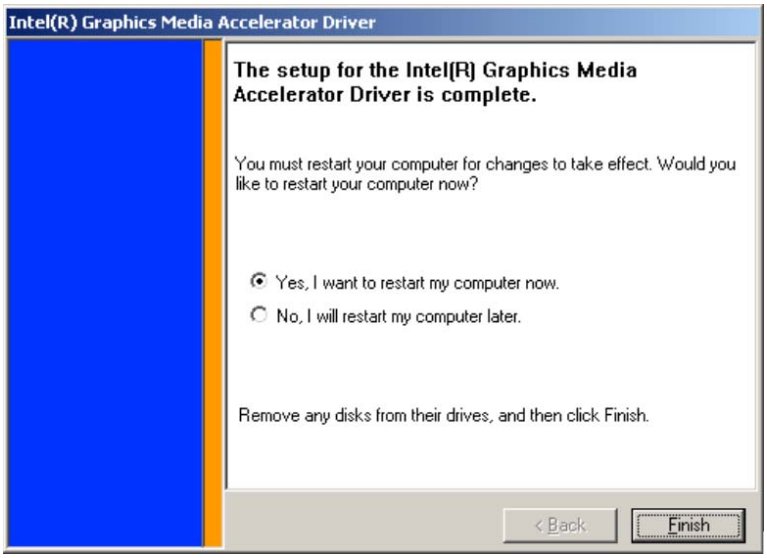

Figure 7-15: Intel® Graphics Media Accelerator Installation Complete

Step 14: The confirmation screen offers the option of restarting the computer now or later. For the settings to take effect, the computer must be restarted. Click **FINISH** to restart the computer.

7.5 Intel® Network Adapter Installation

To install the Intel® Network Adapter, please follow the steps below.

Step 1: Select the **LAN** driver from the list in Error! Reference source not found..

Step 2: A new window opens (Figure 7-16).

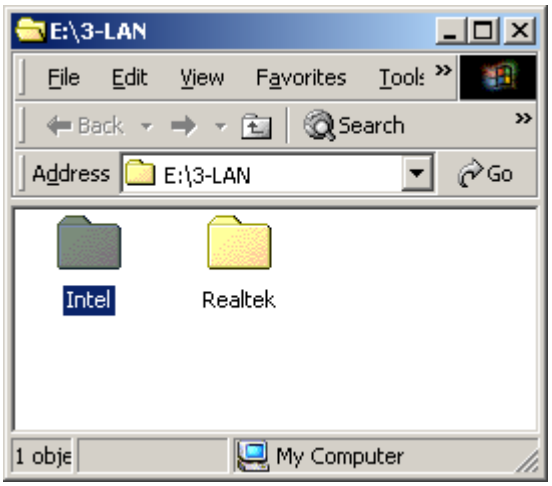

Figure 7-16: Select the Driver Folder

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

Step 4: A new window appears (Figure 7-17).

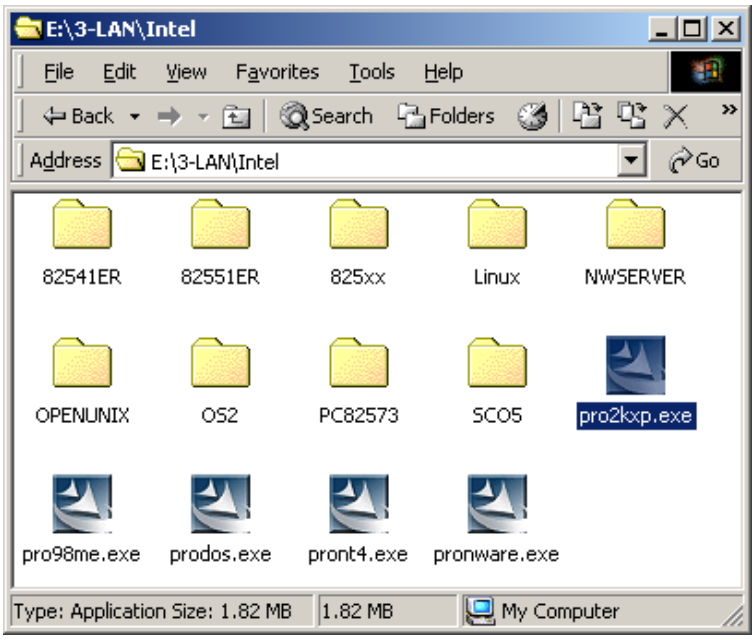

Figure 7-17: Select the Driver

Step 5: Double-click the appropriate installation program icon to continue the installation process.

Step 6: The license agreement in Figure 7-18 appears.

Figure 7-18: Network Adapter License Agreement

Step 7: Read the license agreement. To accept the terms and conditions stipulated in the agreement, select "**I accept the terms…**" and click **NEXT**.

Step 8: The Location to Save Files window (Figure 7-19) appears.

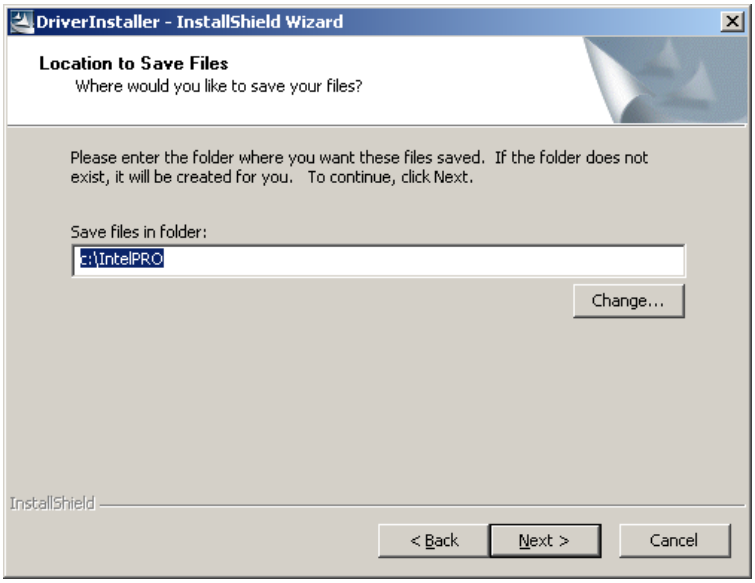

Figure 7-19: Location to Save Files

Step 9: Click **NEXT** to accept the default folder and begin extracting files (Figure 7-20).

