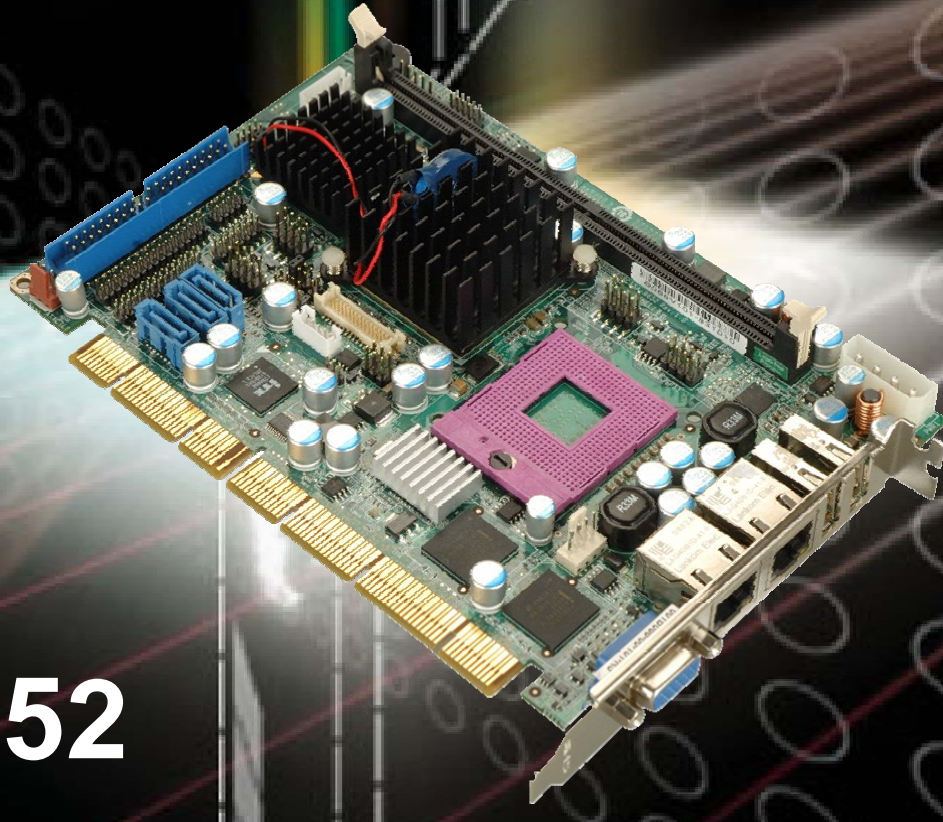# IEI

**IEI Technology Corp.**

**MODEL:**

# PCISA-9652

**Half-size PCISA Socket P Intel® Core™2 Duo CPU Card with VGA, LVDS, SDVO, TV-out, Dual PCIe GbE, Six USB Ports, Three SATA 3Gb/s Ports and CF Type II Slot**

# User Manual

**Rev. 1.02 – 9 February, 2010**

RoHS Lead Free

# Revision

| Date | Version | Changes |
|------|---------|---------|
| 9 February, 2010 | 1.02 | Modified RJ-45 LED indicator information |
| August, 2008 | 1.01 | Modified part numbers of the SATA cable, SATA power cable and USB cable |
| April, 2008 | 1.00 | Initial Release |

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# Manual Conventions

## WARNING!

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

## WARNING:

This is an example of a warning message. Failure to adhere to warning messages may result in permanent damage to the PCISA-9652 or personal injury to the user. Please take warning messages seriously.

## CAUTION!

Cautionary messages should also be heeded to help reduce the chance of losing data or damaging the PCISA-9652. Cautions are easy to recognize. The word "caution" is written as "**CAUTION**," both capitalized and bold and is followed. The italicized text is the cautionary message. A caution message is shown below:

**⚠ CAUTION:**

This is an example of a caution message. Failure to adhere to cautions messages may result in permanent damage to the PCISA-9652. Please take caution messages seriously.

**✔ NOTE:**

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

**✔ NOTE:**

This is an example of a note message. Notes should always be read. Notes contain critical information about the PCISA-9652. Please take note messages seriously.

# Packing List

**NOTE:**

If any of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the PCISA-9652 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The items listed below should all be included in the PCISA-9652 package.

- 1 x PCISA-9652 CPU card
- 1 x IDE flat cable
- 1 x Mini jumper pack
- 1 x Parallel port and RS-232 cable
- 2 x SATA cables
- 1 x SATA power cable
- 1 x USB cable
- 1 x Utility CD
- 1 x Quick installation guide

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

# Table of Contents

# List of Figures

# List of Tables

# List of BIOS Menus

Chapter

1

# Introduction

## 1.1 PCISA-9652 Overview
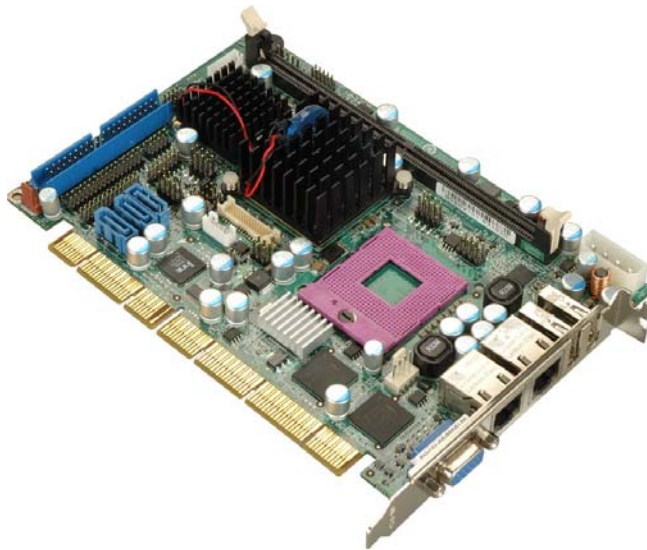


**Figure 1-1: PCISA-9652 CPU Card**

The PCISA-9652 half-size PCISA CPU card is a Socket P Intel® Core™2 Duo (Merom core) CPU platform. The PCISA-9652 has a maximum front side bus (FSB) frequency of 800 MHz and comes with a VGA interface and dual PCI Express (PCIe) Gigabit Ethernet (GbE). The PCISA-9652 supports up to three, second-generation serial ATA (SATA) hard disk drives (HDD) with maximum transfer rates of 3.0 Gbps and up to six USB 2.0 devices. The PCISA-9652 also has a CompactFlash® card socket for additional system storage. Multiple display support adds versatility to the system enabling system integrators and designers increased flexibility in selecting display panel options.

### 1.1.1 PCISA-9652 Features

Some of the PCISA-9652 features are listed below:

- Complies with RoHS
- Supports Socket P Intel® Core™2 Duo processor with Merom core
- Supports a maximum FSB speed up to 800 MHz
- Supports one 240-pin 2 GB (max.) 533/667 MHz DDR2 SDRAM DIMM
- Dual PCIe GbE connectors
- Supports three SATA II channels with transfer rates up to 3.0 Gbps

- ■ Supports six USB 2.0 devices

- ■ Supports HDTV-Out, 24-bit dual-channel LVDS and CRT

## 1.2 PCISA-9652 Board Overview
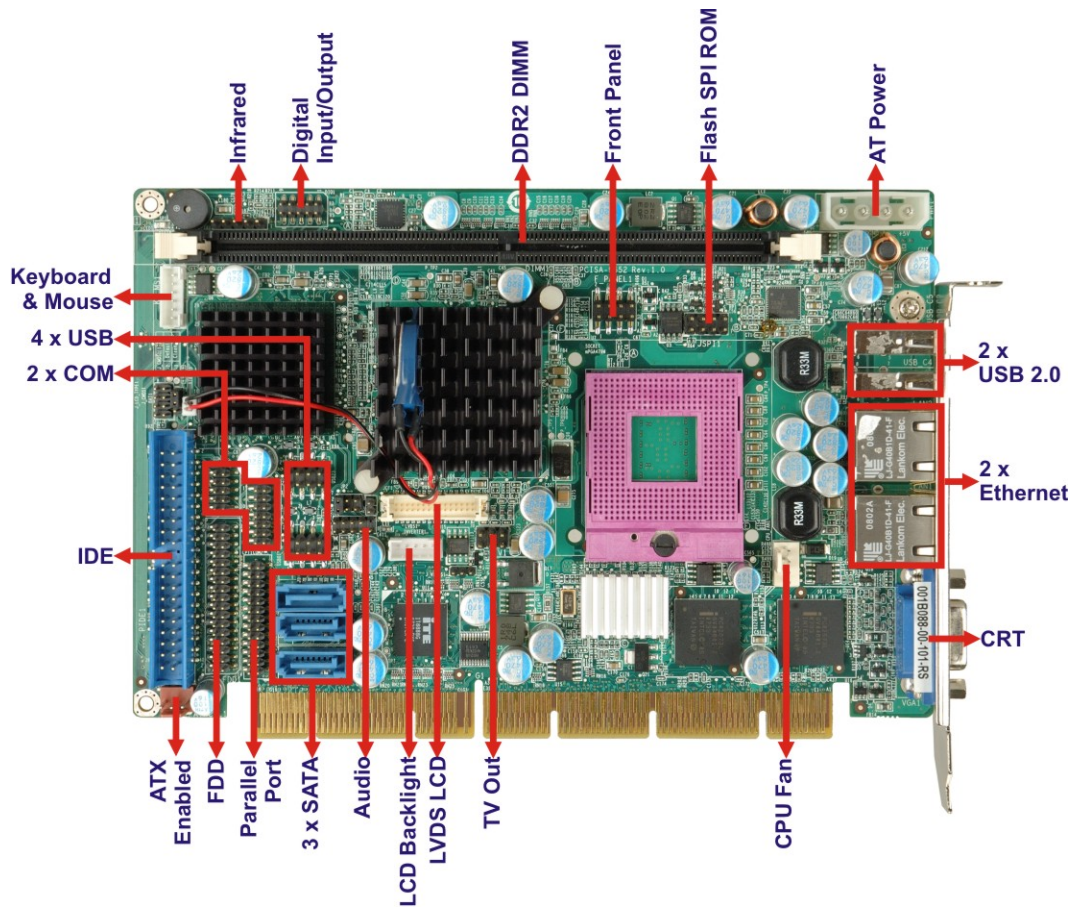


**Figure 1-2: PCISA-9652 Board Overview (Front Side)**
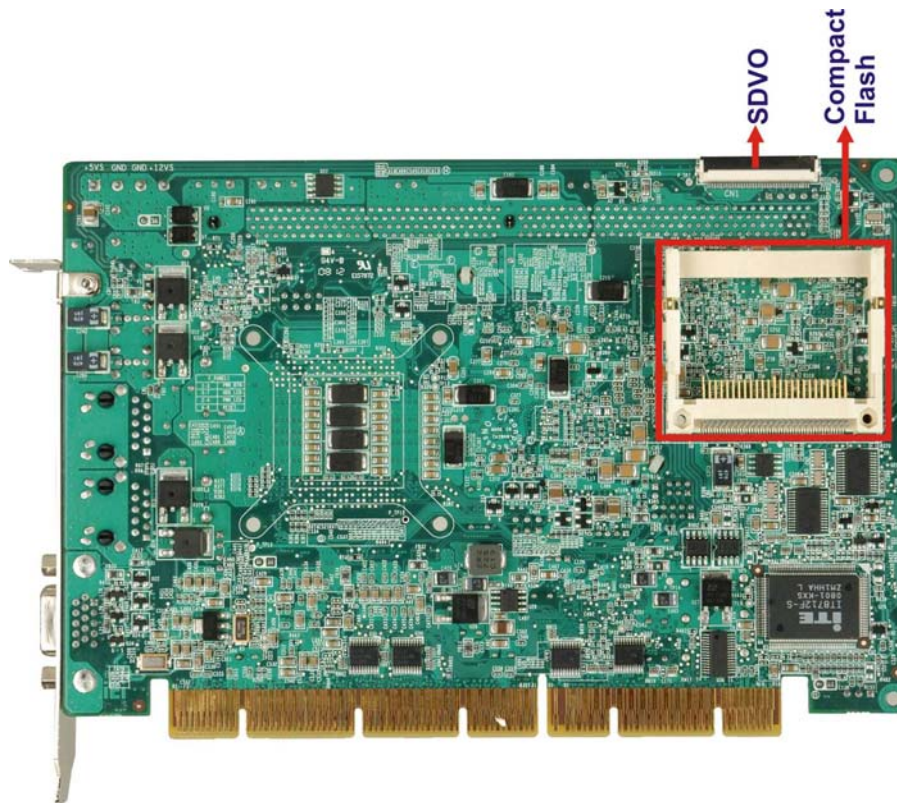
**Figure 1-3: PCISA-9652 Board Overview (Solder Side)**

## 1.2.1 PCISA-9652 Connectors

The PCISA-9652 has the following connectors on-board:

- 1 x Audio connector
- 1 x AT power connector
- 1 x ATX enable connector
- 1 x CompactFlash® card slot
- 1 x DDR2 DIMM socket
- 1 x Digital I/O connector
- 1 x Fan connector
- 1 x Flash SPI ROM connector
- 1 x Floppy disk connector
- 1 x Front panel connector
- 1 x IDE Interface connector

- 1 x Infrared interface connector
- 1 x Keyboard connector
- 1 x LCD backlight connector
- 1 x LVDS LCD connector
- 1 x Parallel port connector
- 1 x RS-232 serial port connector
- 1 x RS-232/422/485 serial port connector
- 3 x SATA II connectors
- 1 x SDVO connector
- 1 x TV out connector
- 2 x USB connectors

The PCISA-9652 has the following connectors on the board rear panel:

- 1 x CRT connector
- 2 x Ethernet connectors
- 2 x USB 2.0 ports

The PCISA-9652 has the following on-board jumpers:

- CF card setup
- Clear CMOS
- COM 2 function selection
- LCD voltage selection
- LVDS panel resolution selection

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

## 1.2.2 Technical Specifications

PCISA-9652 technical specifications are listed in **Table 1-1**. Detailed descriptions of each specification can be found in **Chapter 2**.

| SPECIFICATION | PCISA-9652 |
|---|---|
| **CPUs Supported** | Socket P Intel® Core™2 Duo Merom core CPU |
| **Chipsets** | Northbridge: Intel® GME965<br>Southbridge: Intel® ICH8ME |
| **Graphics Support** | Intel® Graphics Media Accelerator (GMA) X3100 |
| **Display** | **CRT**<br>**HDTV:**<br>　・ Up to 1080i component output<br>　・ Composite output for NTSC/PAL<br>**LVDS:** Dual-channel 24-bit LVDS |
| **Memory** | One 240-pin 2 GB (max.) 533/667 MHz dual-channel DDR2 SDRAM DIMM |
| **Super I/O** | iTE IT8712F |
| **Serial ATA (SATA)** | Three SATA II connectors with 3.0 Gbps transfer rates |
| **HDD Interface** | One IDE channel supports two Ultra ATA 100/66/33 devices |
| **USB Interfaces** | Six USB 2.0 devices supported (four internal and two external) |
| **Serial Ports** | One RS-232 (10-pin header connector)<br>One RS-232/422/485 (14-pin header connector) |
| **Keyboard/Mouse** | One keyboard/mouse connector (6-pin header) |
| **Infrared** | One IrDA connector through the iTE IT8712F super I/O. Supports:<br>　・　Serial Infrared (SIR) |

|  | • Amplitude Shift Keyed IR (ASKIR) |
|---|---|
| **Digital I/O** | 8-bit digital I/O, 4 input / 4 output by super I/O |
| **Audio** | Supports 7.1 channel HD audio via AC-KIT883HD audio kit |
| **Ethernet** | Dual Intel® 82573L PCIe GbE controllers |
| **BIOS** | AMI BIOS Label |
| **Power** | AT and ATX power |
| **Power Consumption** | 5V @ 7.72 A, +12V @ 0.139 A<br>(2.0 GHz Intel® Core™2 Duo T7300 with a 800 MHz FSB<br>and a 667 MHz 1 GB DDR2 DIMM) |
| **Operating Temperature** | Minimum: 0ºC (32°F)<br>Maximum: 60°C (140°F) |
| **Humidity** | 5%~95% non condensing |
| **Physical Dimensions** | 185 mm x 127.6 mm (width x length) |
| **Weight (GW)** | 1.0 kg |

**Table 1-1: Technical Specifications**

Chapter

2

# Detailed Specifications

## 2.1 Overview

This chapter describes the specifications and on-board features of the PCISA-9652 in detail.

## 2.2 Dimensions

### 2.2.1 Board Dimensions

The dimensions of the board are listed below:

■ **Length**:      185.0 mm
■ **Width**:      127.6 mm
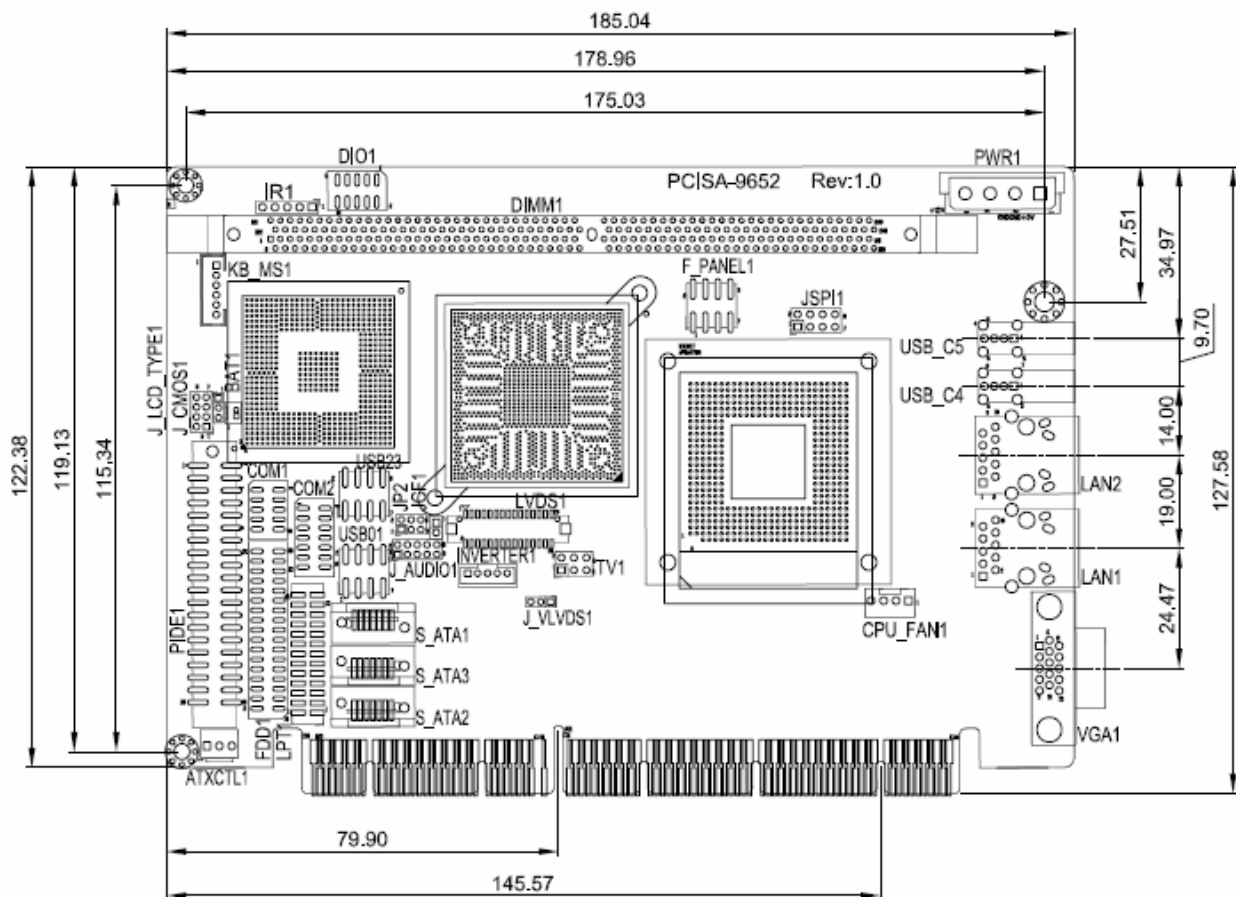


**Figure 2-1: PCISA-9652 Dimensions (mm)**

### 2.2.2 External Interface Panel Dimensions

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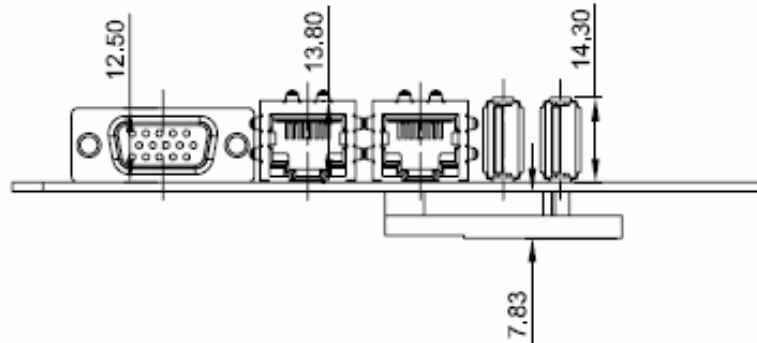