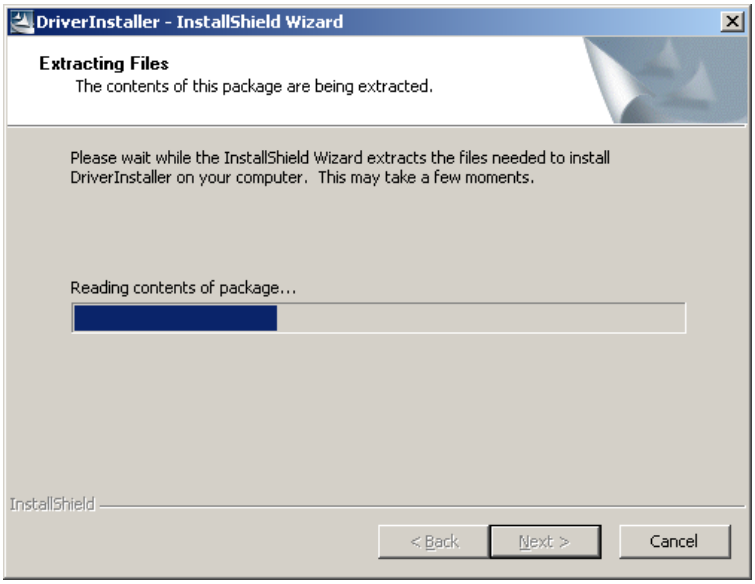

Figure 7-20: InstallShield Wizard Extracting Files

Step 10: If the **Overwrite Protection** window appears (Figure 7-21), make the appropriate choice to either continue the installation process or not.

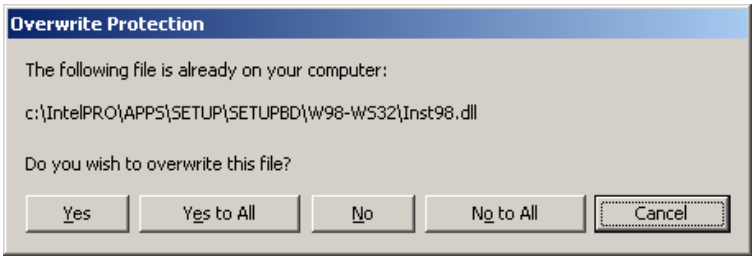

Figure 7-21: Overwrite Protection

Step 11: File extraction continues (Figure 7-22).

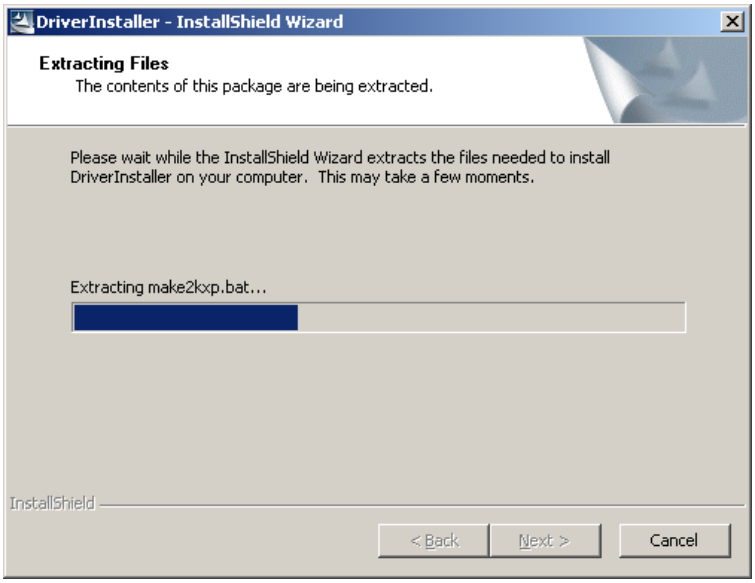

Figure 7-22: File Extraction Continues

Step 12: The **Intel® Pro Network Connections** window appears (Figure 7-23).

Figure 7-23: Intel® Pro Network Connections

Step 13: Click Install **Base Driver** and an installation notice appears (Figure 7-24) as the driver is installed.

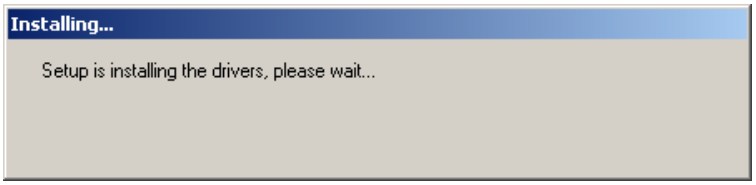

Figure 7-24: Intel® Pro Network Connections Driver Installation Notice

Step 14: After the driver is installed click **EXIT** in the **Intel® Pro Network Connections** window to exit the program.

7.6 Realtek RTL8110SC GbE LAN Installation

To install the Realtek RTL8110SC GbE LAN driver, please follow the steps below.

Step 1: Select **LAN** from the list in Error! Reference source not found..

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

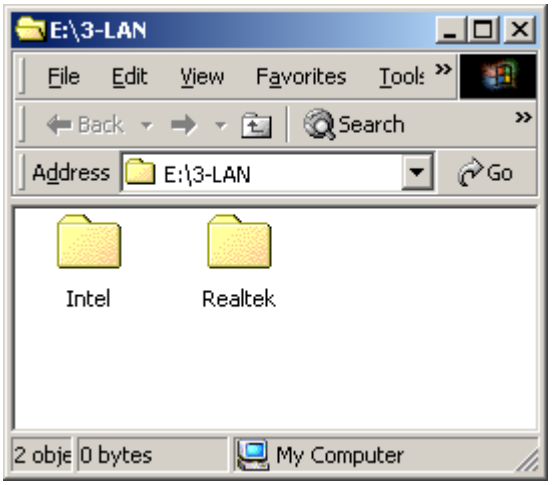

Figure 7-25: LAN Window

Step 3: Double-click the **Realtek** folder and a new window opens (Figure 7-26).

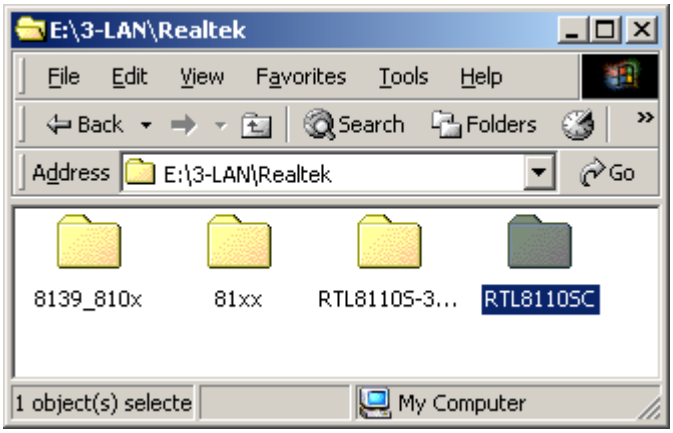

Figure 7-26: Realtek Folder

Step 4: Double-click the **Realtek** folder and a new window opens (Figure 7-27).

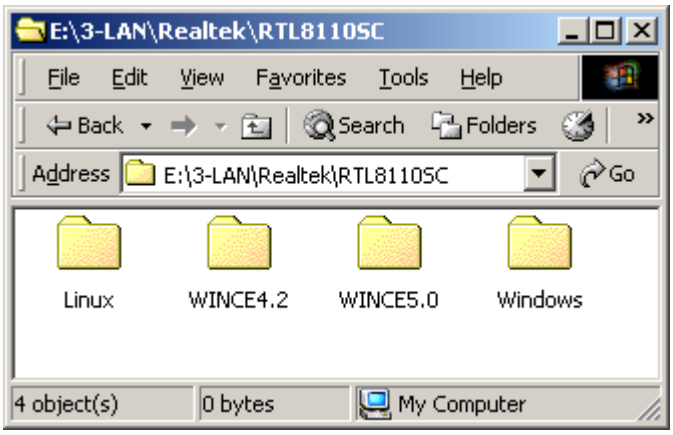

Figure 7-27: RTL8110SC Folder

Step 5: Double-click the appropriate OS folder and a new window opens (Figure 7-28).

NOTE:

The remainder of this installation assumes the use of Windows XP as the operating system.

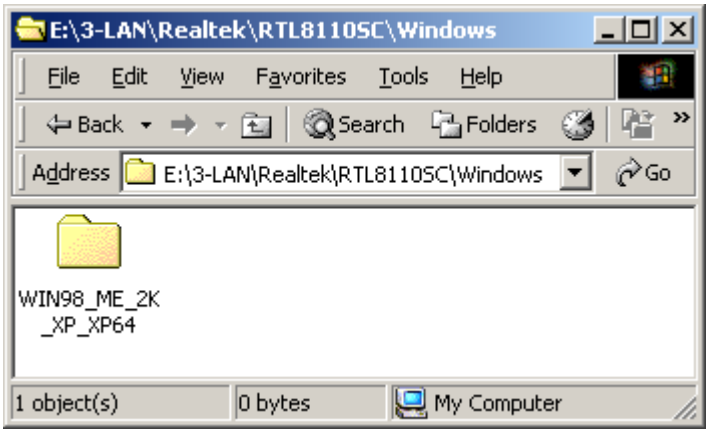

Figure 7-28: Windows Folder

Step 6: Double-click the **WIN98_ME_2K_XP_XP64** folder and a new window opens (Figure 7-29).

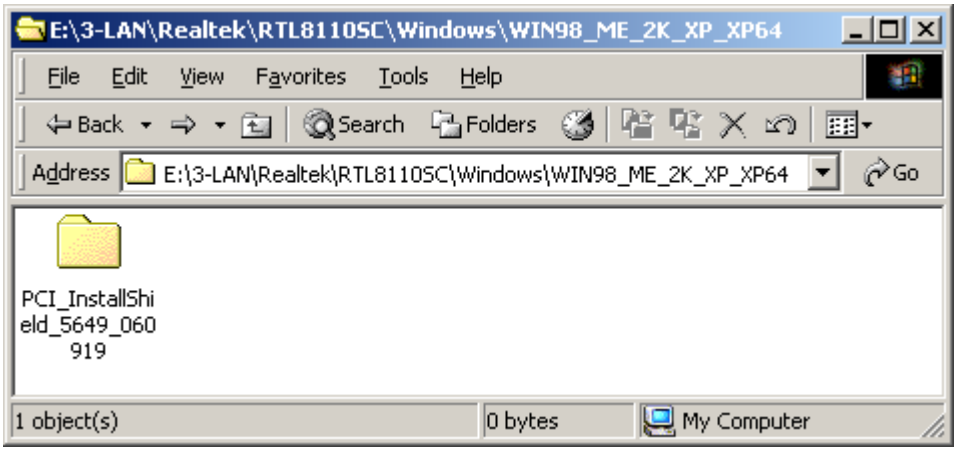

Figure 7-29: WIN98_ME_2K_XP_XP64 Folder

Step 7: Double-click the **PCI_InstallShield_5649_060_919** folder and a new window opens (Figure 7-30).