**Figure 2-2: External Interface Panel Dimensions (mm)**

## 2.3 Data Flow

The PCISA-9652 motherboard comes with an Intel® GME965 GMCH and an Intel® ICH8ME I/O Controller Hub. **Figure 2-3** shows the data flow between the system chipset, the CPU and other components installed on the motherboard.
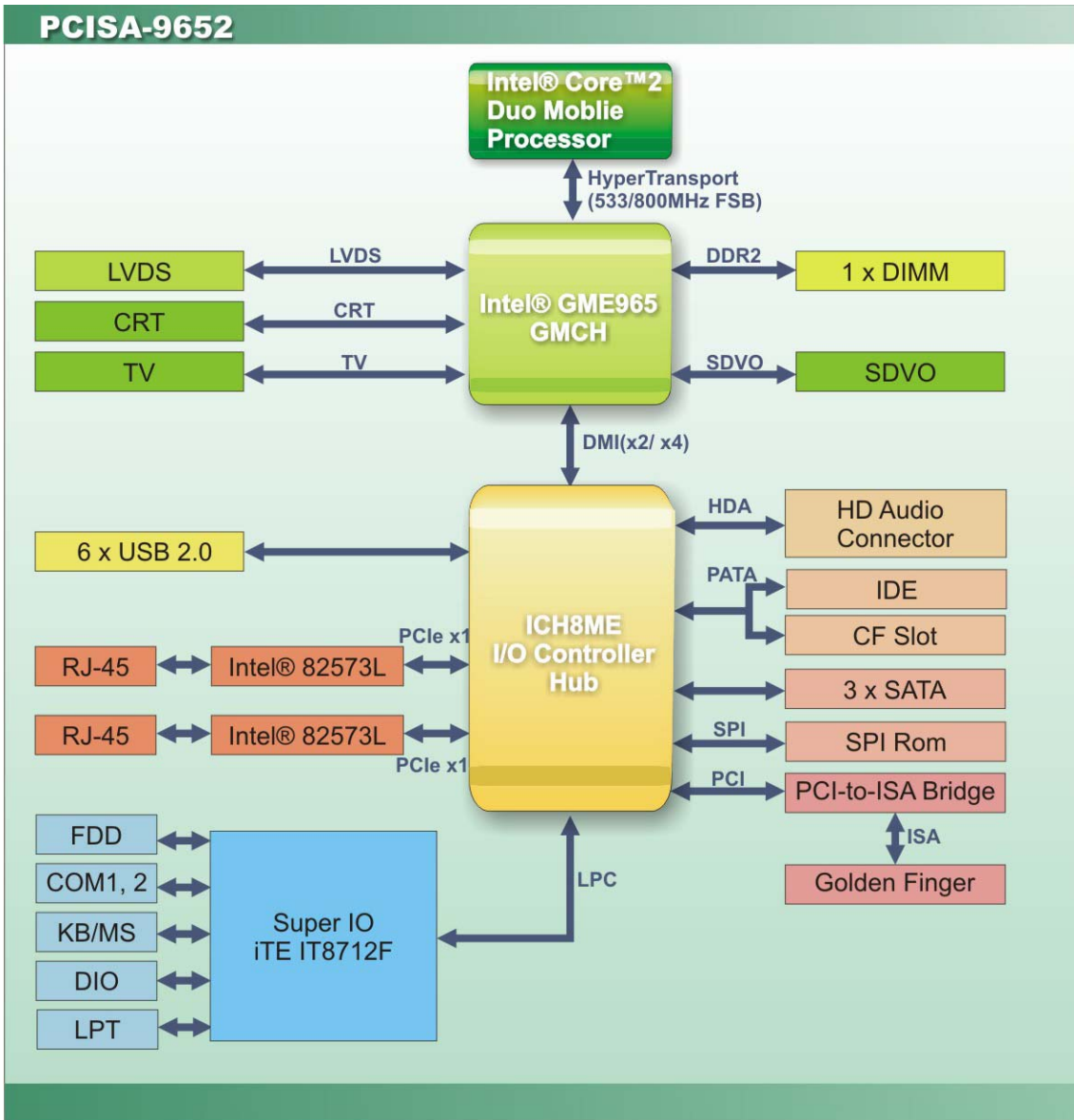
**Figure 2-3: Data Flow Block Diagram**

## 2.4 Compatible Processors

**Table 2-1** lists the Intel® processors supported on the PCISA-9652. All the processors in **Table 2-1** are 65nm Socket P processors.

| Processor | Max. CPU Speed | FSB Speed | Max. Cache Size |
|---|---|---|---|
| Intel® Core™2 Duo | 2.60 GHz | 800 MHz | 4 MB |
| Intel® Celeron® M | 2.13 GHz | 533 MHz | 1 MB |

**Table 2-1: Supported Intel® Processors**

## 2.5 Intel® GME965 Graphics and Memory Controller Hub

### 2.5.1 Intel® GME965 Overview

The Intel® GME965 GMCH has the Intel® Graphics Media Accelerator X3100 (Intel® GMA 3100) to support integrated graphics. The integrated graphics and memory controller hub (GMCH) facilitates the flow of information primarily between the following four interfaces:

- Front Side Bus (FSB)
- System Memory Interface
- Graphics Interface
- Direct Media Interface (DMI)

### 2.5.2 Intel® GME965 Front Side Bus (FSB) Support

The Intel® GME965 GMCH supports processors with the following FSB speeds:

- 533 MHz
- 800 MHz

The Socket P, Intel® GME965 GMCH and the FSB are shown in **Figure 2-4**.
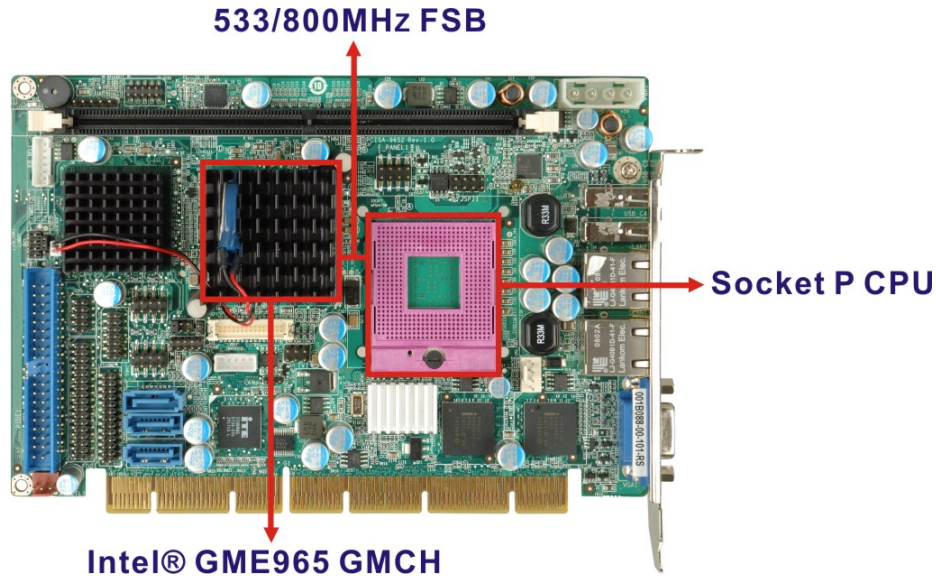
**Figure 2-4: Front Side Bus (FSB)**

## 2.5.3 Intel® GME965 Memory Support

---

![warning icon] **WARNING:**

Only DDR2 memory module can be installed on the PCISA-9652. Do not install DDR memory modules. If a DDR memory module is installed on the PCISA-9652, the PCISA-9652 may be irreparably damaged.

---

The Intel® GME965 GMCH on the PCISA-9652 supports one 240-pin DDR2 DIMM with the following features:

- One 240-pin DIMM
- DDR2 only (**DO NOT** install a DDR DIMM)
- Single-channel
- Capacities of 256 MB, 512 MB, 1 GB or 2 GB
- Transfer speeds of 533 MHz or 667 MHz
- 64-bit wide channel

The memory sockets are shown in **Figure 2-5**.
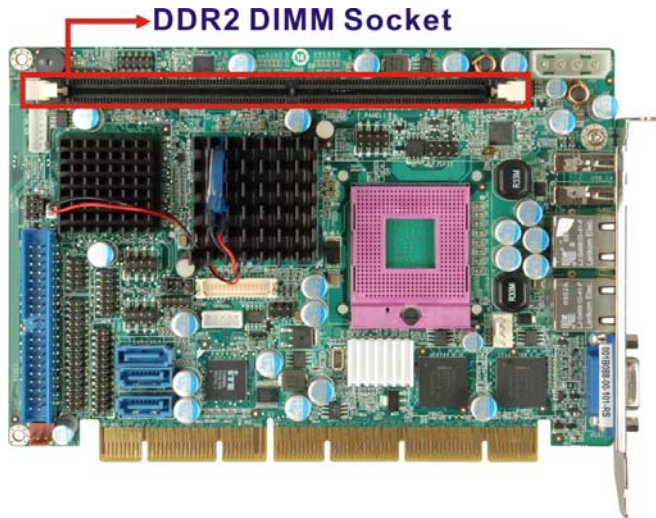
**Figure 2-5: 240-pin DDR2 DIMM Socket**

## 2.5.4 Intel® GME965 Integrated Graphics

The Intel® GME965 GMCH has a mobile Intel® Graphics Media Accelerator X3100 integrated graphics engine that supports the following display devices:

- Analog CRT
- LVDS
- Analog TV-Out
- SDVO

SDVO
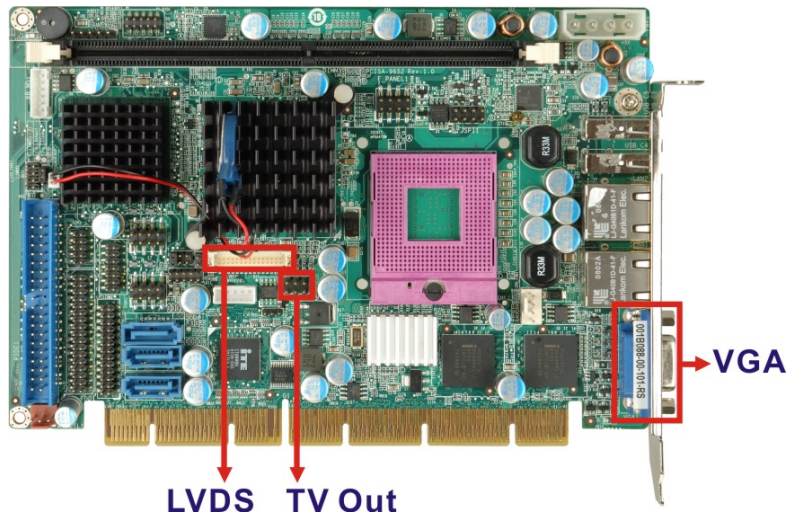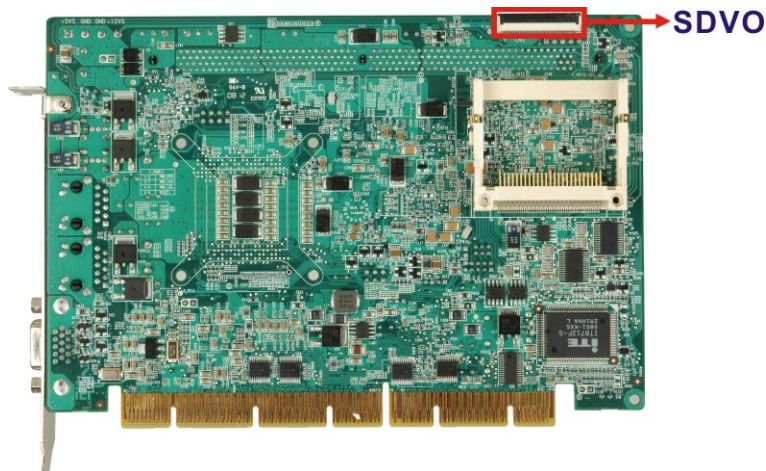
**Figure 2-6: Integrated Graphics Interfaces**

### 2.5.4.1 Intel® GME965 Analog CRT Support

A DB-15 VGA connector on the external peripheral interface connector panel is interfaced to the Intel® GME965 graphics engine. The Intel® GME965 internal graphics engine, with an integrated 300 MHz RAMDAC and hot plug CRT support, supports analog CRT monitors up to QXGA (2048 x 1536).

### 2.5.4.2 Intel® GME965 LVDS Support

A 30-pin LVDS crimp connector is interfaced to the Intel® GME965 graphics engine. The Intel® GME965 internal graphics engine supports LVDS displays with the following features:

- 18-bit/24-bit 25 MHz to 112 MHz single-channel or dual-channel LVDS screens
- TFT panel type supported
- Panel Fitting, Panning and Center mode supported
- SPWG v3.5 specification compliant

### 2.5.4.3 Intel® GME965 TV Out Support

An internal 6-pin header TV output connector is interfaced to the Intel® GME965 graphics engine. The Intel® GME965 internal graphics engine has the following TV output features:

- Three integrated 10-bit DACs
- Overscaling
- NTSC and PAL formats supported
- Supports Component, S-Video, TV D connector or Composite output connectivity
- Supports with the following resolutions:
  - SDTV 480i
  - EDTV 480p
  - HDTV 720p, 1080i
  - True HDTV 1080p

### 2.5.4.4 Intel® GME965 SDVO Support

The Intel® GME965 internal graphics engine has the following SDVO output features:

- Concurrent operation of PCIe x 1 with SDVO
- One SDVO port supported
  - SDVO is muxed onto the PCIe pins
  - DVI 1.0 support for external digital monitor
  - Only Downstream HDCP support
  - Supports TV and DVD formats
  - Display hot plug support
- Supports multiple external SDVO components, including HDMI, DVI, LVDS, Analog TV-out, Analog CRT.

### 2.5.5 Intel® GME965 Direct Management Interface (DMI)

The Direct Media Interface (DMI) is the communication bus between the Intel® GME965 GMCH and the ICH8ME I/O controller hub (ICH). The DMI is a high-speed interface that integrates advanced priority-based servicing and allows for concurrent traffic and true isochronous transfer capabilities. The DMI is shown in **Figure 2-7**.
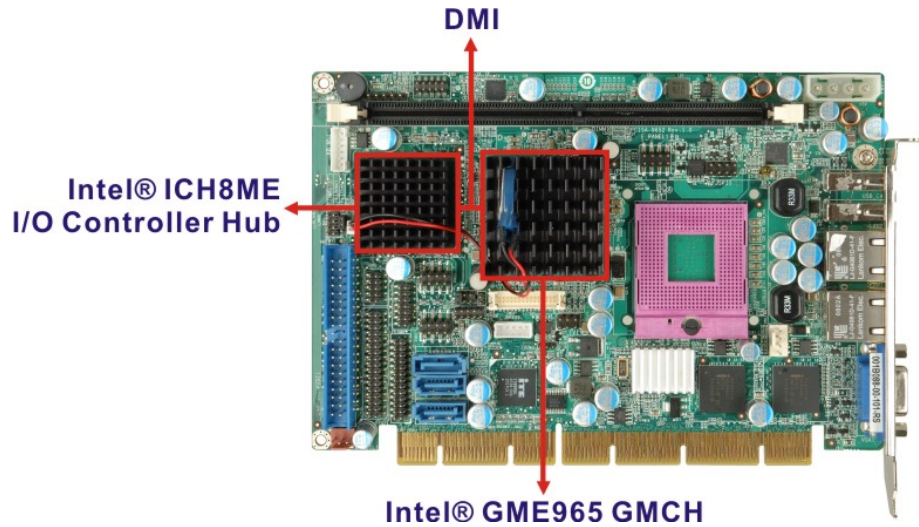
**Figure 2-7: DMI Chip-to-Chip Connection**

Features of the Intel® GME965 DMI are listed below:

- 2GB/s (1GB/s in each direction) bus speed
- Configurable as x2 or x4 DMI lanes
- 32-bit downstream address

# 2.6 Intel® ICH8ME I/O Controller Hub

## 2.6.1 Intel® ICH8ME Overview

The Intel® ICH8ME I/O Controller Hub (ICH) is connected to the Intel® GME965 GMCH through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH8ME are listed below.

- Complies with PCI Express Base Specification, Revision 1.1
- Complies with PCI Local Bus Specification, Revision 2.3 and supports 33 MHz PCI operations
- Supports ACPI Power Management Logic
- Contains:
  - O  Enhanced DMA controller
  - O  Interrupt controller
  - O  Timer functions
- Integrated SATA host controller with DMA operations interfaced to three SATA

connectors on the PCISA-9652

■   Supports the six USB 2.0 devices on the PCISA-9652 with four UHCI
    controllers and one EHCI controller

■   Complies with System Management Bus (SMBus) Specification, Version 2.0

■   Supports Intel® High Definition Audio

■   Contains Low Pin Count (LPC) interface

■   Supports Firmware Hub (FWH) interface

■   Serial Peripheral Interface (SPI) support

## 2.6.2 Intel® ICH8ME HD Audio Controller

The Intel® High Definition Audio controller integrated into the ICH8ME is connected to the
on-board audio connector. The audio connector is connected to an optional 7.1 channel
(ALC-KIT883HD) High Definition Audio codec. The audio controllers support 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

In addition to the basic surround sound features, the High Definition audio kit also features
multi-streaming functionality.
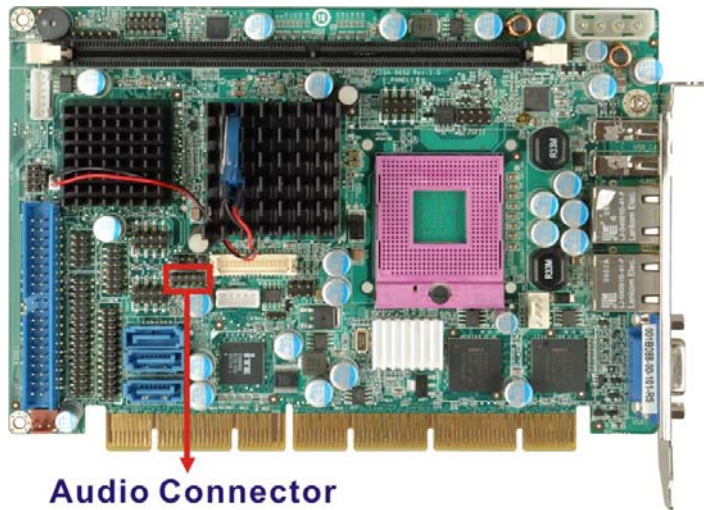
**Figure 2-8: Audio Connector**

## 2.6.3 Intel® ICH8ME IDE Interface

The integrated IDE interface on the ICH8ME supports two IDE hard disks and ATAPI devices. PIO IDE transfers up to 16 MB/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 100 MB/s
- **Ultra ATA/66**, with data transfer rates up to 66 MB/s
- **Ultra ATA/33**, with data transfer rates up to 33 MB/s

| 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 | 100 MB/s | 66 MB/s | 33 MB/s |
| Controller Interface | 5V | 5V | 5V |

**Table 2-2: Supported HDD Specifications**

## 2.6.4 Intel® ICH8ME Low Pin Count (LPC) Interface

The ICH8ME LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH7 is connected to the ITE IT8712F Super I/O chipset. For more detailed information please refer to **Section 2.8.2**.

## 2.6.5 Intel® ICH8ME PCI Interface

The PCI bus on the ICH8ME 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
- 33 MHz
- 5V tolerant PCI signals (except PME#)
- Integrated PCI arbiter supports up to seven PCI bus masters

### 2.6.5.1 ITE IT8888G PCI-to-ISA Bridge

The ICH8ME is interfaced to an ITE IT8888G PCI-to-ISA bridge through the PCI bus. The ITE IT8888G PCI-to-ISA bridge is then connected to an ISA edge connector on the bottom of the PCISA-9652 thereby enabling legacy ISA card expansion on the backplane. The PCI to ISA bridge is shown in **Figure 2-9**.

![NOTE icon] **NOTE:**

The ICH8ME integrated in PCISA-9652 supports non-DMA ISA devices.
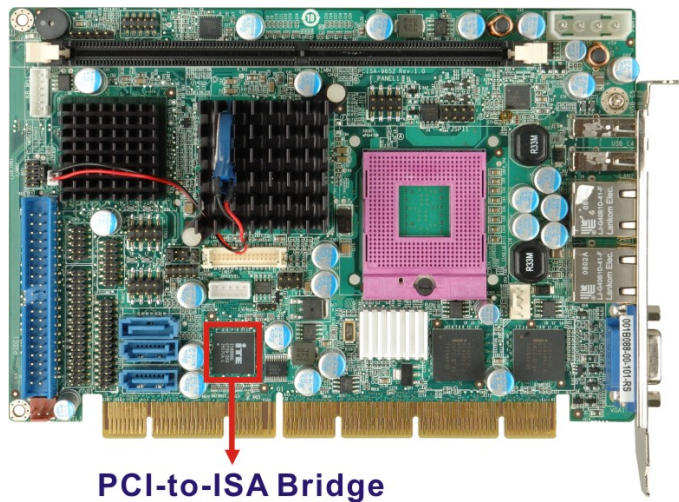
**Figure 2-9: PCI-to-ISA Bridge**

The ITE IT8888G has a PCI specification v2.1 compliant 32-bit PCI bus interface and supports both PCI Bus master and slave. The PCI interface supports both programmable positive and full subtractive decoding schemes. Some of the features of the IT8888G PCI to ISA bridge are listed below.

- PCI Interface
- Programmable PCI Address Decoders
- PC/PCI DMA Controller
- Distributed DMA Controller
- ISA Interface
- SM Bus
- 1 analog line-level mono output: MONO_OUT
- Power-on Serial Bus Configuration
- Serial IRQ
- Versatile power-on strapping options
- Supports NOGO function
- Single 33 MHz Clock Input
- +3.3V PCI I/F with +5V tolerant I/O buffers
- +5V ISA I/F and core Power Supply

## 2.6.6 Intel® ICH8ME PCIe x1 Bus

The Intel® ICH8ME GMCH has six PCIe x1 lanes. Two of the six PCIe lanes are implemented on the PCISA-9652, including:

- Two PCIe x1 lanes are connected to two Intel® 82573L GbE controllers

For more detailed information, please refer to **Section 2.7**.

## 2.6.7 Intel® ICH8ME Real Time Clock

256 bytes of battery backed RAM is provided by the Motorola MC146818A real time clock (RTC) integrated into the ICH8ME. 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.

## 2.6.8 Intel® ICH8ME SATA Controller

The integrated SATA controller on the ICH8ME supports three SATA II drives on the PCISA-9652 with independent DMA operations. SATA controller specifications are listed below.

- Supports three SATA II drives
- Supports 3.0 Gbps data transfer speeds
- Supports Serial ATA Specification, Revision 1.0a
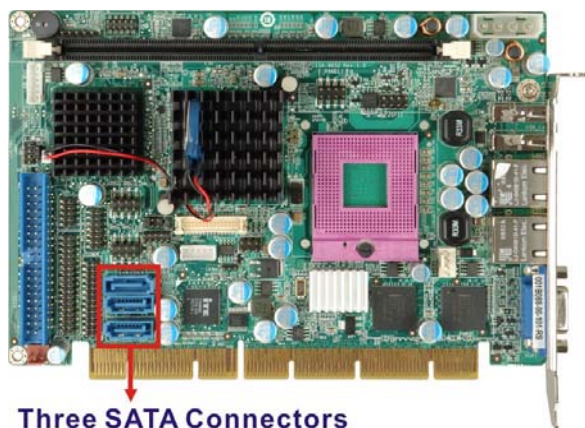


**Figure 2-10: SATA Drive Connectors**

### 2.6.9 Intel® ICH8ME Serial Peripheral Interface (SPI) BIOS

The 4-pin SPI is connected to an SPI BIOS chip. A licensed copy of AMI BIOS is preinstalled on the SPI BIOS chip. A master-slave protocol is used for communication on the SPI bus. The slave is connected to the Intel® ICH8ME and is implemented as a tri-state bus.