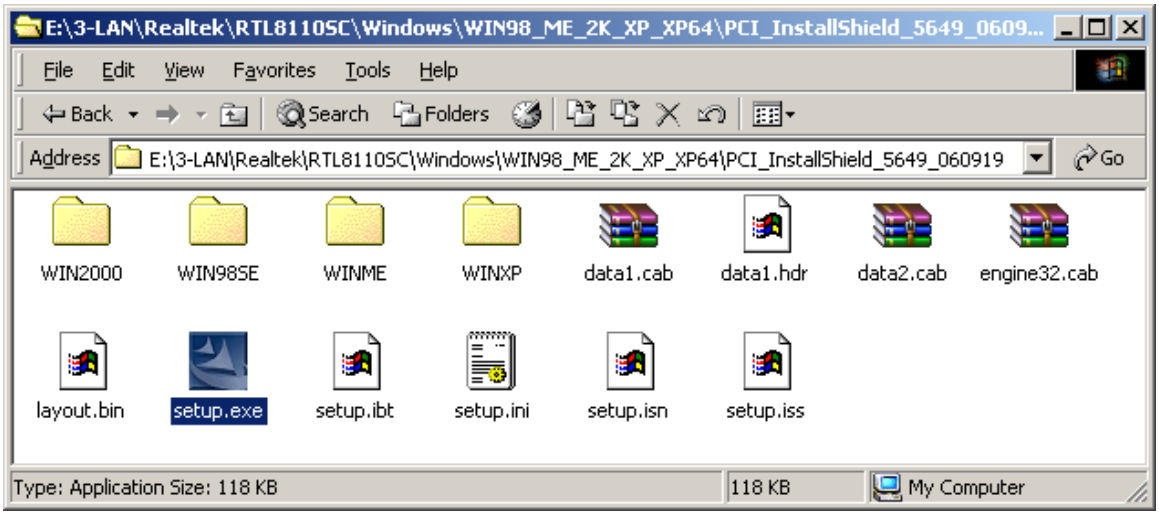

Figure 7-30: PCI_InstallShield_5649_060_919 Folder

Step 8: Double-click the **setup.exe** program icon.

Step 9: The **InstallShield Wizard** is prepared to guide the user through the rest of the process (Figure 7-31).

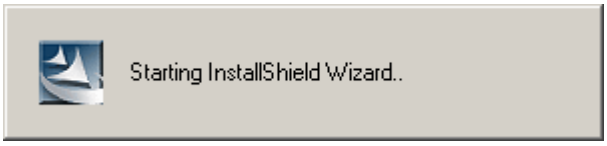

Figure 7-31: RTL8110SC InstallShield Wizard

Step 10: The **InstallShield Wizard** continues (Figure 7-32).

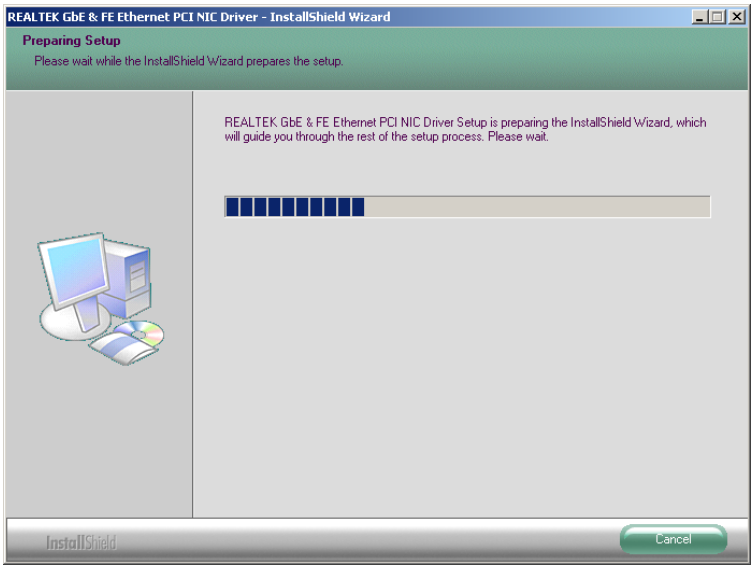

Figure 7-32: RTL8110SC InstallShield Wizard Continues

Step 11: Once initialized, the **InstallShield Wizard** welcome screen appears (Figure 7-33).

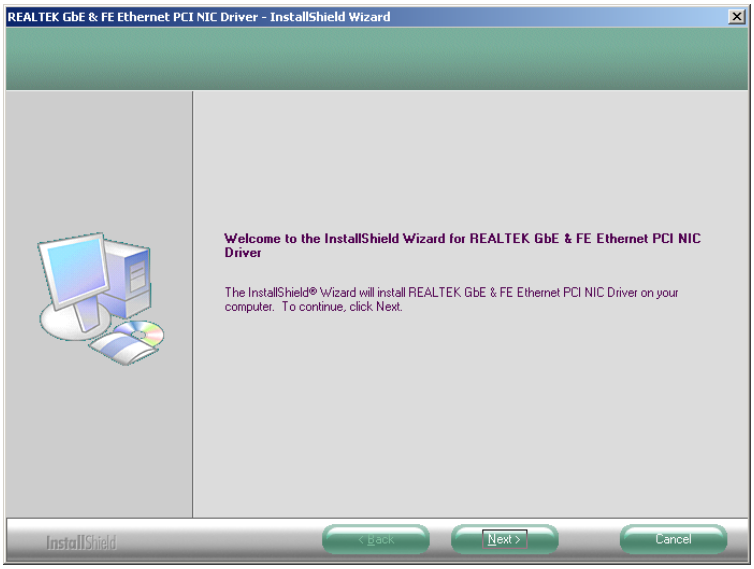

Figure 7-33: RTL8110SC InstallShield Wizard Welcome Screen

Step 12: Click **NEXT** to continue the installation.