### 2.6.10 Intel® ICH8ME USB Controller

Up to eight high-speed, full-speed or low-speed USB devices are supported by the ICH8ME on the PCISA-9652. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ICH8ME integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the ICH8ME integrated Universal Host Controller Interface (UHCI) controllers.

Six of the eight USB ports implemented on the PCISA-9652 are connected to two internal connectors and two external connectors. See **Figure 2-11**.
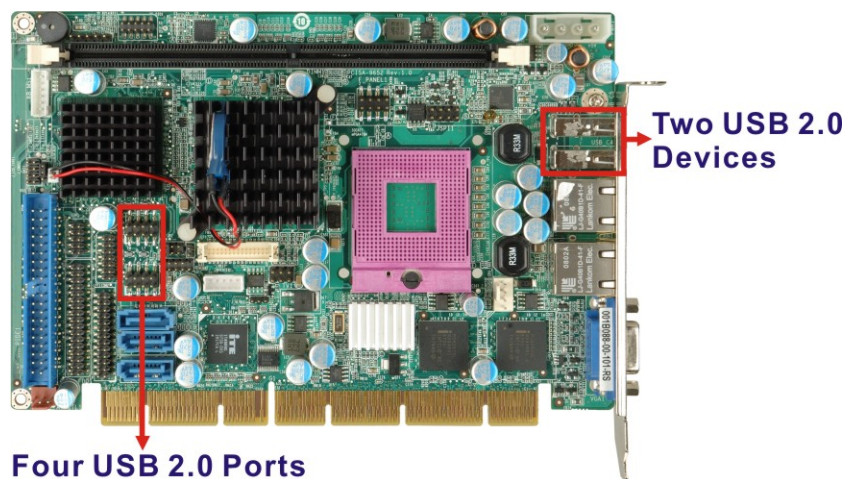


**Figure 2-11: Onboard USB Implementation**

## 2.7 PCIe Bus Components

### 2.7.1 PCIe Bus Overview

The PCIe bus is connected to components listed below:

■ Two PCIe x1 lanes are connected to two Intel® PCIe GbE connectors

## 2.7.2 Intel® 82573L PCIe GbE Controller

Two RJ-45 Ethernet LAN connectors are interfaced directly to two Intel® 82573L PCIe GbE controllers. The Intel® 82573L PCIe GbE controller is a compact, single-port integrated physical layer (PHY) device with its own Memory Access Controller (MAC) and interfaced to the Intel® ICH8ME Southbridge through a PCIe x1 lane. The Intel® 82573L GbE controllers are shown in **Figure 2-12** below.
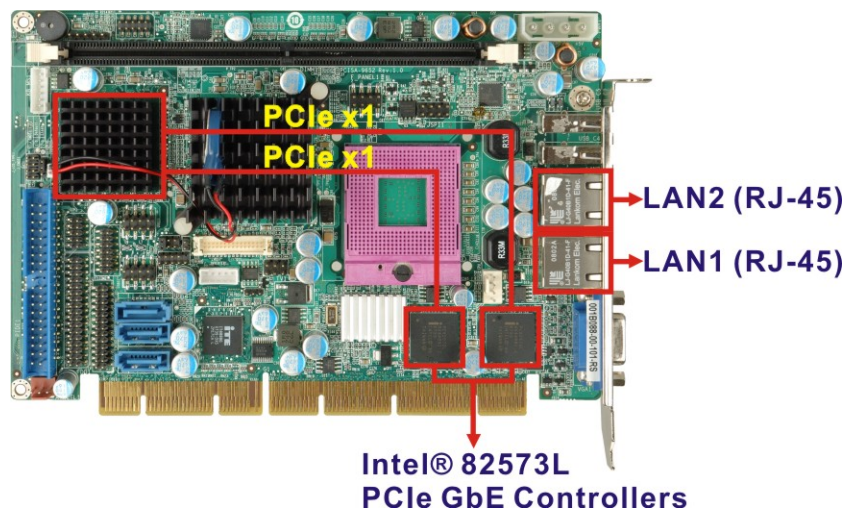


**Figure 2-12: Intel® 82573L PCIe GbE Controllers**

Some of the features of the Intel® 82573L are listed below:

■ 2 Gbps peak bandwidth per direction
■ PCI Express Rev 1.0a specification
■ High bandwidth density per pin
■ Wide,pipelined internal data path architecture
■ Optimized transmit (Tx) and receive (Rx) queues
■ 32 KB configurable Rx and Tx first-in/first-out (FIFO)
■ IEEE 802.3x*-compliant flow-control support with software controllable pause times and threshold values
■ Programmable host memory Rx buffers (256 B-16 KB)
■ Descriptor ring management hardware for Tx and Rx

■ Mechanism for reducing interrupts from Tx/Rx operations

■ Integrated PHY for 10/100/1000 Mbps (full- and half-duplex)

■ IEEE 802.3ab* auto-negotiation support

■ IEEE 802.3ab PHY compliance and compatibility

■ Tx/Rx IP,TCP,and UDP checksum offloading

■ Tx TCP segmentation

■ IEEE 802.1q* Virtual Local Area Network (VLAN) support with VLAN tag insertion, stripping, and packet filtering for up to 4096 VLAN tags

■ Boot ROM Preboot eXecution Environment (PXE) Flash interface support

■ SDG 3.0,WfM 3.0 and PC2001 compliant

■ Wake on LAN support

## 2.8 LPC Bus Components

### 2.8.1 LPC Bus Overview

The LPC bus is connected to components listed below:

■ Super I/O chipset

### 2.8.2 Super I/O chipset

The iTE IT8712F Super I/O chipset is connected to the ICH8ME through the LPC bus. iTE IT8712F Super I/O chipset is shown in **Figure 2-13** below.
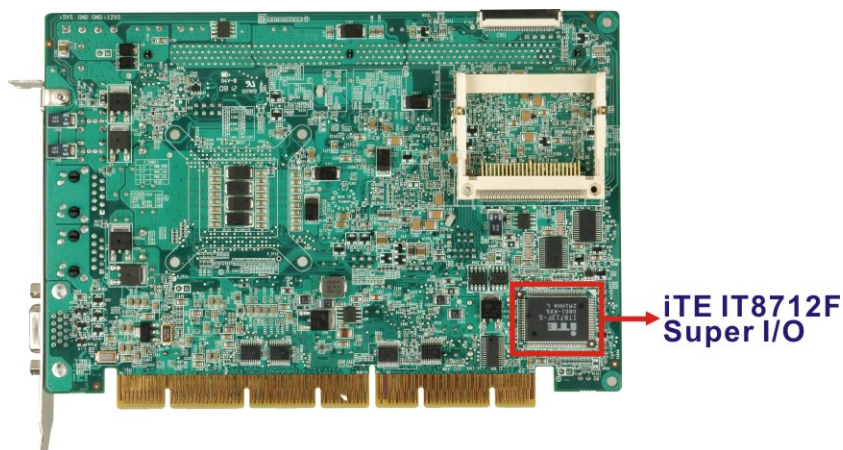


**Figure 2-13: iTE IT8712F Super I/O**

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

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

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

### 2.8.2.1 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.

### 2.8.2.2 Super I/O 16C550 UARTs

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

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

### 2.8.2.3 Super I/O Enhanced Hardware Monitor

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

### 2.8.2.4 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.

### 2.8.2.5 Super I/O GPIO Ports

The Super I/O has 38 programmable GPIO pins of which 8 are implemented on the PCISA-9652. The GPIO connector has 8 programmable bits, 4-bit input and 4-bit output.

### 2.8.2.6 Super I/O Infrared

The Super I/O has dedicated infrared (IrDA) pins that are interfaced to an IrDA connector. The IrDA connector is compatible with the following standards:

- ASKIR
- SIR

### 2.8.2.7 Super I/O Keyboard Controller

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

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

### 2.8.2.8 Super I/O Parallel Port

The Super I/O parallel port (LPT) is compatible with the following LPT specifications.

- Bi-directional SPP compatible
- EPP V. 1.7 and V. 1.9 compatible
- Extended Parallel Port (EPP) mode supported. Compatible with IEEE 1284 specifications
- Enhanced printer port back-drive current protection

The parallel port controller is connected to an on-board LPT connector on the PCISA-9652.

### 2.8.2.9 Super I/O Floppy Disk Drive (FDD) Controller

The Super I/O FDD controller is compatible with the following specifications.

- FDD anti-virus functions with software write protect and FDD write enable signal
- Supports 3.5-inch or 5.25-inch FDD
- Compatible with industry standard 82077
- Supported capacities:
  - ○ 360K
  - ○ 720K
  - ○ 1.2M
  - ○ 1.44M
  - ○ 2.88M
- Supported transfer rates
  - ○ 250Kbps
  - ○ 300Kbps
  - ○ 500Kbps
  - ○ 1Mbps
  - ○ 2Mbps
- 3-mode FDD drives supported

The FDD controller is interfaced to a FDD connector on the PCISA-9652.

## 2.9 Environmental and Power Specifications

### 2.9.1 System Monitoring

Three thermal inputs on the PCISA-9652 Super I/O Enhanced Hardware Monitor monitor the following temperatures:

- CPU temperature
- PWM temperature
- System temperature

Eight voltage inputs on the PCISA-9652 Super I/O Enhanced Hardware Monitor monitor the following voltages:

- CPU Core
- +1.8V
- +3.30V
- +5.00V
- +12.0V
- +1.05V
- +1.5V
- +1.25V
- VBAT

The PCISA-9652 Super I/O Enhanced Hardware Monitor also monitors the following fan speed:

- CPU 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 PCISA-9652 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 GMCH and ICH chipsets to ensure the operating temperature of these chips remain low.

### 2.9.3 Power Consumption

**Table 2-3** shows the power consumption parameters for the PCISA-9652 running with a 2.0GHz Intel® Core™2 Duo T7300 with a 800 MHz FSB and a 667 MHz 1 GB DDR2 DIMM,

| Voltage | Current |
|---------|---------|
| +5V | 7.72 A |
| +12V | 0.139 A |

**Table 2-3: Power Consumption**

Chapter

3

# Unpacking

## 3.1 Anti-static Precautions

⚠ **WARNING:**

Failure  to  take  ESD  precautions  during  the  installation  of  the PCISA-9652 may result in permanent damage to the PCISA-9652 and severe injury to the user.

Electrostatic  discharge  (ESD)  can  cause  serious  damage  to  electronic  components, including the PCISA-9652. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PCISA-9652, 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 PCISA-9652, place it on an antic-static pad. This reduces the possibility of ESD damaging the PCISA-9652.
- **Only handle the edges of the PCB**: When handling the PCB, hold the PCB by the edges.

## 3.2 Unpacking

### 3.2.1 Unpacking Precautions

When the PCISA-9652 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 PCISA-9652 does not fall out of the box.
- Make sure all the components shown in **Section 3.3** are present.

## 3.3 Unpacking Checklist

![NOTE icon] **NOTE:**

If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the PCISA-9652 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

### 3.3.1 Package Contents

The PCISA-9652 is shipped with the following components:

| Quantity | Item and Part Number | Image |
|---|---|---|
| 1 | PCISA-9652 CPU card |  |
| 1 | Parallel port and RS-232 cable (**P/N**:19800-000027-RS) |  |
| 1 | IDE cable (**P/N**: 32200-000052-RS) |  |
| 2 | SATA cables (**P/N**: 32000-062800-RS) |  |
| 1 | SATA power cable (**P/N**: 32100-088600-RS) |  |

| 1 | Mini jumper pack | |
| 1 | Quick Installation Guide | |
| 1 | Dual port USB cable<br>(**P/N**: CB-USB02-RS) | |
| 1 | Utility CD | |

**Table 3-1: Package List Contents**

## 3.3.2 Optional Items

**NOTE:**

The items listed in this section are optional items that must be ordered separately. Please contact your PCISA-9652 vendor, distributor or reseller for more information or, contact IEI directly by sending an email to sales@iei.com.tw.

The following optional items are available for the PCISA-9652.

| Quantity | Item and Part Number | Image |
|---|---|---|
| 1 | 7.1 Channel HD audio kit with Realtek ALC883<br>(**P/N**: AC-KIT883HD-R10) | |

| Quantity | Item and Part Number | Image |
|---|---|---|
| 1 | CPU Cooler<br><br>(**P/N**: CF-479B-RS) | |
| 1 | FDD cable<br><br>(**P/N**: 32200-000058-RS) | |
| 1 | KB/MS cable with bracket<br><br>(**P/N**: 19800-000075-RS) | |
| 1 | HDTV cable set with<br><br>S-Video/Composite/Component interfaces<br><br>(**P/N**: HDTVCABLESET-01) | |
| 1 | RS-232/422/485 cable<br><br>(**P/N**: 32200-000077-RS) | |

**Table 3-2: Optional Items**

Chapter

4

# Connectors and Jumpers

# 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 PCISA-9652 Layout

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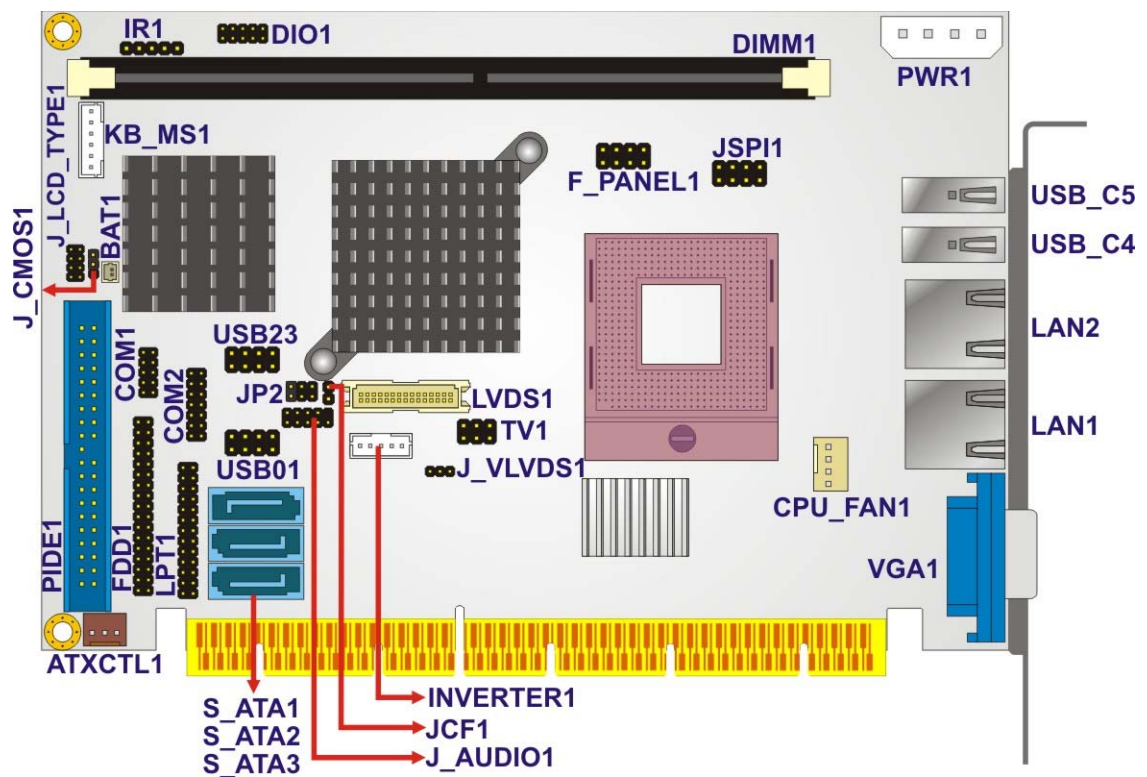


**Figure 4-1: Connector and Jumper Locations (Front Side)**
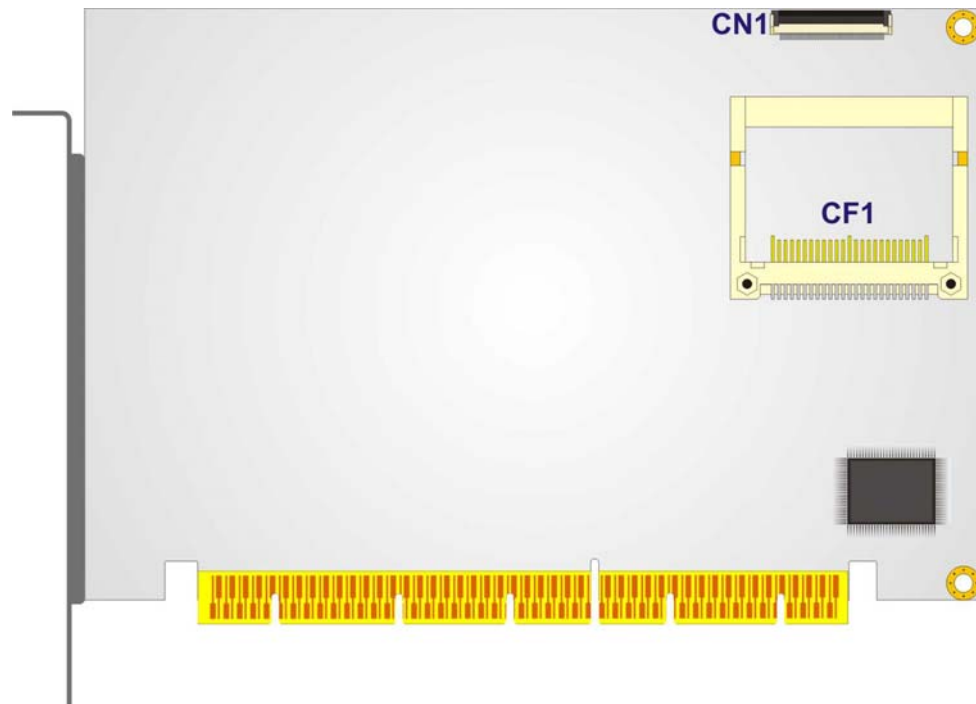
**Figure 4-2: Connector and Jumper Locations (Solder Side)**

## 4.1.2 Peripheral Interface Connectors

**Table 4-1** shows a list of the peripheral interface connectors on the PCISA-9652. Detailed descriptions of these connectors can be found in **Section 4.2**.

| Connector | Type | Label |
|---|---|---|
| AT power connector | 4-pin connector | PWR1 |
| ATX enable connector | 3-pin wafer | ATXCTL1 |
| Audio connector | 10-pin header | J_AUDIO1 |
| CompactFlash® card slot | 50-pin slot | CF1 |
| DDR2 DIMM socket | 240-pin slot | DIMM1 |
| Digital Input/Output connector | 10-pin header | DIO1 |
| Fan connector, CPU | 4-pin wafer connector | CPU_FAN1 |

| FDD connector | 34-pin header | FDD1 |
|---|---|---|
| Flash SPI ROM connector | 8-pin header | JSPI1 |
| Front panel connector | 8-pin header | F_PANEL1 |
| IDE Interface connector | 40-pin box header | PIDE1 |
| Infrared interface connector | 5-pin header | IR1 |
| Keyboard connector | 6-pin wafer | KB_MS1 |
| LCD backlight connector | 5-pin wafer connector | INVERTER1 |
| LVDS LCD connector | 30-pin crimp connector | LVDS1 |
| Parallel port connector | 26-pin header | LPT1 |
| SATA drive connector (1) | 7-pin SATA connector | S_ATA1 |
| SATA drive connector (2) | 7-pin SATA connector | S_ATA2 |
| SATA drive connector (3) | 7-pin SATA connector | S_ATA3 |
| SDVO connector | 47-pin connector | CN1 |
| Serial port connector | 10-pin header | COM1 |
| Serial port connector | 14-pin header | COM2 |
| TV out connector | 6-pin header | TV1 |
| USB connector (1) | 8-pin header | USB01 |
| USB connector (2) | 8-pin header | USB23 |

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

## 4.1.3 Rear Panel Connectors

**Table 4-2** lists the rear panel connectors on the PCISA-9652. Detailed descriptions of these connectors can be found in **Section 4.3**.

| Connector | Type | Label |
|---|---|---|
| CRT connector | 15-pin female connector | VGA1 |
| Ethernet connector (1) | RJ-45 connector | LAN1 |
| Ethernet connector (2) | RJ-45 connector | LAN2 |
| USB 2.0 port (1) | USB port connector | USB_C4 |
| USB 2.0 port (2) | USB port connector | USB_C5 |

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

## 4.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the PCISA-9652.

### 4.2.1 AT Power Connector

| | |
|---|---|
| **CN Label:** | PWR1 |
| **CN Type:** | 4-pin connector (1x4) |
| **CN Location:** | See **Figure 4-3** |
| **CN Pinouts:** | See **Table 4-3** |

The 4-pin AT power connector is connected to an AT power supply.
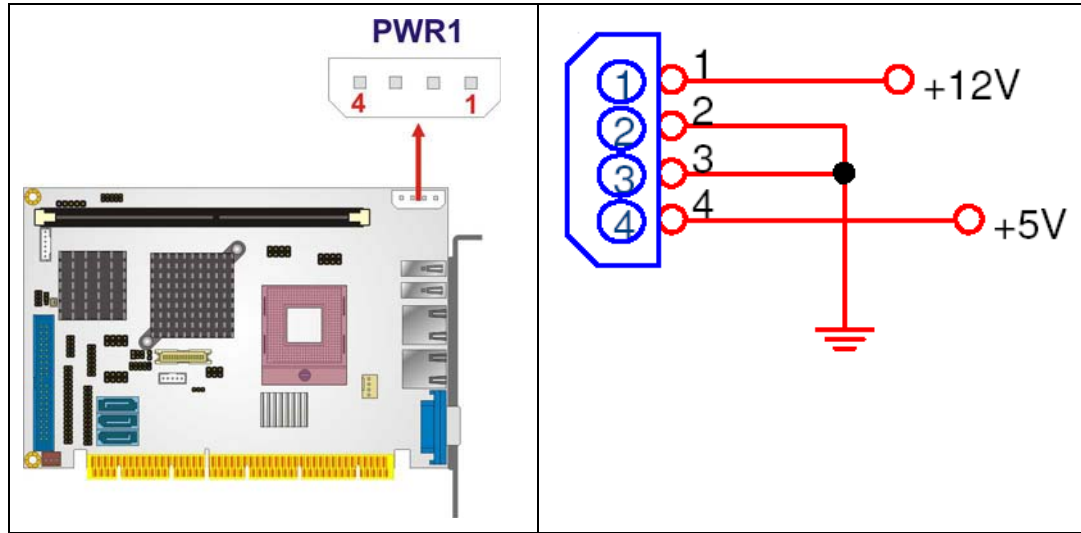
Figure 4-3: AT Power Connector Location

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

Table 4-3: AT Power Connector Pinouts

## 4.2.2 ATX Power Supply Enable Connector

| | |
|---|---|
| **CN Label:** | **ATXCTL1** |
| **CN Type:** | 3-pin wafer (1x3) |
| **CN Location:** | See **Figure 4-4** |
| **CN Pinouts:** | See **Table 4-4** |

The ATX power supply enable connector enables the PCISA-9652 to be connected to an ATX power supply.
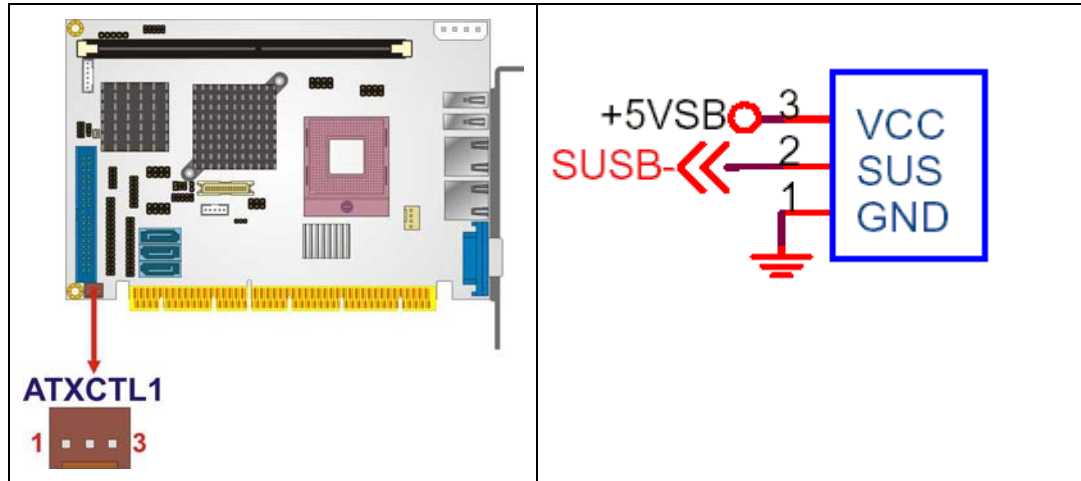
**Figure 4-4: ATX Power Supply Enable Connector Location**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | GND |
| 2 | PS-ON |
| 3 | +5V Standby |

**Table 4-4: ATX Power Supply Enable Connector Pinouts**

## 4.2.3 Audio Connector

**CN Label:** J_AUDIO1

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

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

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

The audio connector connects to the optional audio kit to provide 7.1 channel HD audio to the system.
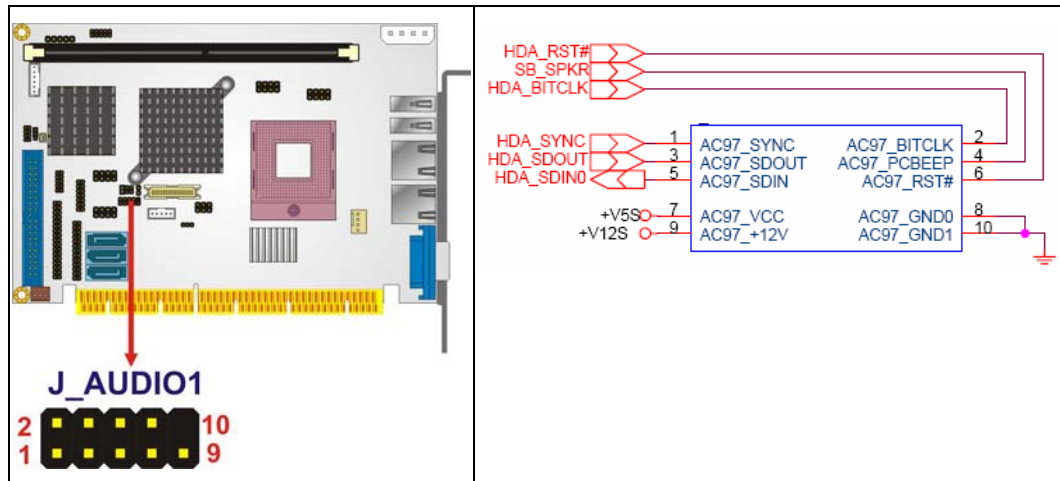
Figure 4-5: Audio Connector Location

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | HDA_SYNC | 2 | HDA_BITCLK |
| 3 | HDA_SDOUT | 4 | SB_SPKR |
| 5 | HDA_SDIN0 | 6 | HDA_RST# |
| 7 | VCC | 8 | GND |
| 9 | +12V | 10 | GND |

Table 4-5: Audio Connector Pinouts

## 4.2.4 CompactFlash® Socket

CN Label:        **CF1** (solder side)

CN Type:        50-pin slot (2x25)

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

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

A CF Type I or Type II memory card is inserted to the CF socket on the solder side of the PCISA-9652.
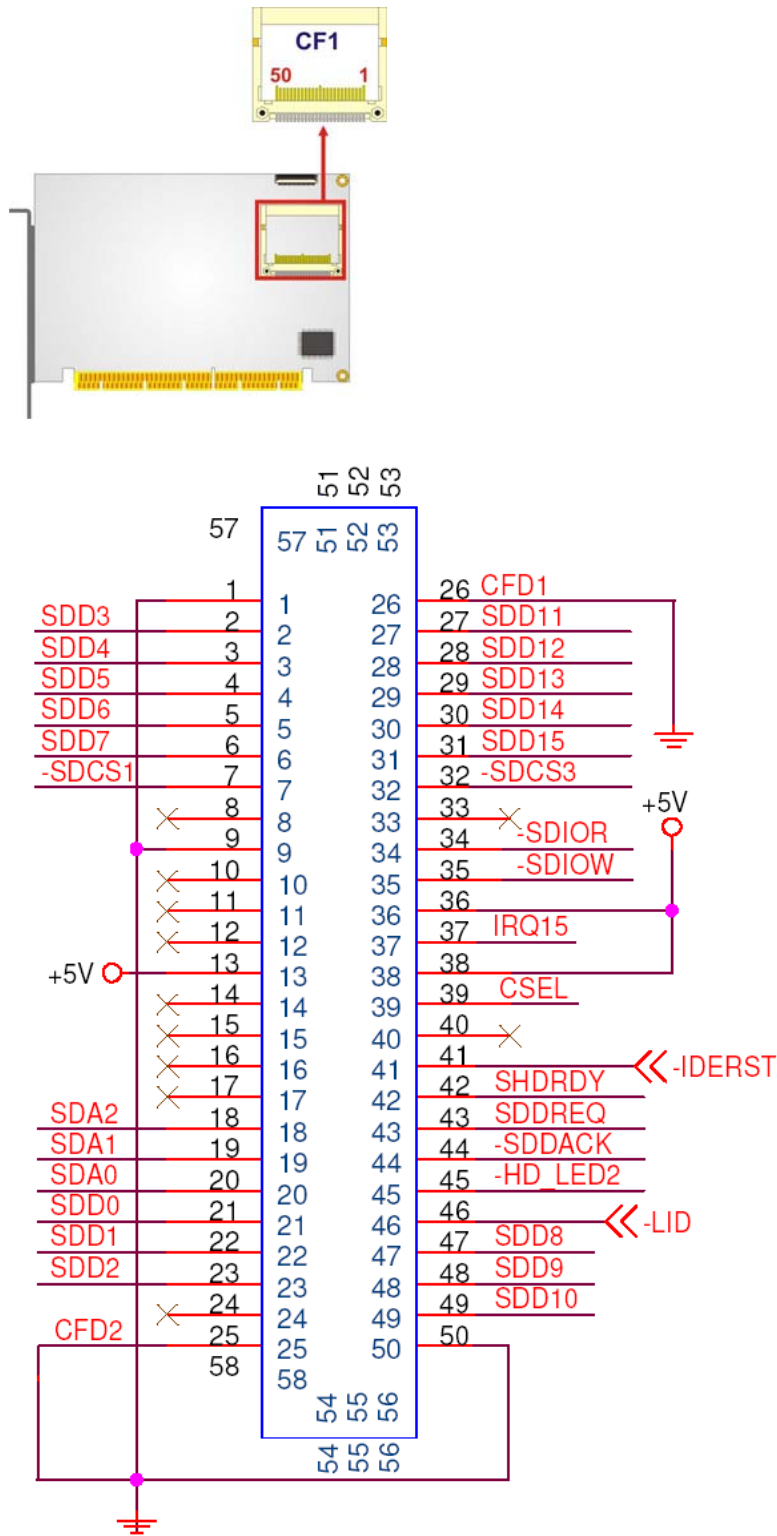
**Figure 4-6: CF Card Socket Location**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | GROUND | 26 | VCC-IN CHECK1 |
| 2 | DATA 3 | 27 | DATA 11 |
| 3 | DATA 4 | 28 | DATA 12 |
| 4 | DATA 5 | 29 | DATA 13 |
| 5 | DATA 6 | 30 | DATA 14 |
| 6 | DATA 7 | 31 | DATA 15 |
| 7 | HDC_CS0# | 32 | HDC_CS1 |
| 8 | N/C | 33 | N/C |
| 9 | GROUND | 34 | IOR# |
| 10 | N/C | 35 | IOW# |
| 11 | N/C | 36 | VCC_COM |
| 12 | N/C | 37 | IRQ15 |
| 13 | VCC_COM | 38 | VCC_COM |
| 14 | N/C | 39 | CSEL |
| 15 | N/C | 40 | N/C |
| 16 | N/C | 41 | HDD_RESET |
| 17 | N/C | 42 | IORDY |
| 18 | SA2 | 43 | SDREQ |
| 19 | SA1 | 44 | SDACK# |
| 20 | SA0 | 45 | HDD_ACTIVE# |
| 21 | DATA 0 | 46 | 66DET |
| 22 | DATA 1 | 47 | DATA 8 |
| 23 | DATA 2 | 48 | DATA 9 |
| 24 | N/C | 49 | DATA 10 |
| 25 | VCC-IN CHECK2 | 50 | GROUND |

**Table 4-6: CF Card Socket Pinouts**

### 4.2.5 Digital Input/Output Connector

**CN Label:** DIO1

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

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

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

The DIO connector is managed through a Super I/O chip. The DIO connector pins are user programmable. The digital IO port of PCISA-9652 is 5V CMOS level.
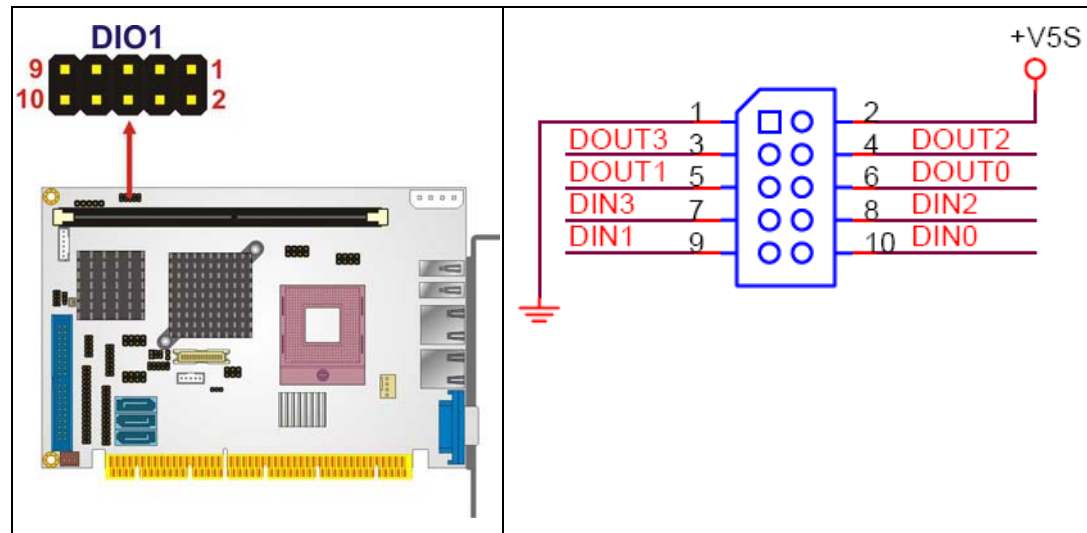


**Figure 4-7: GPIO Connector Location**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 2 | VCC |
| 3 | OUTPUT 3 | 4 | OUTPUT 2 |
| 5 | OUTPUT 1 | 6 | OUTPUT 0 |
| 7 | INPUT 3 | 8 | INPUT 2 |
| 9 | INPUT 1 | 10 | INPUT 0 |

**Table 4-7: GPIO Connector Pinouts**

## 4.2.6 Fan Connectors

**CN Label:** CPU_FAN1

**CN Type:** 4-pin wafer connector (1x3)

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

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

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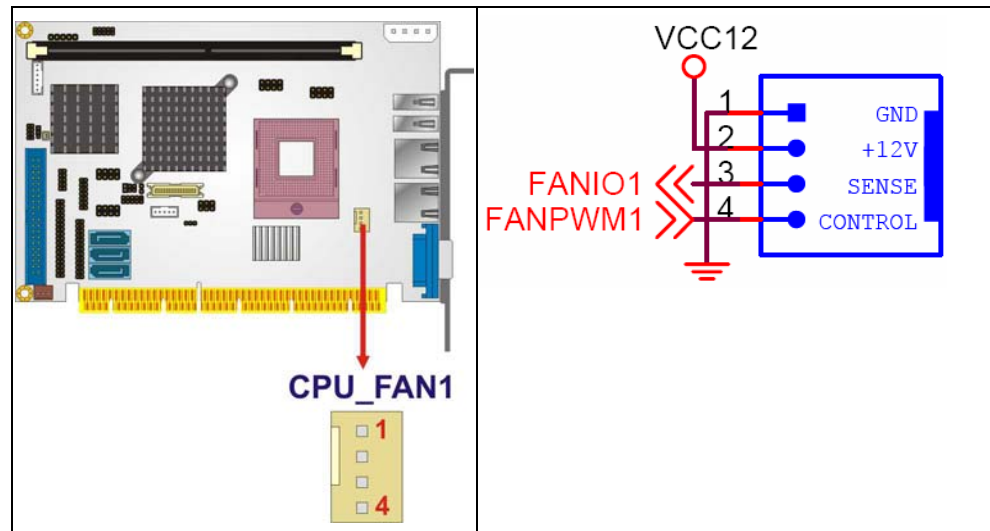


**Figure 4-8: Fan Connector Locations**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | GND |
| 2 | +12V |
| 3 | Rotation Signal |
| 4 | Control |

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

## 4.2.7 Floppy Disk Connector (34-pin)

**CN Label:** FDD1

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

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

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

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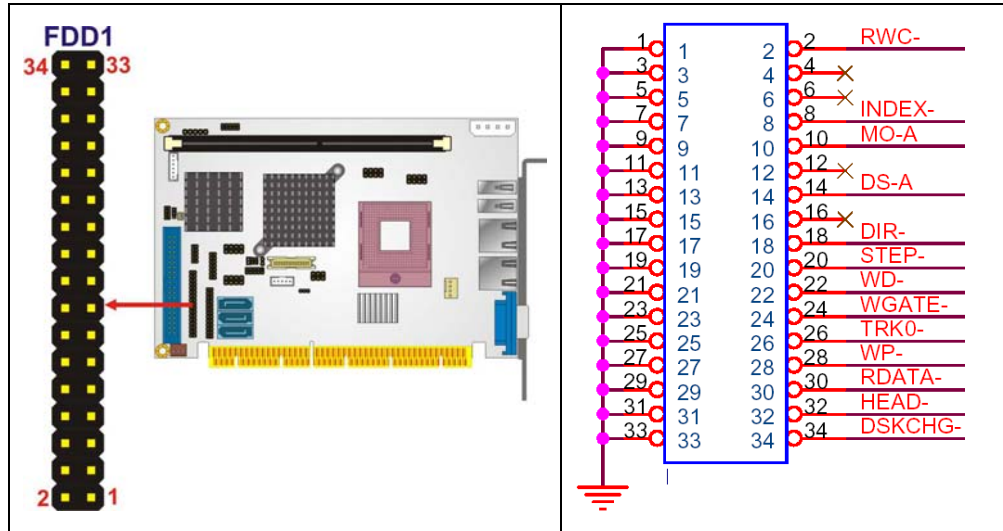


**Figure 4-9: 34-pin FDD Connector Location**

| PIN NO. | DESCRIPTION | PIN NO. | 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 4-9: 34-pin FDD Connector Pinouts**

## 4.2.8 Flash SPI ROM Connector

**CN Label:**       JSPI1

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

**CN Location:**    See **Figure 4-23**

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

Use the Flash SPI ROM connector to flash SPI ROM.
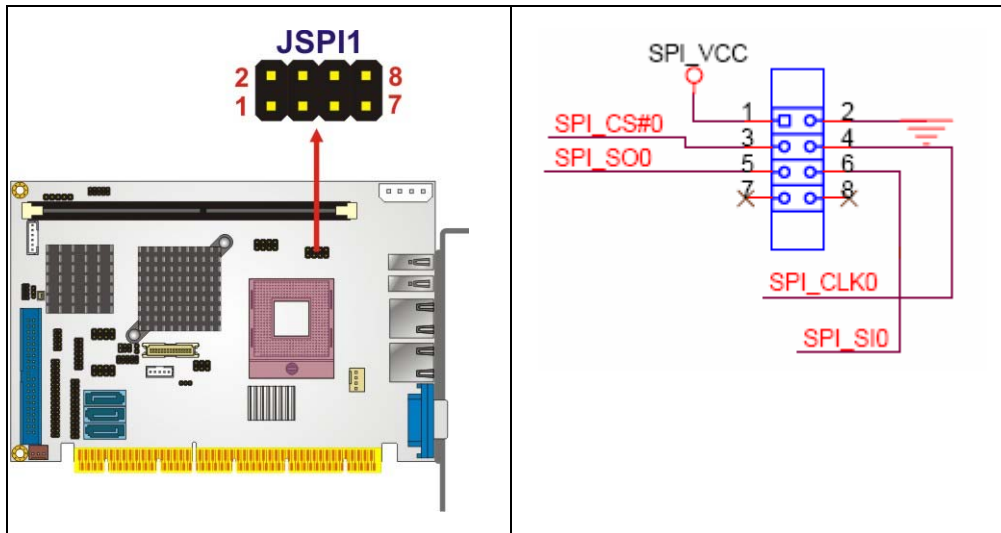


**Figure 4-10: Flash SPI ROM Connector Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | 3.3V | 2 | GND |
| 3 | CS0 | 4 | CLK |
| 5 | SO0 | 6 | SI |

| 7 | NC | 8 | NC |
|---|----|----|----|

**Table 4-10: Flash SPI ROM Connector Pinouts**

## 4.2.9 Front Panel Connector

| | |
|---|---|
| **CN Label:** | F_PANEL1 |
| **CN Type:** | 8-pin header (2x4) |
| **CN Location:** | See **Figure 4-11** |
| **CN Pinouts:** | See **Table 4-11** |

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

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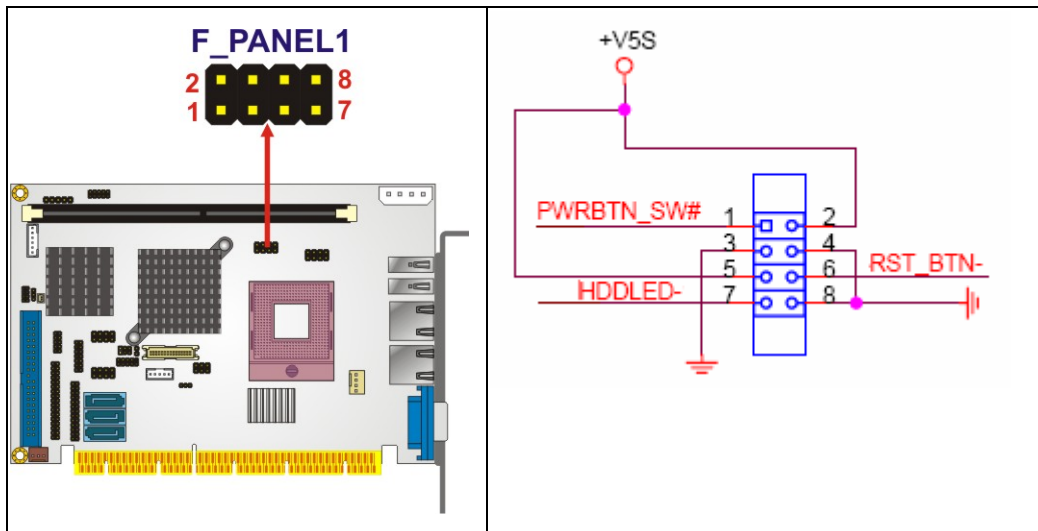


**Figure 4-11: Front Panel Connector Location**

| FUNCTION | PIN | DESCRIPTION | FUNCTION | PIN | DESCRIPTION |
|----------|-----|-------------|----------|-----|-------------|
| Power | 1 | PWR_BTN+ | Power | 2 | PWR_LED+ |
| Button | 3 | PWR_BTN- | LED | 4 | PWR_LED- |
| HDD LED | 5 | HDD_LED+ | Reset | 6 | RESET+ |
| | 7 | HDD_LED- | | 8 | RESET- |

**Table 4-11: Front Panel Connector Pinouts**

## 4.2.10 IDE Connector

| | |
|---|---|
| **CN Label:** | **PIDE1** |
| **CN Type:** | 40-pin box header (2x20) |
| **CN Location:** | See **Figure 4-12** |
| **CN Pinouts:** | See **Table 4-12** |