Step 13: The **InstallShield Wizard** is ready to install the driver (Figure 7-34).

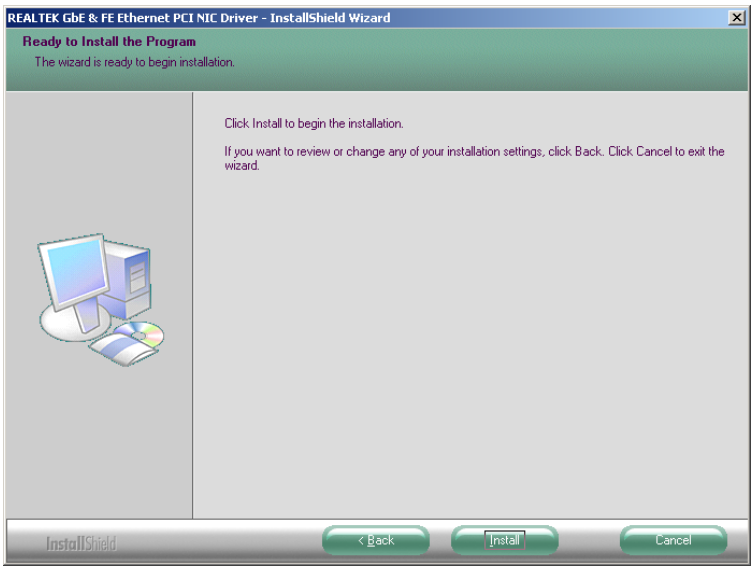

Figure 7-34: RTL8110SC Driver Ready Screen

Step 14: Click **INSTALL** to continue the installation process.

Step 15: **InstallShield** starts to install the new software (Figure 7-35).

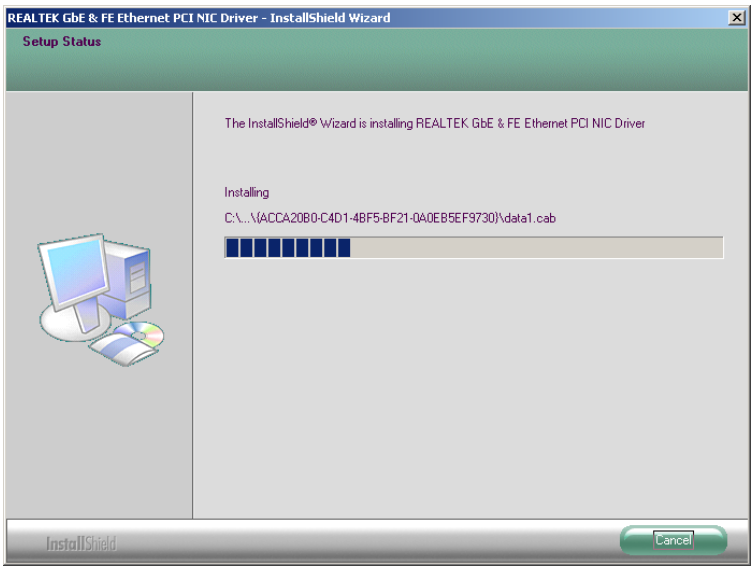

Figure 7-35: RTL8110SC Drivers Installing

Step 16: The **InstallShield Wizard** continues (Figure 7-36).

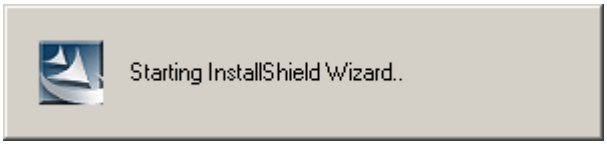

Figure 7-36: RTL8110SC InstallShield Wizard

Step 17: After the driver installation process is complete, a confirmation screen appears (Figure 7-37).

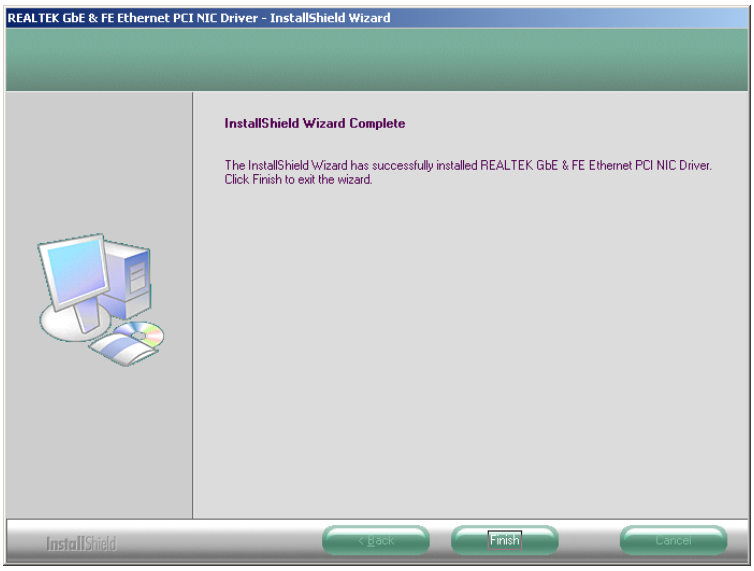

Figure 7-37: RTL8110SC Driver Installation Complete

Step 18: Click **FINISH** to exit the program.