One primary 40-pin IDE device connector on the PCISA-9652 motherboard supports connectivity to ATA 100/66/33 IDE devices with data transfer rates up to 100MB/s.
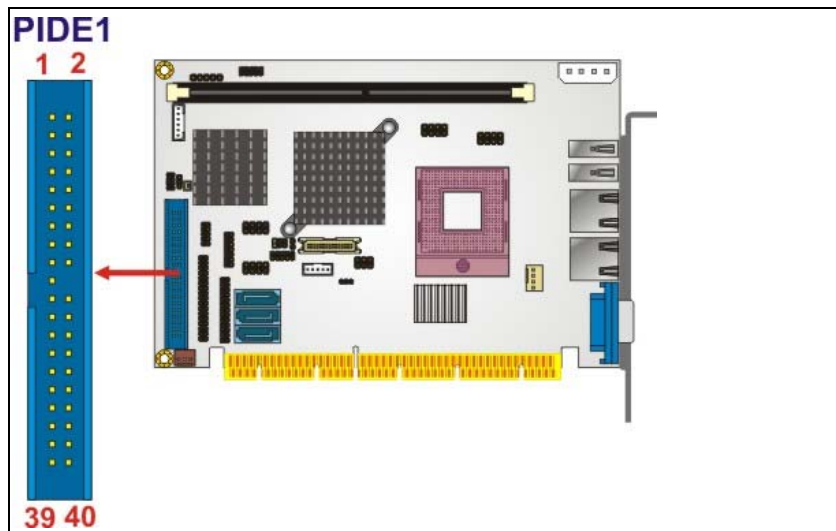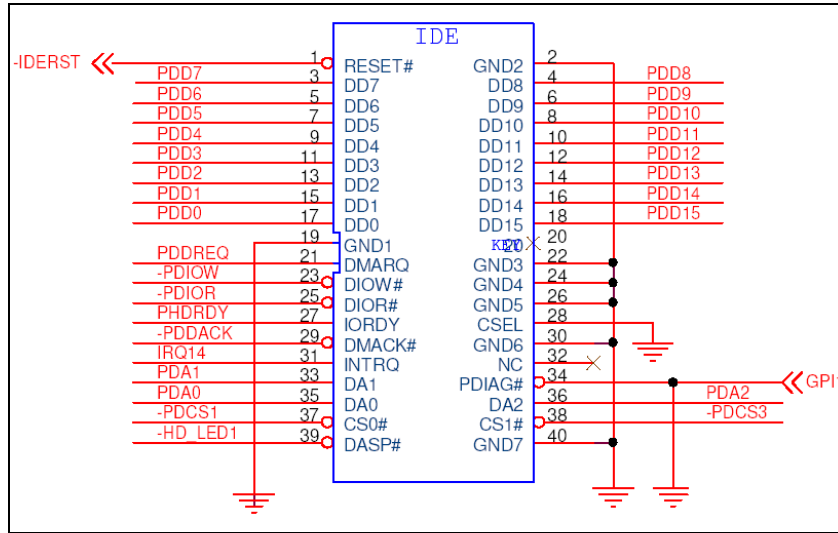
**Figure 4-12: IDE Device Connector Location**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---|---|---|---|
| 1 | RESET# | 2 | GND |
| 3 | DATA 7 | 4 | DATA 8 |
| 5 | DATA 6 | 6 | DATA 9 |
| 7 | DATA 5 | 8 | DATA 10 |
| 9 | DATA 4 | 10 | DATA 11 |
| 11 | DATA 3 | 12 | DATA 12 |
| 13 | DATA 2 | 14 | DATA 13 |
| 15 | DATA 1 | 16 | DATA 14 |
| 17 | DATA 0 | 18 | DATA 15 |
| 19 | GND | 20 | N/C |
| 21 | IDE DRQ | 22 | GND |
| 23 | IOW# | 24 | GND |
| 25 | IOR# | 26 | GND |
| 27 | IDE CHRDY | 28 | BALE – DEFAULT |
| 29 | IDE DACK | 30 | GND |
| 31 | INTERRUPT | 32 | N/C |
| 33 | SA1 | 34 | PDIAG# |
| 35 | SA0 | 36 | SA2 |
| 37 | HDC CS0# | 38 | HDC CS1# |

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 39 | HDD ACTIVE# | 40 | GND |

**Table 4-12: IDE Connector Pinouts**

## 4.2.11 Infrared Interface Connector

| | |
|---|---|
| **CN Label:** | **IR1** |
| **CN Type:** | 5-pin header (1x5) |
| **CN Location:** | See **Figure 4-13** |
| **CN Pinouts:** | See **Table 4-13** |

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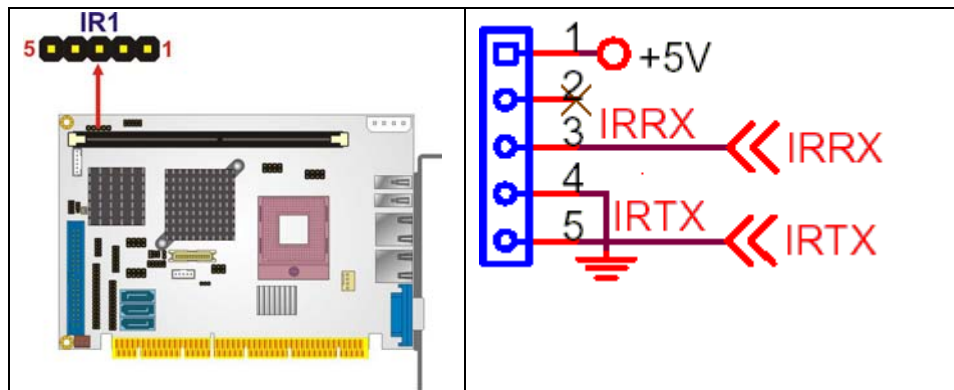


**Figure 4-13: Infrared Connector Pinout Locations**

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

**Table 4-13: Infrared Connector Pinouts**

## 4.2.12 Keyboard/Mouse Connector

| | |
|---|---|
| **CN Label:** | **KB_MS1** |
| **CN Type:** | 6-pin header (1x6) |
| **CN Location:** | See **Figure 4-14** |
| **CN Pinouts:** | See **Table 4-14** |

The keyboard/mouse connector can be connected to a standard PS/2 cable or PS/2 Y cable to add keyboard and mouse functionality to the system.
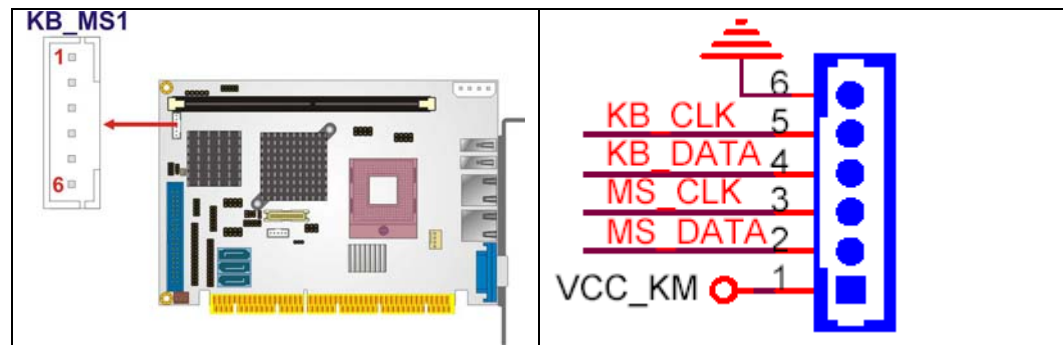


Figure 4-14: Keyboard/Mouse Connector Location

| PIN NO. | DESCRIPTION |
|---|---|
| 1 | VCC5_KBMS |
| 2 | MS DATA |
| 3 | MS CLK |
| 4 | KB DATA |
| 5 | KB CLK |
| 6 | KB GROUND |

Table 4-14: Keyboard/Mouse Connector Pinouts

## 4.2.13 LCD Backlight Connector

| | |
|---|---|
| **CN Label:** | **INVERTER1** |
| **CN Type:** | 5-pin wafer connector (1x5) |

| | |
|---|---|
| **CN Location:** | See **Figure 4-15** |
| **CN Pinouts:** | See **Table 4-15** |

The LCD backlight connector is for the LCD inverter connection.
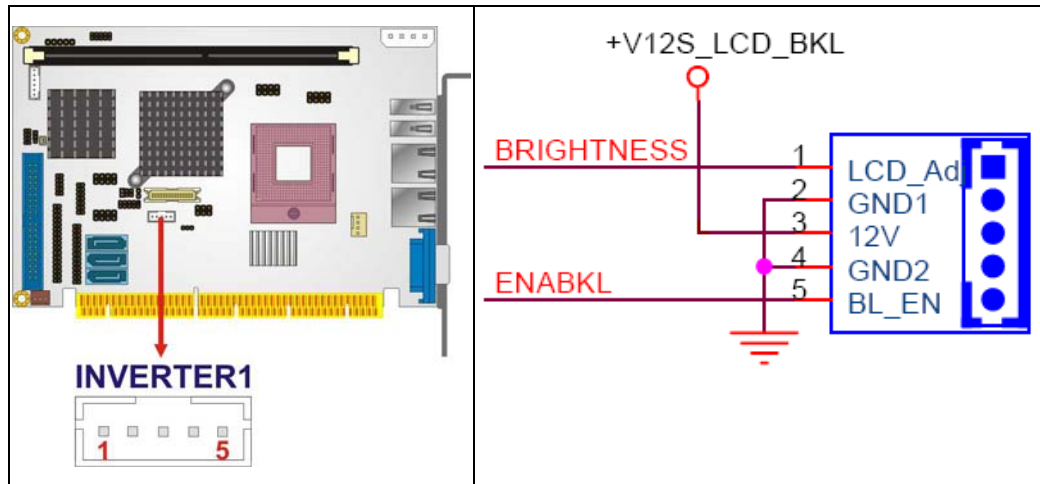


**Figure 4-15: LCD Backlight Connector Location**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | **BRIGHTNESS** |
| 2 | **GND1** |
| 3 | **12V** |
| 4 | **GND2** |
| 5 | **BL_EN** |

**Table 4-15: LCD Backlight Connector Pinouts**

## 4.2.14 LVDS LCD connector

| | |
|---|---|
| **CN Label:** | **LVDS1** |
| **CN Type:** | 30-pin crimp connector (2x15) |
| **CN Location:** | See **Figure 4-16** |

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

The connector supports one or two channel 24-bit LVDS panel.
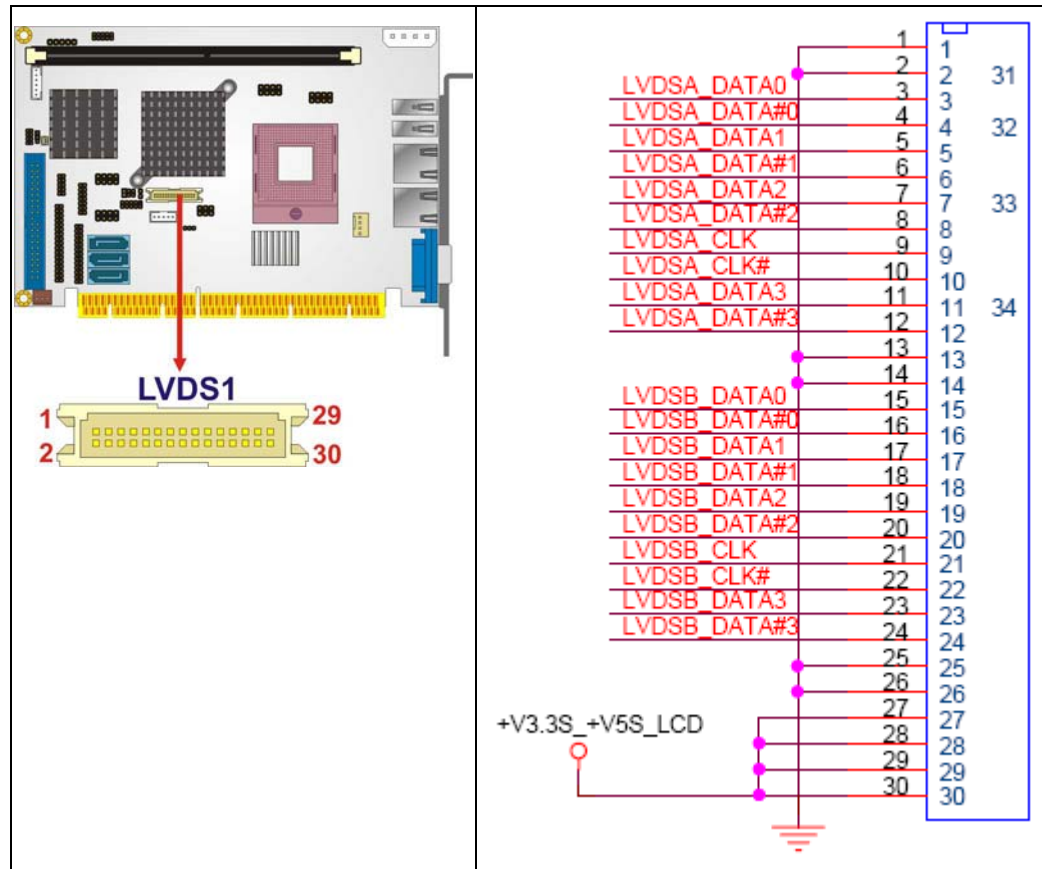


**Figure 4-16: LVDS LCD Connector Location**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GND | 2 | GND |
| 3 | 1st LVDS data0 output + | 4 | 1st LVDS data0 output - |
| 5 | 1st LVDS data1 output + | 6 | 1st LVDS data1 output - |
| 7 | 1st LVDS data2 output + | 8 | 1st LVDS data2 output - |
| 9 | 1st LVDS clock output + | 10 | 1st LVDS clock output - |
| 11 | 1st LVDS data3 output + | 12 | 1st LVDS data3 output - |
| 13 | GND | 14 | GND |
| 15 | 2nd LVDS data0 output + | 16 | 2nd LVDS data0 output - |
| 17 | 2nd LVDS data1 output + | 18 | 2nd LVDS data1 output - |

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 19 | 2nd LVDS data2 output + | 20 | 2nd LVDS data2 output - |
| 21 | 2nd LVDS clock output + | 22 | 2nd LVDS clock output - |
| 23 | 2nd LVDS data3 output + | 24 | 2nd LVDS data3 output - |
| 25 | GND | 26 | GND |
| 27 | +LCD (3.3V or 5V) | 28 | +LCD (3.3V or 5V) |
| 29 | +LCD (3.3V or 5V) | 30 | +LCD (3.3V or 5V) |

Table 4-16: LVDS LCD Connector Pinouts

## 4.2.15 Parallel Port Connector

CN Label:      **LPT1**

CN Type:       26-pin header (2x13)

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

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

The 26-pin parallel port connector connects to a parallel port connector interface or some other parallel port device such as a printer.
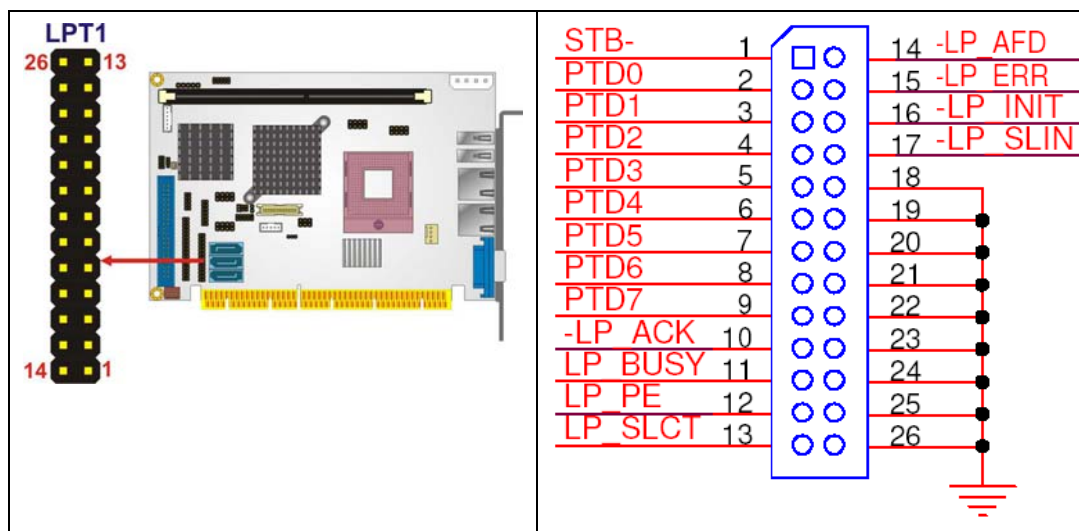


Figure 4-17: Parallel Port Connector Location

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

**Table 4-17: Parallel Port Connector Pinouts**

## 4.2.16 SATA Drive Connectors

**CN Label:**     **S_ATA1**, **S_ATA2** and **S_ATA3**

**CN Type:**      7-pin SATA drive connectors (1x7)

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

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

The three SATA drive connectors are connected to three SATA II drives. SATA II drives transfer data at speeds as high as 3.0Gbps.
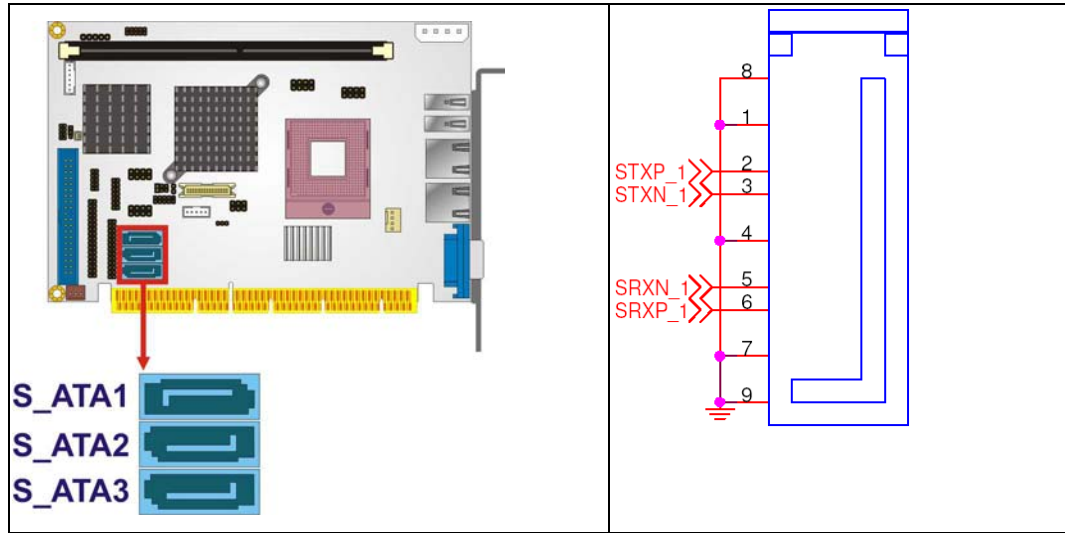
**Figure 4-18: SATA Drive Connector Locations**

| PIN NO. | DESCRIPTION |
|---------|-------------|
| 1 | GND |
| 2 | TXP |
| 3 | TXN |
| 4 | GND |
| 5 | RXN |
| 6 | RXP |
| 7 | GND |

**Table 4-18: SATA Drive Connector Pinouts**

## 4.2.17 SDVO Connector

| | |
|---|---|
| **CN Label:** | **CN1** |
| **CN Type:** | 47-pin connector (1x47) |
| **CN Location:** | See **Figure 4-19** |
| **CN Pinouts:** | See **Table 4-19** |

The 47-pin SDVO (Serial Digital Video Out) connector supports additional video signaling interfaces.
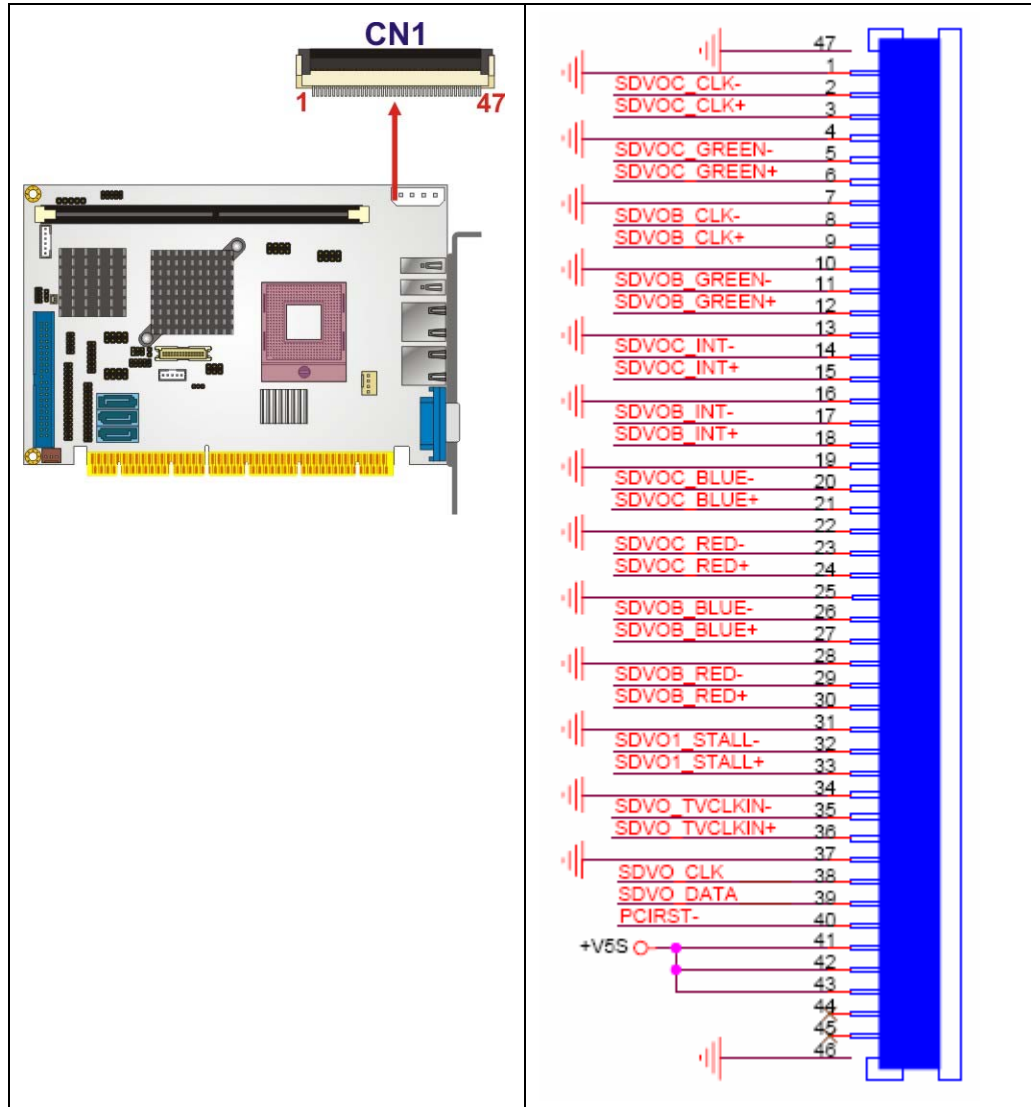
**Figure 4-19: SDVO Connector Pinout Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | GROUND | 25 | GROUND |
| 2 | SDVOC_CLK- | 26 | SDVOB_BLUE- |
| 3 | SDVOC_CLK+ | 27 | SDVOB_BLUE+ |
| 4 | GROUND | 28 | GROUND |
| 5 | SDVOC_GREEN- | 29 | SDVOB_RED- |
| 6 | SDVOC_GREEN+ | 30 | SDVOB_RED+ |
| 7 | GROUND | 31 | GROUND |

| 8 | SDVOB_CLK- | 32 | SDVO1_STALL- |
|---|---|---|---|
| 9 | SDVOB_ CLK+ | 33 | SDVO1_STALL+ |
| 10 | GROUND | 34 | GROUND |
| 11 | SDVOB_GREEN- | 35 | SDVO_TVCLKIN- |
| 12 | SDVOB_GREEN+ | 36 | SDVO_TVCLKIN+ |
| 13 | GROUND | 37 | GROUND |
| 14 | SDVOC_INT+ | 38 | SDVO_CLK |
| 15 | SDVOC_INT+ | 39 | SDVO_DATA |
| 16 | GROUND | 40 | PCIRST |
| 17 | SDVOB_INT+ | 41 | +5VS |
| 18 | SDVOB_INT+ | 42 | +5VS |
| 19 | GROUND | 43 | +5VS |
| 20 | SDVOC_BLUE- | 44 | NC |
| 21 | SDVOC_BLUE+ | 45 | NC |
| 22 | GROUND | 46 | GROUND |
| 23 | SDVOC_RED- | 47 | GROUND |
| 24 | SDVOC_RED+ | | |

**Table 4-19: SDVO Connector Pinouts**

## 4.2.18 Serial Port Connector (COM 1, RS-232)

| CN Label: | COM1 |
|---|---|
| CN Type: | 10-pin header (2x5) |
| CN Location: | See **Figure 4-20** |
| CN Pinouts: | See **Table 4-20** |

The 10-pin serial port connector provides a RS-232 serial communications channel. The COM 1 serial port connector can be connected to external RS-232 serial port devices.
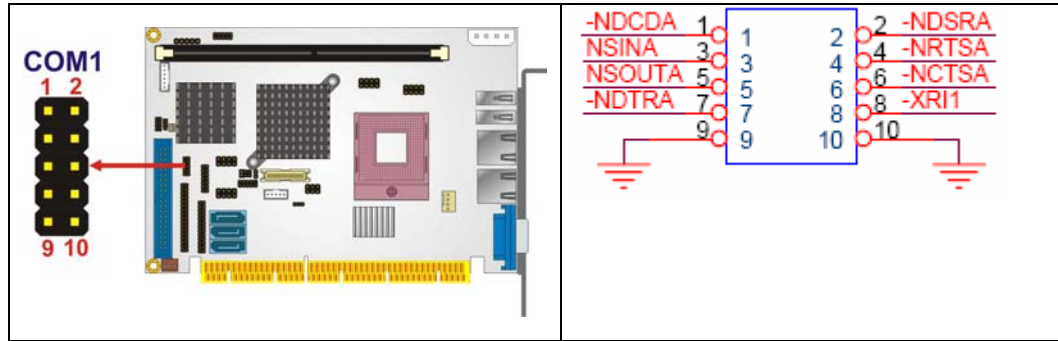
**Figure 4-20: RS-232 Connector Pinout Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | Data Carrier Direct (DCD) | 2 | Data Set Ready (DSR) |
| 3 | Receive Data (RXD) | 4 | Request To Send (RTS) |
| 5 | Transmit Data (TXD) | 6 | Clear To Send (CTS) |
| 7 | Data Terminal Ready (DTR) | 8 | Ring Indicator (RI) |
| 9 | Ground (GND) | 10 | Ground (GND) |

**Table 4-20: RS-232 Connector Pinouts**

## 4.2.19 Serial Port Connector (COM 2, RS-232/422/485)

**CN Label:**        COM2

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

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

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

The serial ports connectors connect to RS-232/422/485 serial port device.
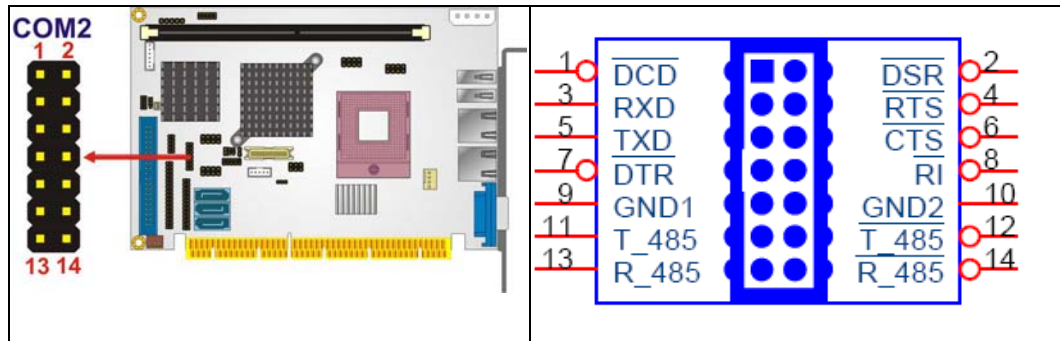
**Figure 4-21: 14-Pin Serial Port Connector Locations**

| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
|---------|-------------|---------|-------------|
| 1 | DCD | 2 | DSR |
| 3 | RXD | 4 | RTS |
| 5 | TXD | 6 | CTS |
| 7 | DTR | 8 | RI |
| 9 | GND | 10 | GND |
| 11 | TXD 485+ | 12 | TXD 485# |
| 13 | RXD 485+ | 14 | RXD 485# |

**Table 4-21: COM 2 Pinouts**

## 4.2.20 TV Out Connector

**CN Label:**      TV1

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

**CN Location:**    See **Figure 4-22**

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

The 2x3 pin TV out connector connects to a TV output by using an S-Video or RCA connector. The TV out connector makes displaying media data on a television easier.
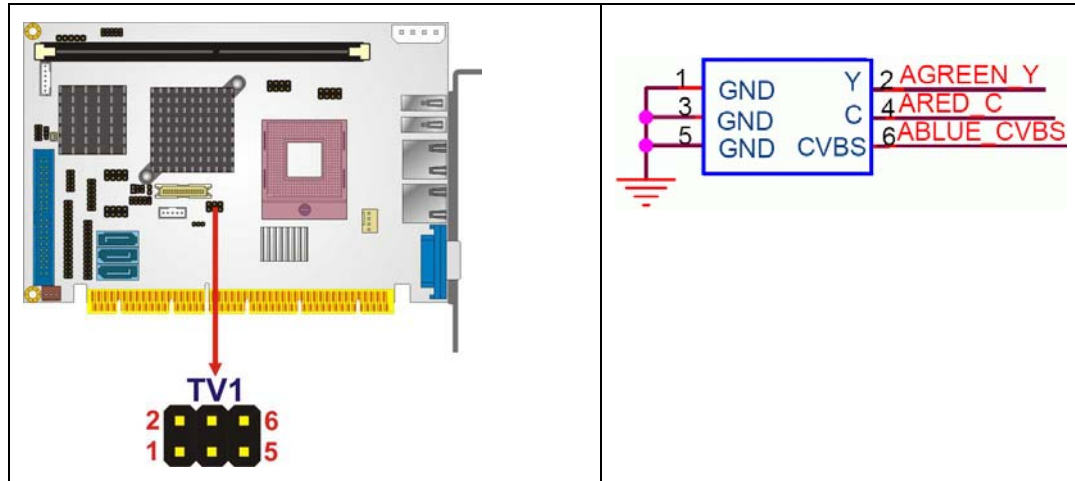
**Figure 4-22: TV Connector Pinout Locations**

| S-Video Connector | | | |
|---|---|---|---|
| PIN NO. | DESCRIPTION | PIN NO. | DESCRIPTION |
| 1 | GND | 2 | AGREEN_Y |
| 3 | GND | 4 | ARED_C |
| RCA Connector (only video signal) | | | |
| 5 | GND | 6 | ABLUE_CVBS |

**Table 4-22: TV Port Connector Pinouts**

## 4.2.21 Internal USB Connectors

| | |
|---|---|
| **CN Label:** | **USB01** and **USB23** |
| **CN Type:** | 8-pin header (2x4) |
| **CN Location:** | See **Figure 4-23** |
| **CN Pinouts:** | See **Table 4-23** |

One 2x4 pin connector provides connectivity to two USB 2.0 ports. The USB ports are used for I/O bus expansion.
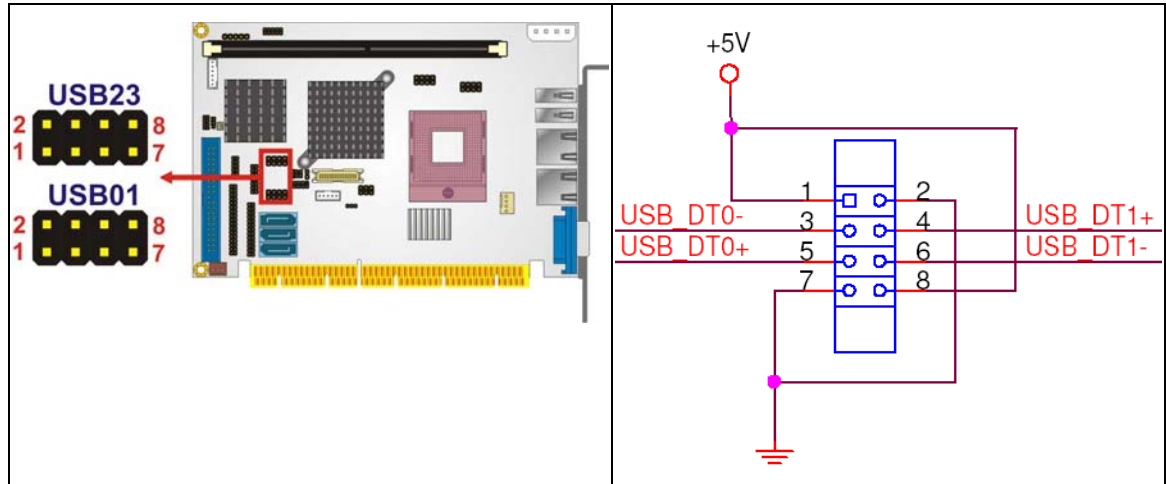
**Figure 4-23: Internal USB Connector Locations**

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

**Table 4-23: USB3 and USB4 Pinouts**

## 4.3 External Interface Connectors

The peripheral connectors on the back panel are connected to devices externally when the PCISA-9652 is installed in a chassis. The peripheral connectors on the rear panel are:

- 1 x CRT connector
- 2 x RJ-45 Ethernet connectors
- 2 x USB 2.0 connectors
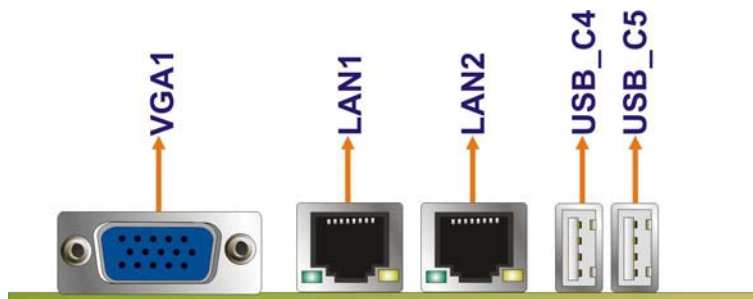


**Figure 4-24: PCISA-9652 External Interface Connectors**

### 4.3.1 CRT Connector

**CN Label:**        **VGA1**

**CN Type:**         15-pin female connector

**CN Location:**     See **Figure 4-24**

**CN Pinouts:**      See **Table 4-24** and **Figure 4-25**

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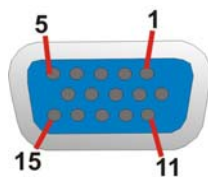


**Figure 4-25: VGA Connector**

| PIN NO. | DESCRIPTION | PIN NO. | 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 4-24: VGA Connector Pinouts**

## 4.3.2 Ethernet Connectors

| | | |
|---|---|---|
| **CN Label:** | **LAN1** and **LAN2** | |
| **CN Type:** | RJ-45 | |
| **CN Location:** | See **Figure 4-24** | |
| **CN Pinouts:** | See **Table 4-25** | |

The PCISA-9652 is equipped with two built-in GbE Ethernet controllers. The controllers can connect to the LAN through two RJ-45 LAN connectors. There are two LEDs on the connector indicating the status of LAN. The pin assignments are listed in the following table:

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

**Table 4-25: LAN1 and LAN2 Pinouts**
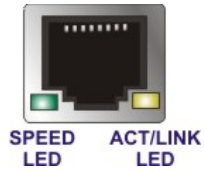
**Figure 4-26: RJ-45 Ethernet Connector**

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 4-26**.

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

**Table 4-26: RJ-45 Ethernet Connector LEDs**

## 4.3.3 USB Connector

| | |
|---|---|
| **CN Label:** | **USB_C4** and **USB_C5** |
| **CN Type:** | USB port |
| **CN Location:** | See **Figure 4-24** |
| **CN Pinouts:** | See **Table 4-27** |

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

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

**Table 4-27: External USB Connector Pinouts**

Chapter

5

# Installation

## 5.1 Anti-static Precautions

> ⚠️ **WARNING:**
>
> Failure to take ESD precautions during the installation of the PCISA-9652 may result in permanent damage to the PCISA-9652 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the PCISA-9652. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the PCISA-9652, 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 PCISA-9652, place it on an antic-static pad. This reduces the possibility of ESD damaging the PCISA-9652.
- ◼ *Only handle the edges of the PCB*: When handling the PCB, hold the PCB by the edges.

## 5.2 Installation Considerations

---

  **NOTE:**

The following installation notices and installation considerations should be read and understood before the PCISA-9652 is installed. All installation notices pertaining to the installation of the PCISA-9652 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the PCISA-9652 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 PCISA-9652, PCISA-9652 components and injury to the user.

---

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

- **Read the user manual**:
  ○ The user manual provides a complete description of the PCISA-9652 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 PCISA-9652 on an antistatic pad**:
  ○ When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power to the PCISA-9652 off**:

O  When working with the PCISA-9652, 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 PCISA-9652 **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 PCISA-9652 is properly installed.

- All the items in the packing list are present
- The CPU is installed
- The CPU cooling kit is properly installed
- A compatible memory module is properly inserted into the slot
- The jumpers have been properly configured
- The PCISA-9652 is inserted into a chassis with adequate ventilation
- The correct power supply is being used
- The following devices are properly connected

  O  IDE device

  O  SATA drives

  O  Power supply

  O  USB cable

  O  Parallel port cable

  O  Serial port cable

- The following external peripheral devices are properly connected to the chassis:

  O  VGA screen

  O  RJ-45 Ethernet cable

  O  USB devices

## 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, PCISA-9652 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 PCISA-9652. If one of these component is not installed the PCISA-9652 cannot run.

### 5.3.1 Socket P CPU Installation

WARNING:

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

To install a socket P CPU onto the PCISA-9652, follow the steps below:

WARNING:

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

**Step 1:** **Unlock the CPU retention screw.** When shipped, the retention screw of the

CPU socket should be in the unlocked position. If it is not in the unlocked

position, use a screwdriver to unlock the screw. See **Figure 5-1**.
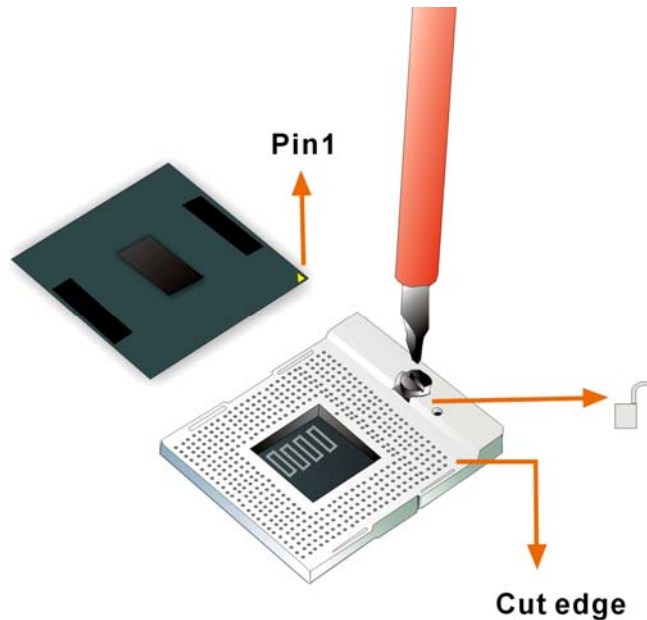


**Figure 5-1: Make sure the CPU socket retention screw is unlocked**

**Step 2:** **Inspect the CPU socket.** Make sure there are no bent pins and make sure the socket contacts are free of foreign material. If any debris is found, remove it with compressed air.

**Step 3:** **Correctly Orientate the CPU**. Make sure the IHS (integrated heat sink) side is facing upwards.

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

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

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

**Step 7:** **Lock the retention screw.** Rotate the retention screw into the locked position. See **Figure 5-2**.
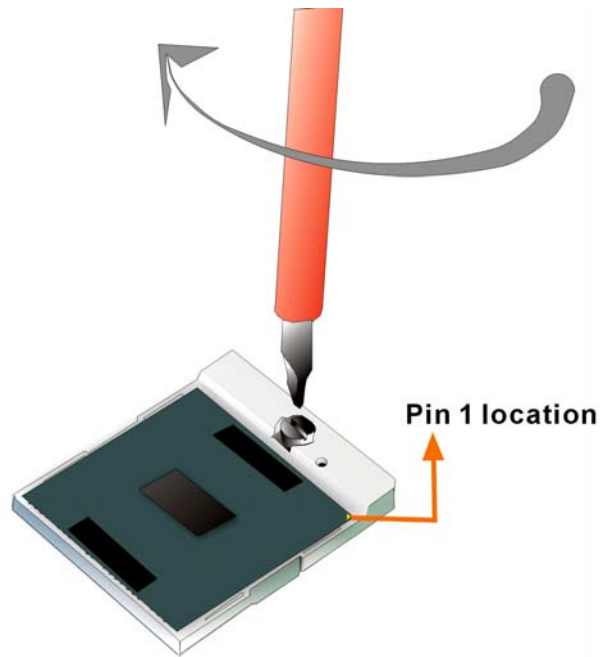
**Figure 5-2: Lock the CPU Socket Retention Screw**

## 5.3.2 Cooling Kit CF-479B-RS Installation



**Figure 5-3: IEI CF-479B-RS Cooling Kit**

An IEI Socket P CPU cooling kit can be purchased separately. The cooling kit comprises a CPU heat sink and a cooling fan.

**⚠ WARNING:**

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

To install the CF-479B-RS cooling kit, please follow the steps below.

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

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

**Step 3:** **Secure the cooling kit**. From the solder side of the PCB, align the support bracket to the screw threads on heat sink that were inserted through the PCB holes. (See **Figure 5-4**)
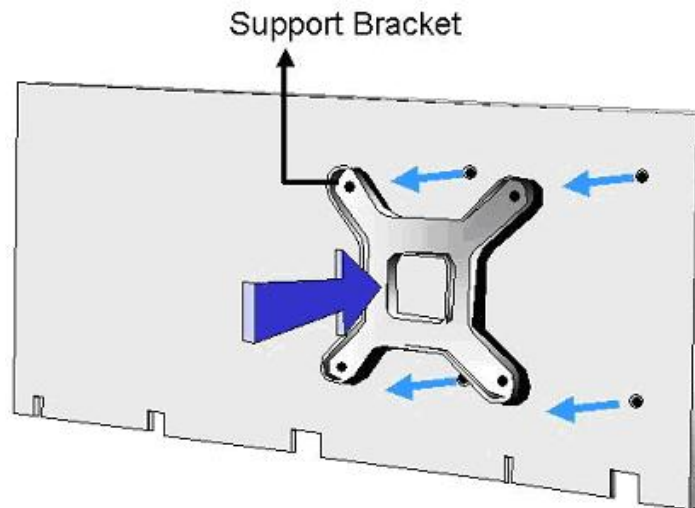


**Figure 5-4: Cooling Kit Support Bracket**

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

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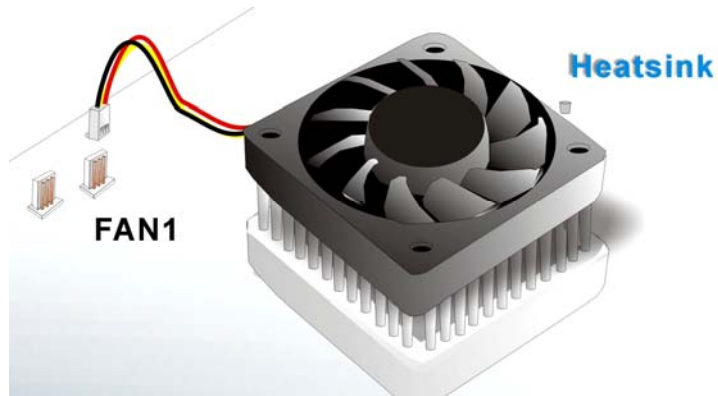


**Figure 5-5: Connect the cooling fan cable**

## 5.3.3 DIMM Installation

**WARNING:**

Only DDR2 memory module can be installed on the PCISA-9652. Do not install DDR memory modules. If a DDR memory module is installed on the PCISA-9652, the PCISA-9652 may be irreparably damaged. Please make sure the purchased DIMM complies with the memory specifications of the PCISA-9652. DIMM specifications compliant with the PCISA-9652 are listed in **Chapter 2**.

> ⚠️ **CAUTION:**
>
> The **DIMM1** socket must be installed with one DDR2 DIMM to enable the PCISA-9652 to boot-up properly.