7.7 Realtek AC`97 Audio Driver (ALC665) Installation

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

7.7.1 BIOS Setup

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

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

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

7.7.2 Driver Installation

To install the audio driver please follow the steps below.

Step 1: Select **AUDIO** from the list in Error! Reference source not found..

Step 2: A new window opens (**Figure 7-38**).

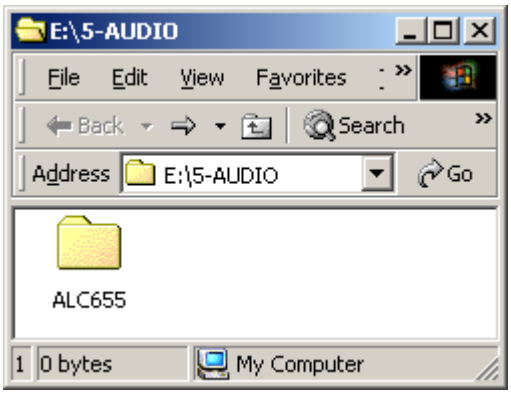

Figure 7-38: Open the ALC655 Folder

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

Step 4: A new window opens (Figure 7-39).

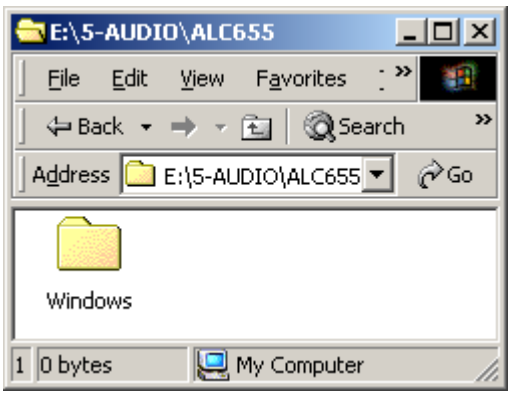

Figure 7-39: Open the Windows Folder

Step 5: Double-click the **Windows** folder.

Step 6: A new window opens (**Figure 7-40**).

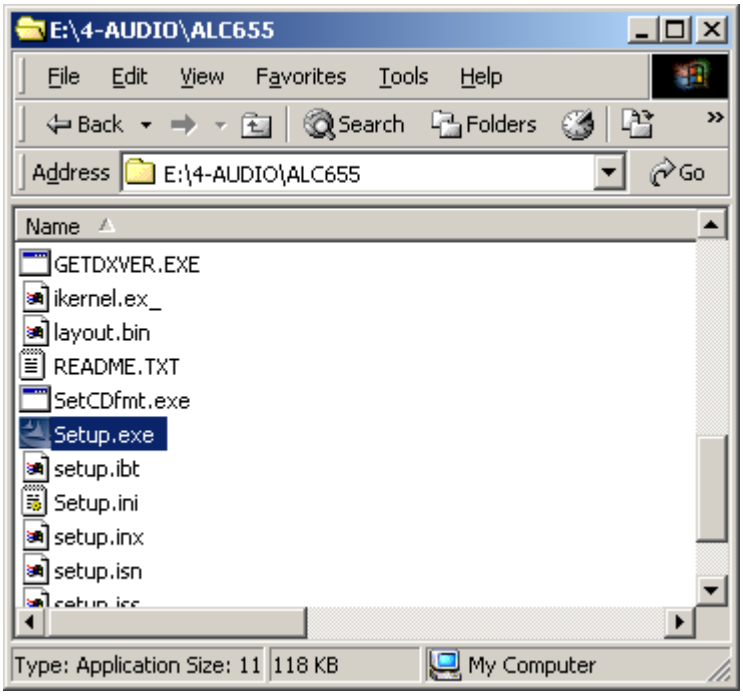

Figure 7-40: Locate the Setup Program Icon

Step 7: Double-click the **Setup.exe** program icon in **Figure 7-40**.

Step 8: The **InstallShield Wizard** is prepared to guide the user through the rest of the process (**Figure 7-41**).

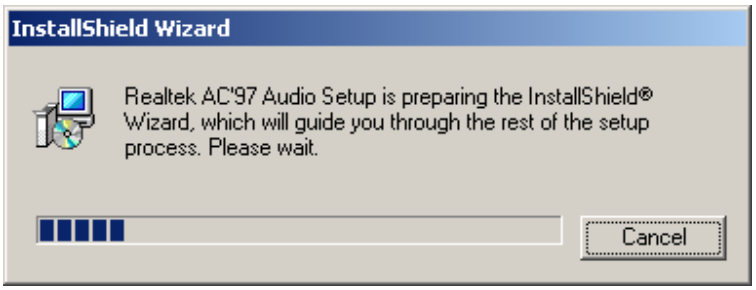

Figure 7-41: Preparing Setup Screen

Step 9: Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 7-42**).

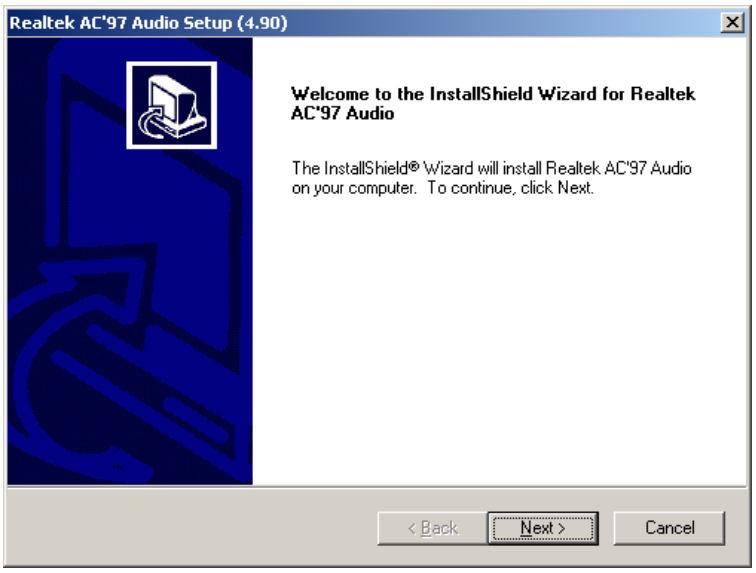

Figure 7-42: InstallShield Wizard Welcome Screen

Step 10: Click **NEXT** to continue the installation.

Step 11: **InstallShield** starts to install the new software as shown in **Figure 7-43**.

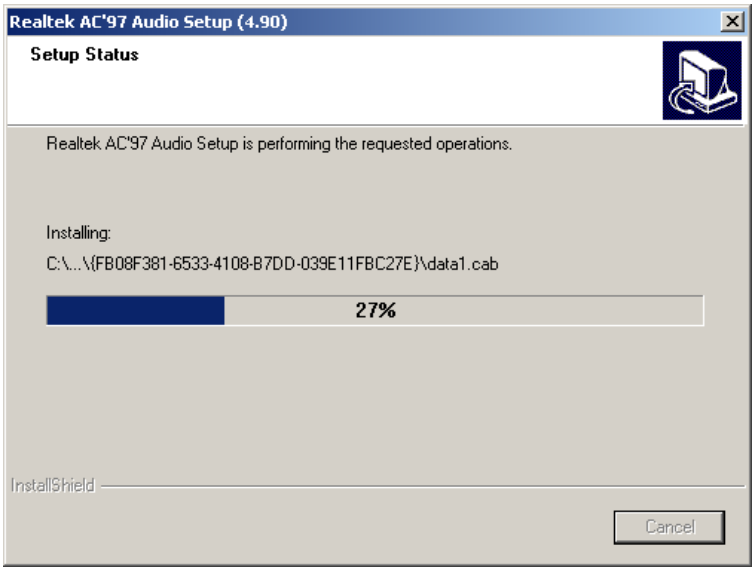

Figure 7-43: Audio Driver Software Configuration

Step 12: At this stage the **Digital Signal Not Found** screen shown in **Figure 7-44** appears.

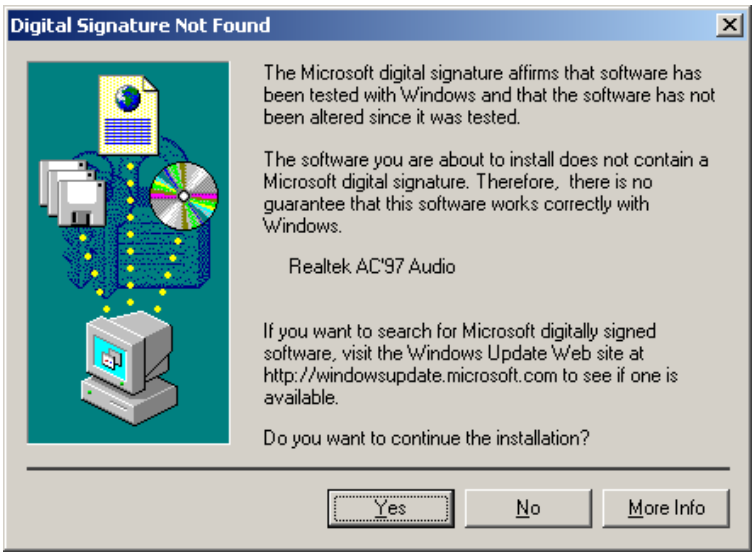

Figure 7-44: Audio Driver Digital Signal

Step 13: Click **YES** and the driver installation begins (**Figure 7-45**).

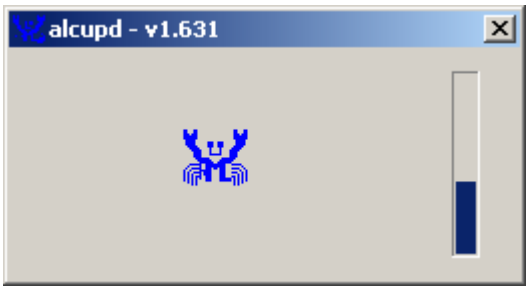

Figure 7-45: Audio Driver Installation

Step 14: After the driver installation process is complete, a confirmation screen appears (**Figure 7-46**).

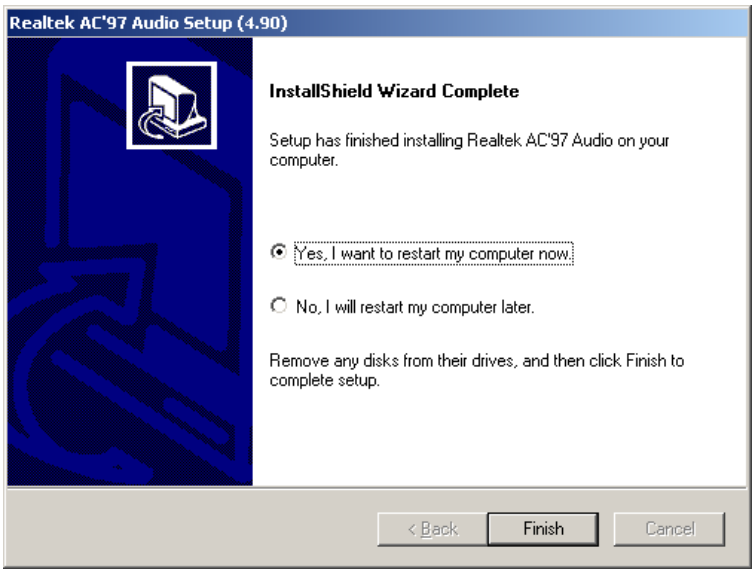

Figure 7-46: Restart the Computer

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

Appendix

A

BIOS Menu Options

A.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 6**.