To install a DIMM into a DIMM socket, please follow the steps below and refer to **Figure 5-6**.
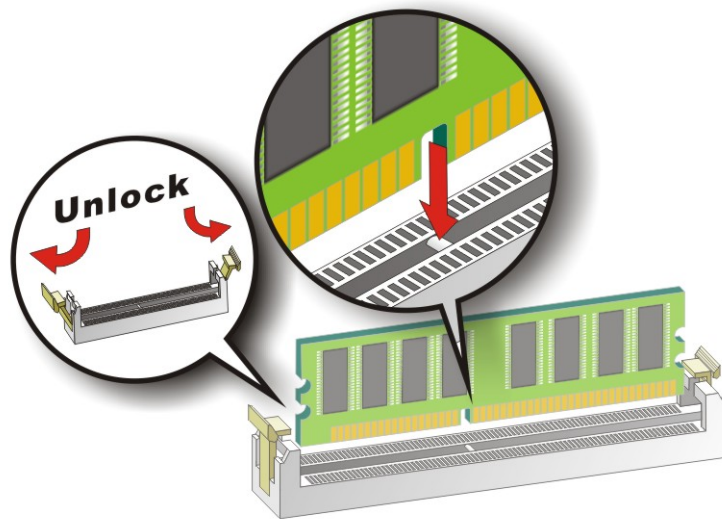


**Figure 5-6: Installing a DIMM**

**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 5-6**.

**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 5-6**.

**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 5-6**.

**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.
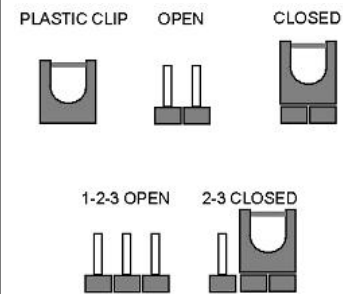
**Figure 5-7: Jumper Locations**

Before the PCISA-9652 is installed in the system, the jumpers must be set in accordance with the desired configuration. The jumpers on the PCISA-9652 are listed in **Table 5-1**.

| Description | Label | Type |
|---|---|---|
| CF card setup | JCF1 | 2-pin header |
| Clear CMOS | J_CMOS1 | 3-pin header |
| COM 2 function selection | JP2 | 6-pn header |
| LVDS LCD voltage selection | J_LVDS1 | 3-pin header |
| LVDS LCD resolution selection | J_LCD_TYPE1 | 8-pin header |

**Table 5-1: Jumpers**

### 5.4.1 CF Card Setup

| | |
|---|---|
| **Jumper Label:** | **JCF1** |
| **Jumper Type:** | 2-pin header |
| **Jumper Settings:** | See **Table 5-2** |
| **Jumper Location:** | See **Figure 5-8** |

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

| CF Card Setup | Description | |
|---|---|---|
| Open | Slave | Default |
| Closed | Master | |

**Table 5-2: CF Card Setup Jumper Settings**

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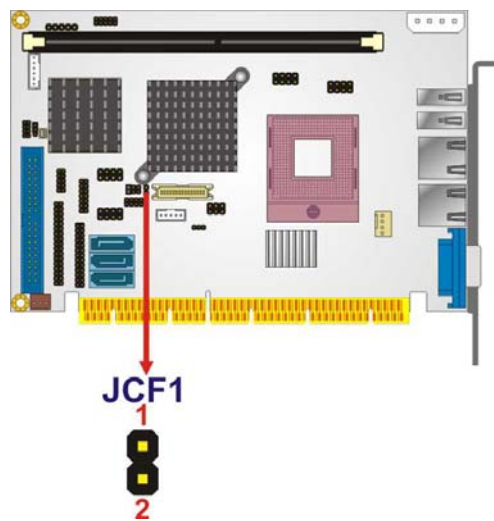


**Figure 5-8: CF Card Setup Jumper Location**

### 5.4.2 Clear CMOS Jumper

| Jumper Label: | **J_COMS1** |
|---|---|
| Jumper Type: | 3-pin header |
| Jumper Settings: | See **Table 5-3** |
| Jumper Location: | See **Figure 5-9** |

If the PCISA-9652 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**.

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

**Table 5-3: Clear CMOS Jumper Settings**

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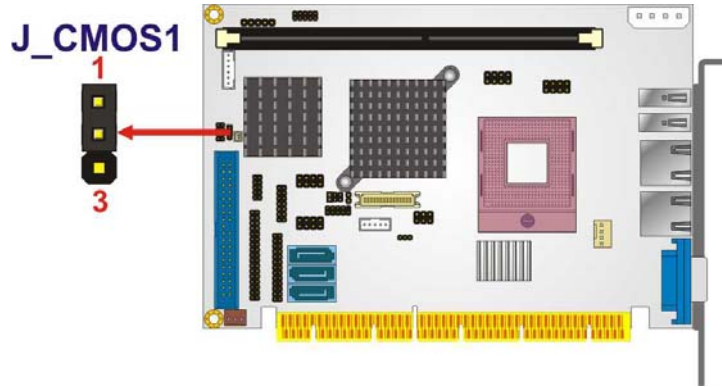
**Figure 5-9: Clear CMOS Jumper**

## 5.4.3 COM 2 Function Select Jumper

| | |
|---|---|
| **Jumper Label:** | **JP2** |
| **Jumper Type:** | 6-pin header |
| **Jumper Settings:** | See **Table 5-4** |
| **Jumper Location:** | See **Figure 5-10** |

The COM 2 Function Select jumper sets the communication protocol used by the second serial communications port (COM 2) as RS-232, RS-422 or RS-485. The COM 2 Function Select settings are shown in **Figure 5-10**.

| COM 2 Function Select | Description | |
|---|---|---|
| Short 1-2 | RS-232 | Default |
| Short 3-4 | RS-422 | |
| Short 5-6 | RS-485 | |

**Table 5-4: COM 2 Function Select Jumper Settings**

The COM 2 Function Select jumper location is shown in **Table 5-4**.
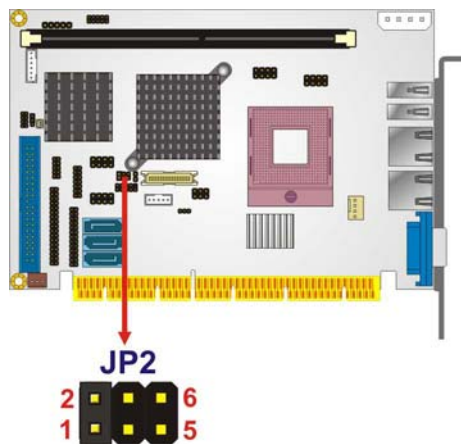
**Figure 5-10: COM 2 Function Select Jumper Location**

## 5.4.4 LVDS Voltage Selection

 **WARNING:**

Permanent damage to the screen and PCISA-9652 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that cam with the monitor to select the correct voltage.

| | |
|---|---|
| **Jumper Label:** | **J_VLVDS1** |
| **Jumper Type:** | 3-pin header |
| **Jumper Settings:** | See **Table 5-5** |
| **Jumper Location:** | See **Figure 5-11** |

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

| LVDS Voltage Select | Description | |
|---|---|---|
| Short 1-2 | +3V | Default |
| Short 2-3 | +5V | |

**Table 5-5: LVDS Voltage Selection Jumper Settings**

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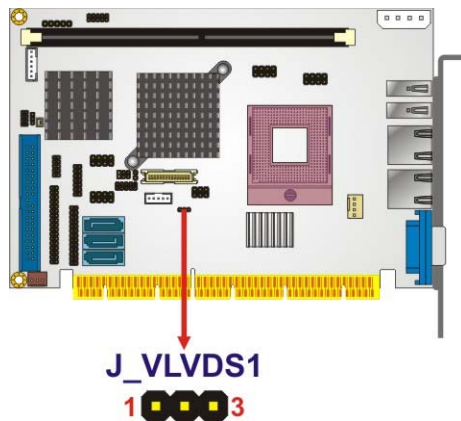


**Figure 5-11: LVDS Voltage Selection Jumper Pinout Locations**

## 5.4.5 LVDS Panel Resolution Selection

| | |
|---|---|
| **Jumper Label:** | **J_LCD_TYPE1** |
| **Jumper Type:** | 8-pin header |
| **Jumper Settings:** | See **Table 5-6** |
| **Jumper Location:** | See **Figure 5-12** |

The **LVDS Panel Resolution Selection** jumper allows the LVDS screen resolution to be set. The **LVDS Panel Resolution Selection** jumper settings are shown in **Table 5-6**.

| LVDS Resolution Select | Description | |
|---|---|---|
| Open | 640 x 480 (18-bit) | |
| Short 1-2 | 800 x 600 (18-bit) | Default |
| Short 3-4 | 1024 x 768 (18-bit) | |

| Short 1-2 & 3-4 | 1024 x 768 (24-bit) | |
| Short 5-6 | 1024 x 768 (48-bit) | |
| Short 1-2 & 5-6 | 1280 x 1024 (48-bit) | |
| Short 3-4 & 5-6 | 1600 x 1200 (48-bit) | |
| Short 1-2 & 3-4 & 5-6 | 1280 x 768 (18-bit) | |
| Short 7-8 | 1280 x 800 (18-bit) | |
| Short 1-2 & 7-8 | 1366 x 768 (24-bit) | |
| Short 3-4 & 7-8 | 1440 x 900 (36-bit) | |
| Short 1-2 & 3-4 & 7-8 | 1440 x 900 (48-bit) | |
| Short 5-6 & 7-8 | 1680 X 1050 (48-bit) | |
| Short 1-2 & 5-6 & 7-8 | 1920 X 1080 (48-bit) | |
| Short 3-4 & 5-6 & 7-8 | 1920 X 1200 (48-bit) | |

**Table 5-6: LVDS Resolution Selection Jumper Settings**

The LVDS Voltage Selection jumper location is shown in **Figure 5-12**.
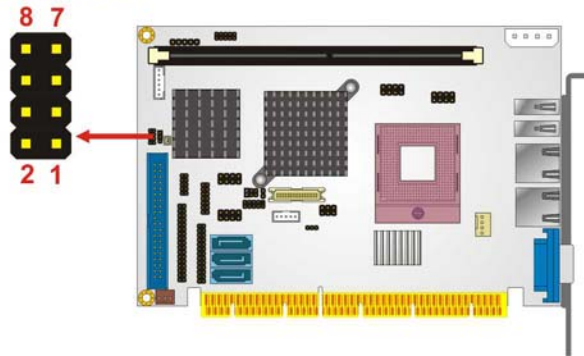


**Figure 5-12: LVDS Resolution Selection Jumper Pinout Locations**

## 5.5 Chassis Installation

### 5.5.1 Airflow

![WARNING icon] **WARNING:**

Airflow is critical to the cooling of the CPU and other onboard components. The chassis in which the PCISA-9652 must have air vents to allow cool air to move into the system and hot air to move out.

The PCISA-9652 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

![NOTE icon] **NOTE:**

IEI has a wide range of backplanes available. Please contact your PCISA-9652 vendor, reseller or an IEI sales representative at sales@iei.com.tw or visit the IEI website (http://www.ieiworld.com.tw) to find out more about the available chassis.

### 5.5.2 Backplane Installation

Before the PCISA-9652 can be installed into the chassis, a backplane must first be installed. Please refer to the installation instructions that came with the backplane and the chassis to see how to install the backplane into the chassis.

**NOTE:**

IEI has a wide range of backplanes available. Please contact your PCISA-9652 vendor, reseller or an IEI sales representative at sales@iei.com.tw or visit the IEI website (http://www.ieiworld.com.tw) to find out more about the available chassis.

### 5.5.3 CPU Card Installation

To install the PCISA-9652 CPU card onto the backplane, carefully align the CPU card interface connectors with the corresponding socket on the backplane. To do this, please refer to the reference material that came with the backplane. Next, secure the CPU card to the chassis. To do this, please refer to the reference material that came with the chassis.

## 5.6 Internal Peripheral Device Connections

### 5.6.1 Peripheral Device Cables

The cables listed in **Table 5-7** are shipped with the PCISA-9652.

| Quantity | Type |
|----------|------|
| 1 | IDE cable |
| 1 | Parallel port and RS-232 cable |
| 2 | SATA drive cables |
| 1 | SATA drive power cable |
| 1 | USB cable |

**Table 5-7: IEI Provided Cables**

Optional cables are listed below:

■ Keyboard/mouse cable

■ HDTV/TV cable with S-Video/Composite/Component output

## 5.6.2 IDE Cable Connection

The IDE flat cable connects to the PCISA-9652 to one or two IDE devices. To connect an IDE HDD to the PCISA-9652, please follow the instructions below.

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

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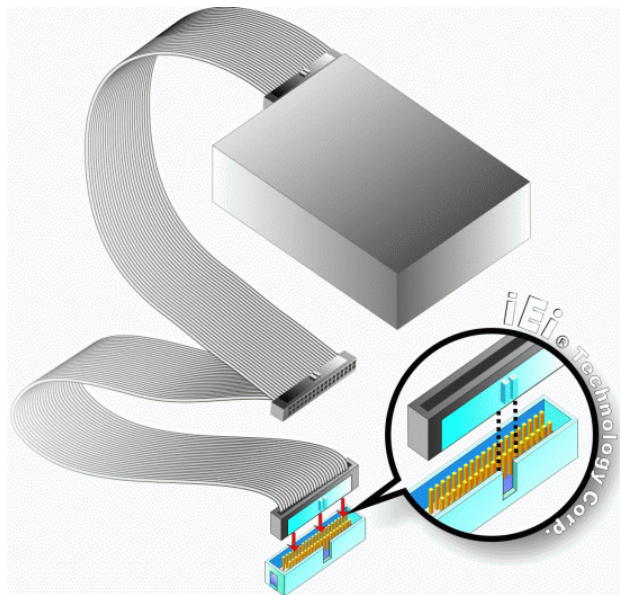


**Figure 5-13: IDE Cable Connection**

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

## 5.6.3 SATA Drive Connection

The PCISA-9652 is shipped with two SATA drive cables and one SATA drive power cable.
To connect the SATA drives to the connectors, please follow the steps below.

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

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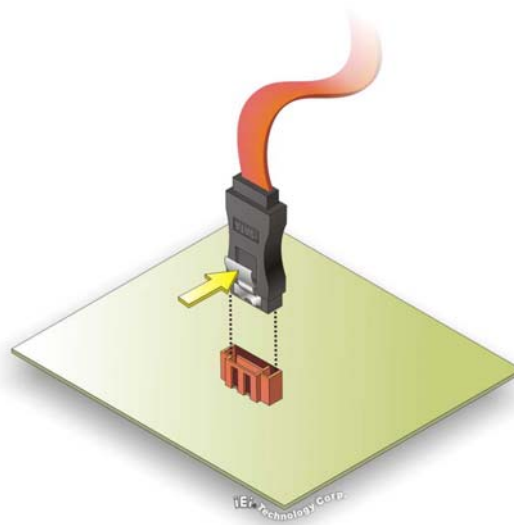


**Figure 5-14: SATA Drive Cable Connection**

**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**.
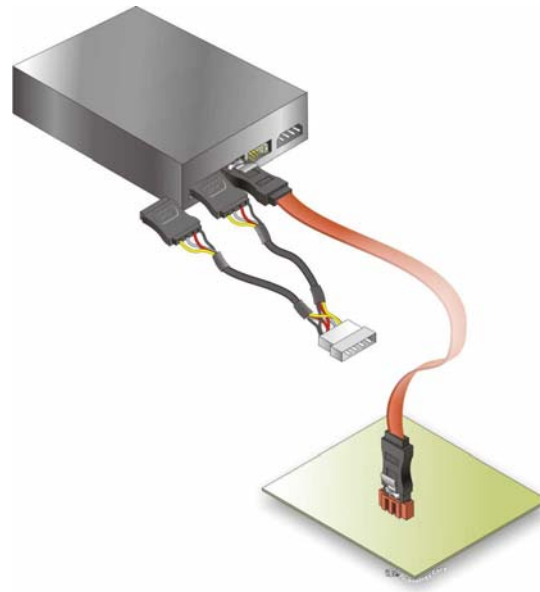
**Figure 5-15: SATA Power Drive Connection**

## 5.6.4 USB Cable (Dual Port) with Slot Bracket

The PCISA-9653 can be shipped with a dual port USB 2.0 cable. To connect the USB cable connector, please follow the steps below.

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

> ⚠️ **WARNING:**
>
> If the USB pins are not properly aligned, the USB device can burn out.

**Step 2:** **Align the connectors**. The cable has two connectors. Correctly align pin 1on each cable connector with pin 1 on the PCISA-9652 USB connector.

**Step 3:** **Insert the cable connectors** Once the cable connectors are properly aligned with the USB connectors on the PCISA-9652, connect the cable connectors to

the onboard connectors. See **Figure 5-16**.
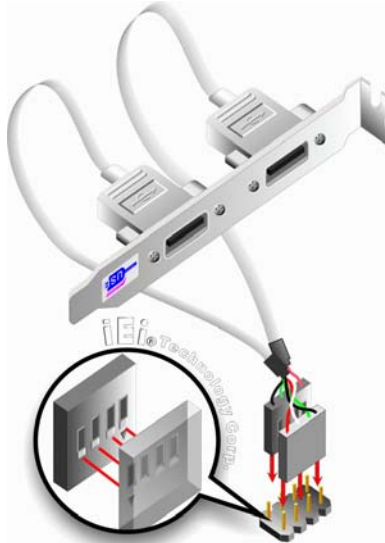


**Figure 5-16: Dual USB Cable Connection**

**Step 4:** **Attach the bracket to the chassis**. The USB 2.0 connectors are attached to a bracket. To secure the bracket to the chassis please refer to the installation instructions that came with the chassis.

## 5.6.5 7.1 Channel Audio Kit Installation (Optional)

 **NOTE:**

This is an optional item that must be ordered separately. For further information please contact the nearest PCISA-9652 distributor, reseller or vendor or contact an iEi sales representative directly. Send any queries to sales@iei.com.tw.

The optional 7.1 channel audio kit connects to the 10-pin audio connector on the PCISA-9652. The audio kit consists of five audio jacks. One audio jack, Mic In, connects to a microphone. The remaining four audio jacks, Line-In, Front-Out, Rear-Out, and

Center Subwoofer, connect to speakers. To install the audio kit, please refer to the steps below:

**Step 1:** **Connect the audio kit cable.** The audio kit is shipped with a cable that connects the audio kit to the PCISA-9652. Connect the cable to the connector on the back of the audio kit. Make sure the pins are properly aligned (i.e. pin 1 connects to pin 1).

**Step 2:** **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

**Step 3:** **Align pin 1**. Align pin 1 on the on-board connector with pin 1 on the audio kit cable connector. Pin 1 on the audio kit cable connector is indicated with a white dot. See **Figure 5-17**.
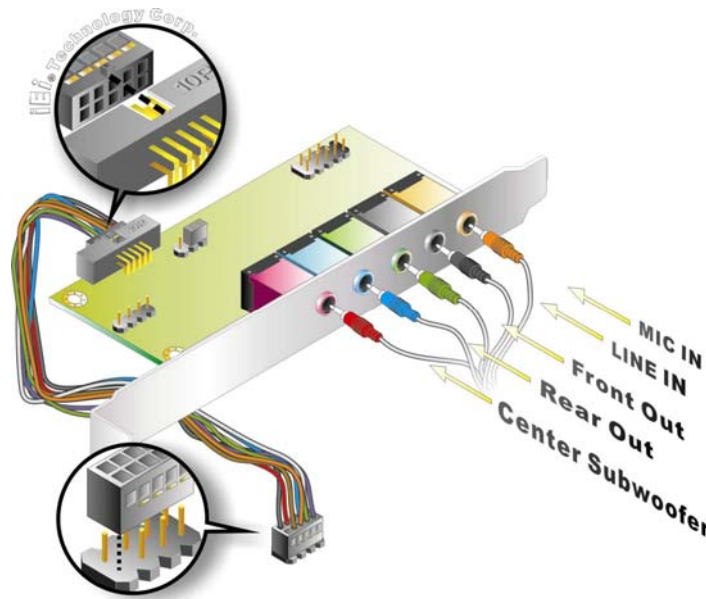


**Figure 5-17: 7.1 Channel Audio Kit**

**Step 4:** **Mount the audio kit onto the chassis**. Once the audio kit is connected to the PCISA-9652, secure the audio kit bracket to the system chassis.

**Step 5:** **Connect the audio devices**. Connect one speaker to the line-in audio jack, one speaker to the line-out audio jack and a microphone to the mic-in audio jack.

**Step 6:** **Install the driver**. If the 7.1 channel audio kit is used, the ALC883 Realtek

codec driver must be installed. Refer to **Chapter 7** for driver installation

instructions.

## 5.7 External Peripheral Interface Connection

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

- RJ-45 Ethernet cables
- USB devices
- VGA monitor

To install these devices, connect the corresponding cable connector from the actual device to the corresponding PCISA-9652 external peripheral interface connector making sure the pins are properly aligned.

### 5.7.1 LAN Connection (Single Connector)

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

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

in **Chapter 4**.

**Step 2:** **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of

the RJ-45 connectors on the PCISA-9652. See **Figure 5-18**.
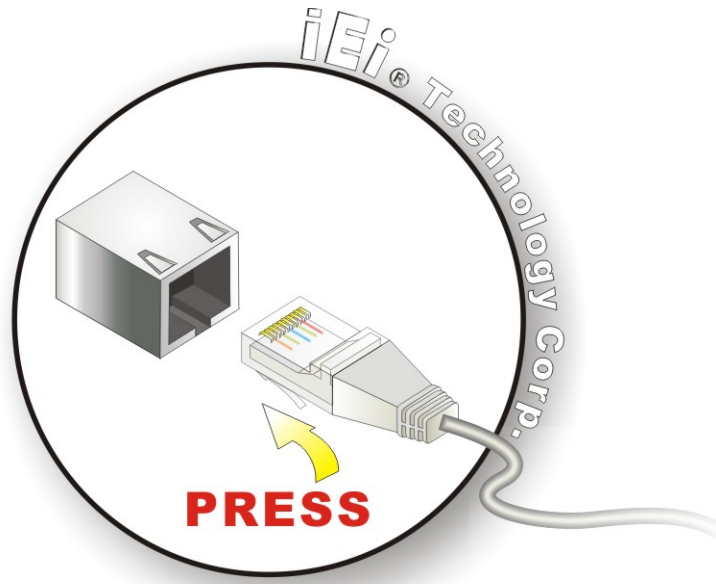
**Figure 5-18: LAN Connection**

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

## 5.7.2 VGA Monitor Connection

The PCISA-9652 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the PCISA-9652, please follow the instructions below.