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Appendix

B

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. GLOBAL AMERICAN, INC. support is contacted or the GLOBAL AMERICAN, INC. 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 EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

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

INT 15H:

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

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

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

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

NOTE:

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

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

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

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

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Appendix

C

Address Mapping

C.1 IO Address Map

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

Table C-1: IO Address Map

C.2 1st MB Memory Address Map

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

Table C-2: 1st MB Memory Address Map

C.3 IRQ Mapping Table

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

Table C-3: IRQ Mapping Table

C.4 DMA Channel Assignments

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

Table C-4: IRQ Mapping Table

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Appendix

D

External AC'97 Audio CODEC

D.1 Introduction

The motherboard comes with an onboard Realtek ALC655 CODEC. The ALC655 is a 16-bit, full-duplex AC'97 Rev. 2.3 compatible six-channel audio CODEC that provides three pairs of stereo outputs with 5-bit volume control, a mono output, and multiple stereo and mono inputs, along with flexible mixing, gain, and mute functions.

D.1.1 Accessing the AC'97 CODEC

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

- LINE IN
- LINE OUT
- MIC IN

D.1.2 Driver Installation

The driver installation has been described in Section 7.5.

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

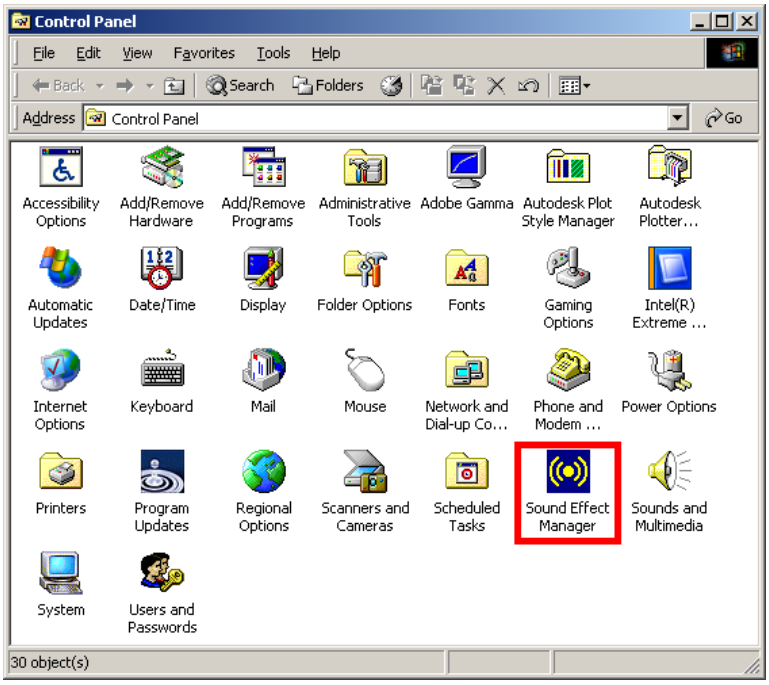

Figure D-1: Control Panel Sound Effect Manager

D.2 Sound Effect Configuration

D.2.1 Accessing the Sound Effects Manager

Follow the steps below to access the **Sound Effect Manager**.

Step 1: Install the ALC655 audio CODEC driver (see Section **7.5**).

Step 2: Click the Sound Effect Manager icon in the system task bar (**Figure D-2**).

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

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

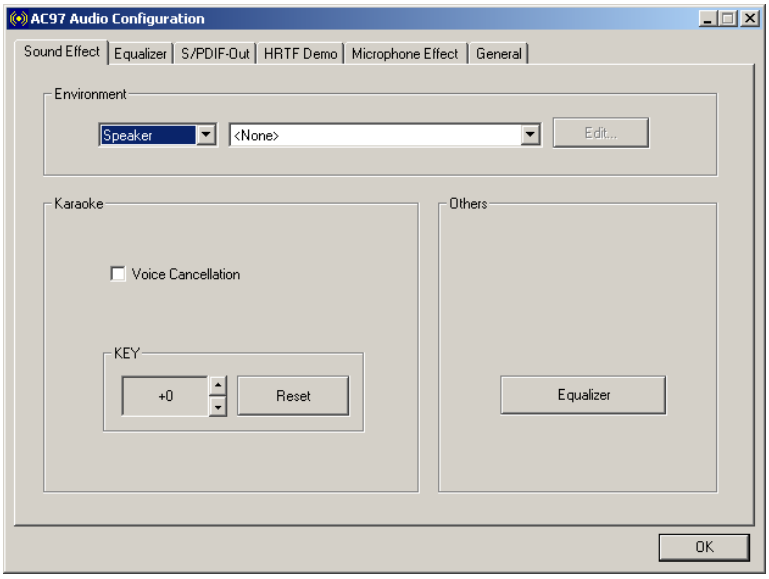

Figure D-3: Sound Effects Manager (ALC655)

NOTE:

The Sound Effect Manager shown in **Figure D-3** is for the RealTek ALC655 audio CODEC. Different CODECs may have different sound manager appearances.

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

D.2.2 Sound Effect Manager Configuration Options

The **Sound Effects Manager** enables configuration of the items listed below. To configure these items click the corresponding menu tab in the **Sound Effects Manager** (**Figure D-3)**.

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. Click **EDIT** to edit the sound effect.
- ***Karaoke Mode*** - **Karaoke Mode** is accessed in the Sound Effect tab. The **Voice Cancellation** disables the vocal part of the music being played. The **Key adjustment** up or down arrow icons enable 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*** - S/PDIF is used to transmit digital and analog audio signals with either a 48 or 44.1kHz sample rate.
- ***HRTF Demo*** - Adjust HRTF (Head Related Transfer Functions) 3D positional audio 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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Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

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