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

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

**Step 3:** **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the PCISA-9652. See **Figure 5-19**.
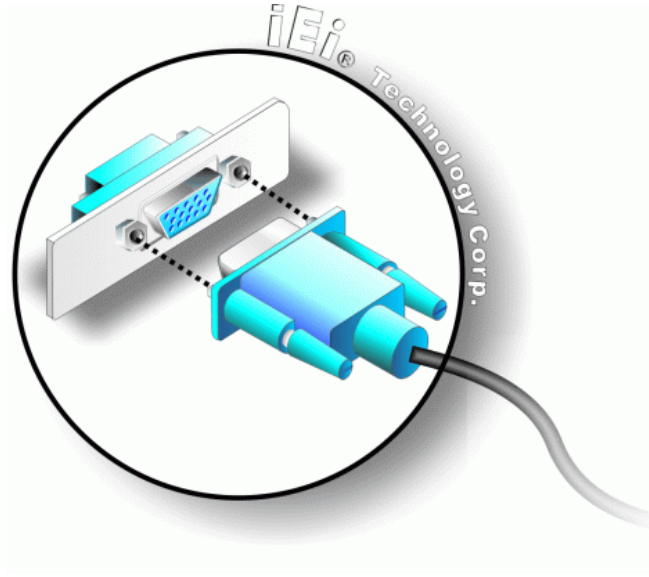
**Figure 5-19: VGA Connector**

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

## 5.7.3 USB Device Connection (Single Connector)

There are two external USB 2.0 connectors. Both connectors are perpendicular to the PCISA-9652. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

**Step 1:** **Located the USB connectors**. The locations of the USB connectors are shown in **Chapter 4**.

**Step 2:** **Align the connectors.** Align the USB device connector with one of the connectors on the PCISA-9652. See **Figure 5-20**.
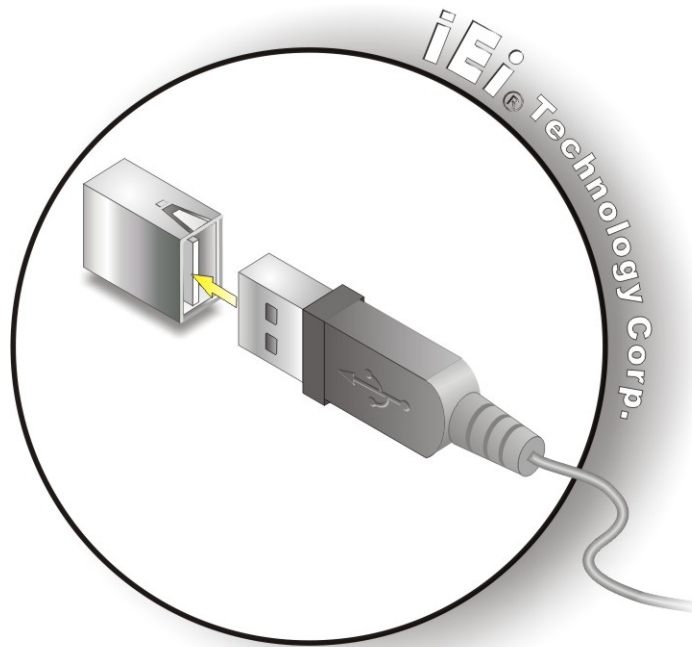
**Figure 5-20: USB Device Connection**

**Step 3:** **Insert the device connector.** Once aligned, gently insert the USB device

connector into the on-board connector.

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 |

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

*Table 6-1: BIOS Navigation Keys*

## 6.1.3 Getting Help

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

## 6.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter **5**.

## 6.1.5 BIOS Menu Bar

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

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

  System Overview                               Use [ENTER], [TAB]
  _____      or [SHIFT-TAB] to
  AMIBIOS                                        select a field.
  Version    :08.00.14
  Build Date:11/19/07                           Use [+] or [-] to
  ID         :B088MR12                          configure system Time.
  BID        :1
  PID        :0

  Processor

  Speed      :255MHz
  Count      :255                               ←     Select Screen
                                                ↑↓    Select Item
  System Memory                                 +-    Change Field
  Size       :504MB                             Tab   Select Field
                                                F1    General Help
  System Time                  [06:06:25]       F10   Save and Exit
  System Date                  [Fri 01/12/2007] ESC   Exit


          v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

**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

o   **Count**: The number of CPUs on the motherboard

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

o   **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**)

■   Remote Access Configuration (see **Section 6.3.6**)

■   USB Configuration (see **Section 6.3.7**)

■   Power Configuration (see **Section 6.3.8**)
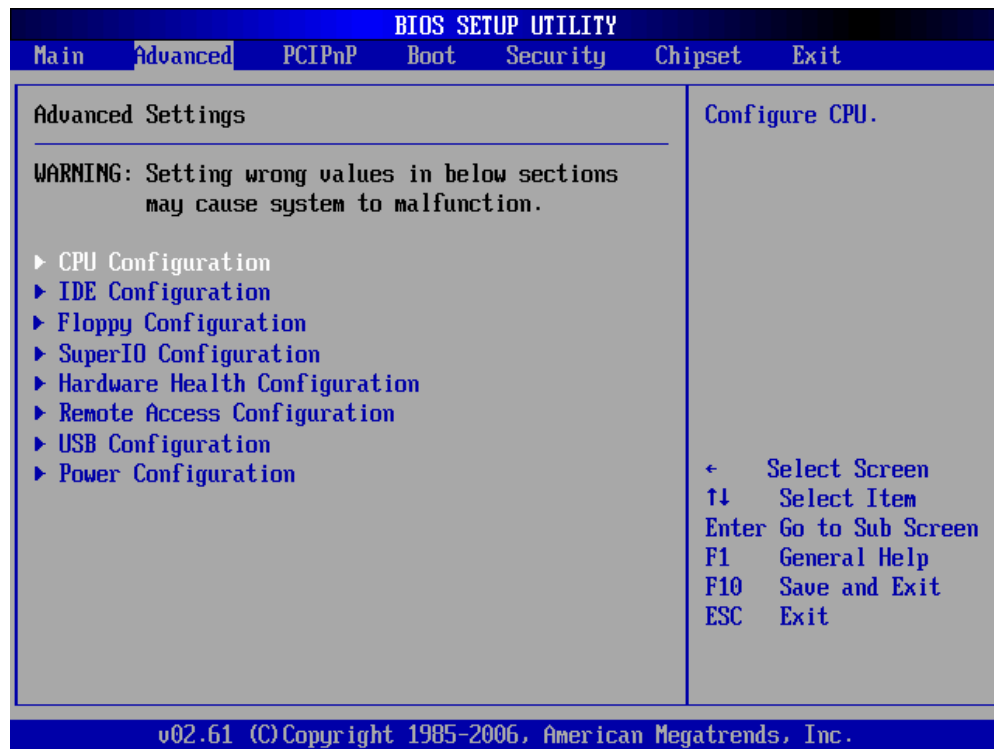
**BIOS Menu 2: Advanced**

## 6.3.1 CPU Configuration

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

**BIOS SETUP UTILITY**

Advanced

```
Configure advanced CPU settings
Module Version:3F.06

Manufacturer:Intel

Frequency    :255MHz
FSB Speed    :92MHz
Cache L1     :0 KB
Cache L2     :0 KB
Ratio Actual Value:11
```

```
←      Select Screen
↑↓     Select Item
F1     General Help
F10    Save and Exit
ESC    Exit
```

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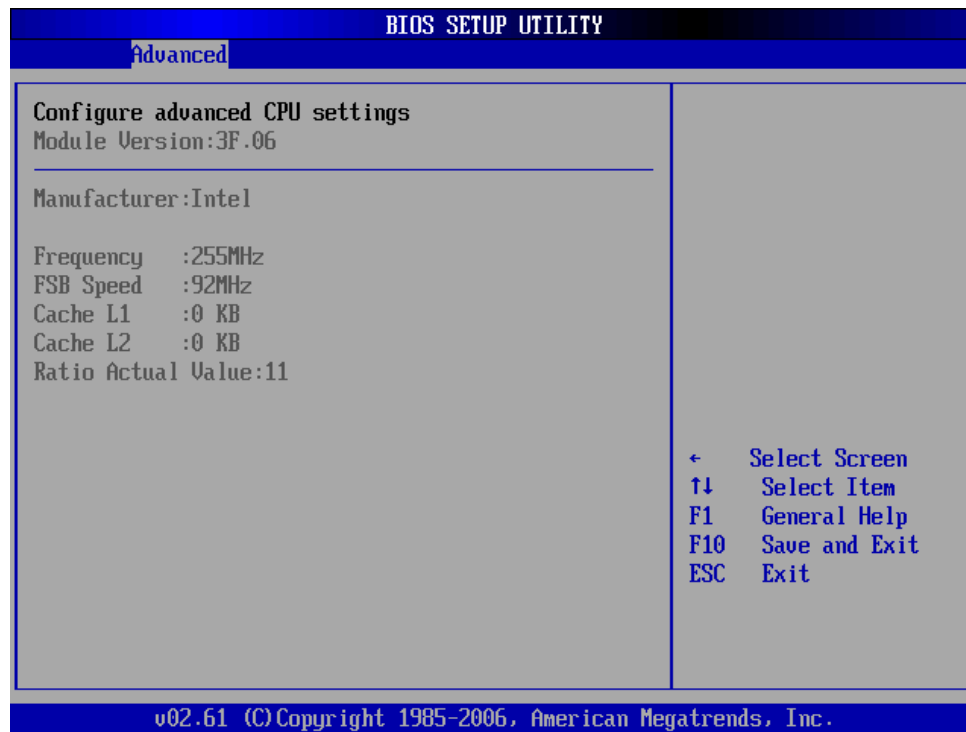
**BIOS Menu 3: CPU Configuration**

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

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

## 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 SETUP UTILITY
    Advanced

    IDE Configuration                              Options

    ATA/IDE Configuration        [Compatible]      Disabled
       Legacy IDE Channels       [SATA Pri, PATA Sec]  Compatible
                                                   Enhanced
    ▶ Primary IDE Master         : [Not Detected]
    ▶ Primary IDE Slave          : [Not Detected]
    ▶ Secondary IDE Master       : [Not Detected]
    ▶ Secondary IDE Slave        : [Not Detected]
    ▶ Third IDE Master           : [Not Detected]
    ▶ Third IDE Slave            : [Not Detected]

                                                   ←    Select Screen
                                                   ↑↓   Select Item
                                                   +-   Change Option
                                                   F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit


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```

**BIOS Menu 4: IDE Configuration**

➔   **ATA/IDE Configurations [Compatible]**

Use the **ATA/IDE Configurations** option to configure the ATA/IDE controller.

➔   **Disabled**                Disables the on-board ATA/IDE controller.

➔   **Compatible**   DEFAULT    Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔   **Enhanced**                Configures 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.

➔ **Legacy IDE Channels [SATA Pri, PATA Sec]**

    ➔ **SATA Only**

    ➔ **SATA Pri., PATA Sec**    DEFAULT

    ➔ **PATA Only**

➔ **IDE Master and IDE Slave**

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

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

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

### 6.3.2.1 IDE Master, IDE Slave

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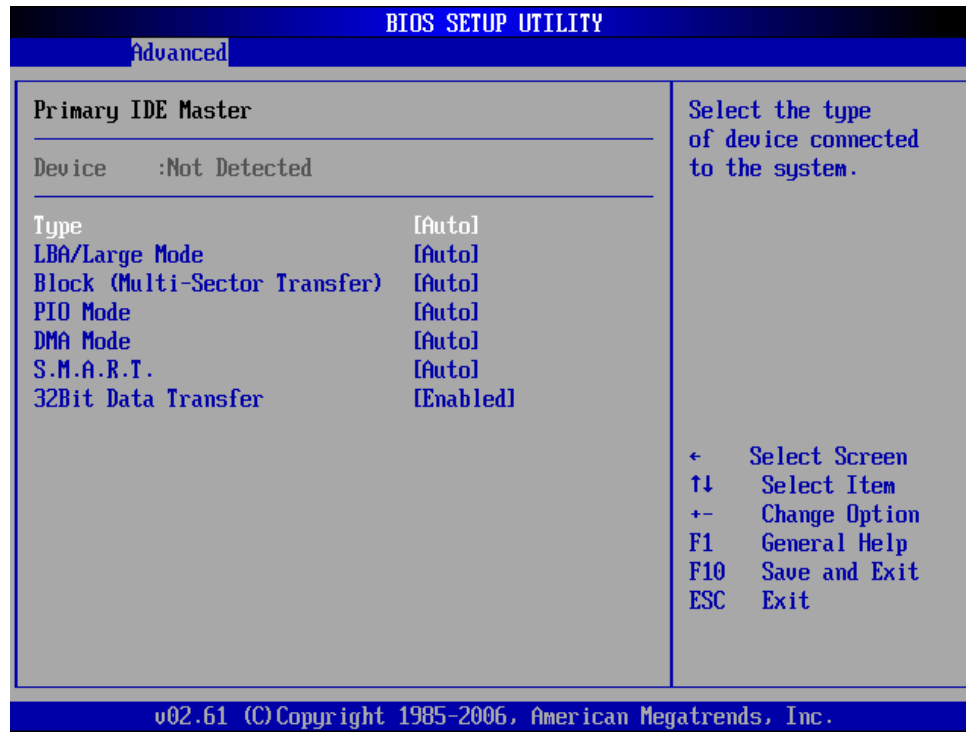
**BIOS Menu 5: IDE Master and IDE Slave Configuration**

➔ **Type [Auto]**

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

➔ **Not Installed**  BIOS is prevented from searching for an IDE disk drive on the specified channel.

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

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

IDE disk drives on the specified channel.

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

           ➔ **ZIP**

           ➔ **LS-120**

➔ **LBA/Large Mode [Auto]**

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

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

➔ **Auto**   **DEFAULT**    BIOS auto detects the LBA mode control on the specified channel.

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

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

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

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

➔ **PIO Mode [Auto]**

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

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

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

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

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

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

➔ **4**  PIO mode 4 selected with a maximum transfer rate of 16.6MBps (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

➔ **DMA Mode [Auto]**

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

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

➔ **SWDMA0**  Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1MBps

➔ **SWDMA1**  Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2MBps

➔ **SWDMA2**  Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3MBps

➔     **MWDMA0**          Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2MBps

➔     **MWDMA1**          Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3MBps

➔     **MWDMA2**          Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6MBps

➔     **UDMA1**           Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6MBps

➔     **UDMA1**           Ultra DMA mode 1 selected with a maximum data transfer rate of 25MBps

➔     **UDMA2**           Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3MBps

➔     **UDMA3**           Ultra DMA mode 3 selected with a maximum data transfer rate of 44MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔     **UDMA4**           Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔     **UDMA5**           Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9MBps (To use this mode, it is required that an 80-conductor ATA cable is used.)

➔    **S.M.A.R.T [Auto]**

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

è  **Auto**  DEFAULT  BIOS auto detects HDD SMART support.

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

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

è  **32Bit Data Transfer [Enabled]**

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

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

è  **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 SETUP UTILITY
     Advanced

 Floppy Configuration                               Select the type of
 ──────────────────────────────────────────         floppy drive
 Floppy A                    [1.44 MB 3½"]           connected to the
                                                     system.




                                                     ←    Select Screen
                                                     ↑↓    Select Item
                                                     +-    Change Option
                                                     F1    General Help
                                                     F10   Save and Exit
                                                     ESC   Exit


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```
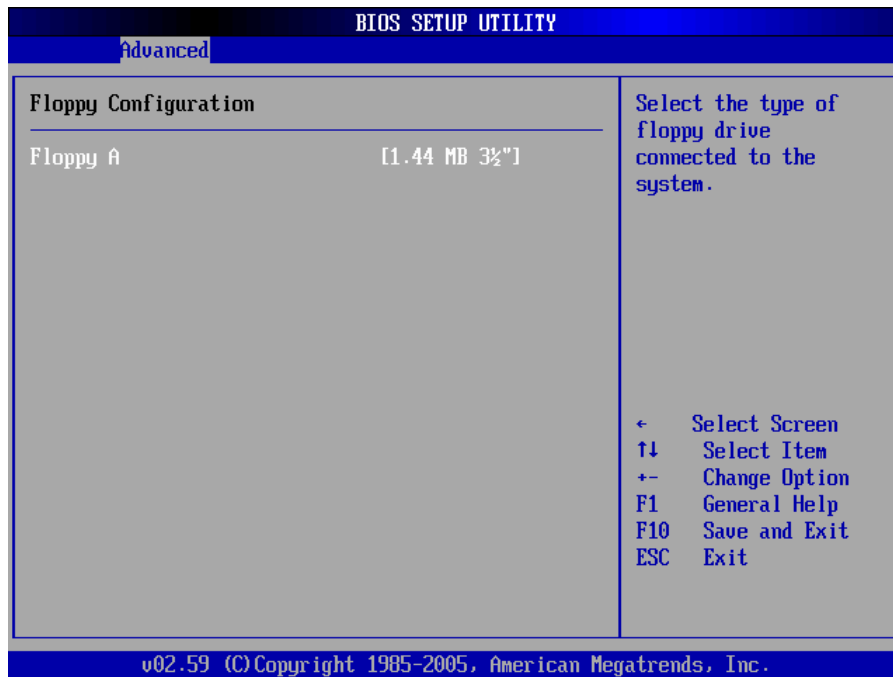
**BIOS Menu 6: IDE Master and IDE Slave Configuration**

➔ **Floppy A**

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

- Disabled
- 360 KB 51/4"
- 1.2 MB 51/4"
- 720 KB 31/2"
- 1.44 MB 31/2'
- 2.88 MB 31/2"

## 6.3.4 Super IO Configuration

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

```
                    BIOS SETUP UTILITY
   Advanced

Configure ITE8712 Super IO Chipset              Allows BIOS to Select
                                                Serial Port1 Base
                                                Addresses.
Serial Port1 Address          [3F8/IRQ4]
   Serial Port1 Mode          [Normal]
Serial Port2 Address          [2F8/IRQ3]
   Serial Port2 Mode          [Normal]
Parallel Port Address         [378]
   Parallel Port Mode         [Normal]
   Parallel Port IRQ          [IRQ7]


                                                ←    Select Screen
                                                ↑↓   Select Item
                                                +-   Change Option
                                                F1   General Help
                                                F10  Save and Exit
                                                ESC  Exit


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```

**BIOS Menu 7: Super IO Configuration**

➔ **Serial Port1 Address [3F8/IRQ4]**

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

➔ **Disabled**           No base address is assigned to Serial Port 1

➔ **3F8/IRQ4**     DEFAULT     Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4

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

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

➔ **Serial 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 [378]**

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

➔ **Disabled**            No base address is assigned to the Parallel Port

➔ **378**      DEFAULT    Parallel Port I/O port address is 378

➔ **278**              Parallel Port I/O port address is 278

➔ **3BC**              Parallel Port I/O port address is 3BC

➔ **Parallel Port Mode [Normal]**

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

➔ **Normal**    DEFAULT    The normal parallel port mode is the standard mode for parallel port operation.

➔ **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**

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

➔ **EPP+ECP**

The parallel port is compatible with both EPP and ECP 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

## 6.3.5 Hardware Health Configuration

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

**PCISA -9652 Half-Size CPU Card**

```
                        BIOS SETUP UTILITY
       Advanced

Hardware Health Configuration
_____
CPU Temperature            :42°C/107°F
PWM Temperature            :42°C/107°F
System Temperature         :41°C/105°F

Fan1 Speed                 :6308 RPM

CPU Core                   :1.216 V
+1.8V                      :1.824 V
+3.30V                     :3.376 V
+5.00V                     :4.999 V
+12.0V                     :11.904 V           ←    Select Screen
+1.05V                     :1.024 V            ↑↓   Select Item
+1.5V                      :1.488 V            F1   General Help
+1.25V                     :1.232 V            F10  Save and Exit
VBAT                       :3.264 V            ESC  Exit




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```

**BIOS Menu 8: Hardware Health Configuration**


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

- ■ **System Temperatures**: The following system temperatures are monitored
  - ○ CPU Temperature
  - ○ PWM Temperature
  - ○ System Temperature
- ■ **Fan Speeds**: The CPU cooling fan speed is monitored.
  - ○ Fan1 Speed
- ■ **Voltages**: The following system voltages are monitored
  - ○ CPU Core
  - ○ +1.8V
  - ○ +3.30V
  - ○ +5.00V
  - ○ +12.0V

    ○ +1.05V

    ○ +1.5V

    ○ +1.25V

    ○ VBAT

## 6.3.6 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 9**) 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.
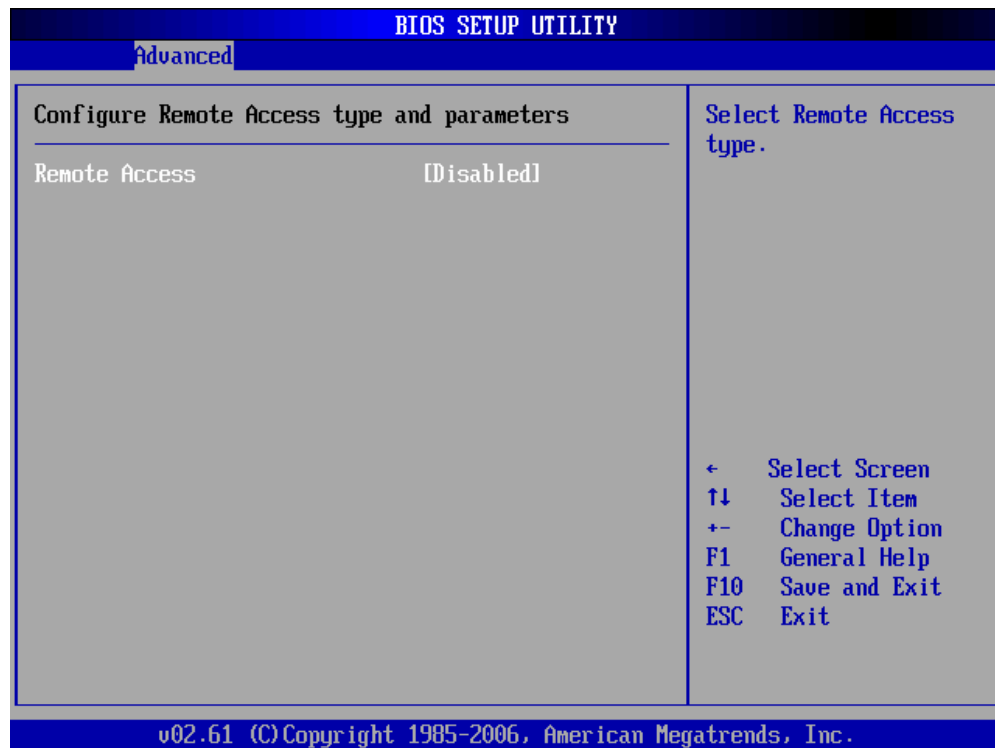


**BIOS Menu 9: Remote Access Configuration [Advanced]**

➔ **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**

➔ **Redirection after BIOS POST**

➔ **Terminal Type**

These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

Use the **Serial Port Number** option allows users 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 [3F8h,4]**

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 musts be set on the host (a management computer running a terminal software) and the slave

---

➔ **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

## 6.3.7 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 10**) to read USB configuration information and configure the USB settings.
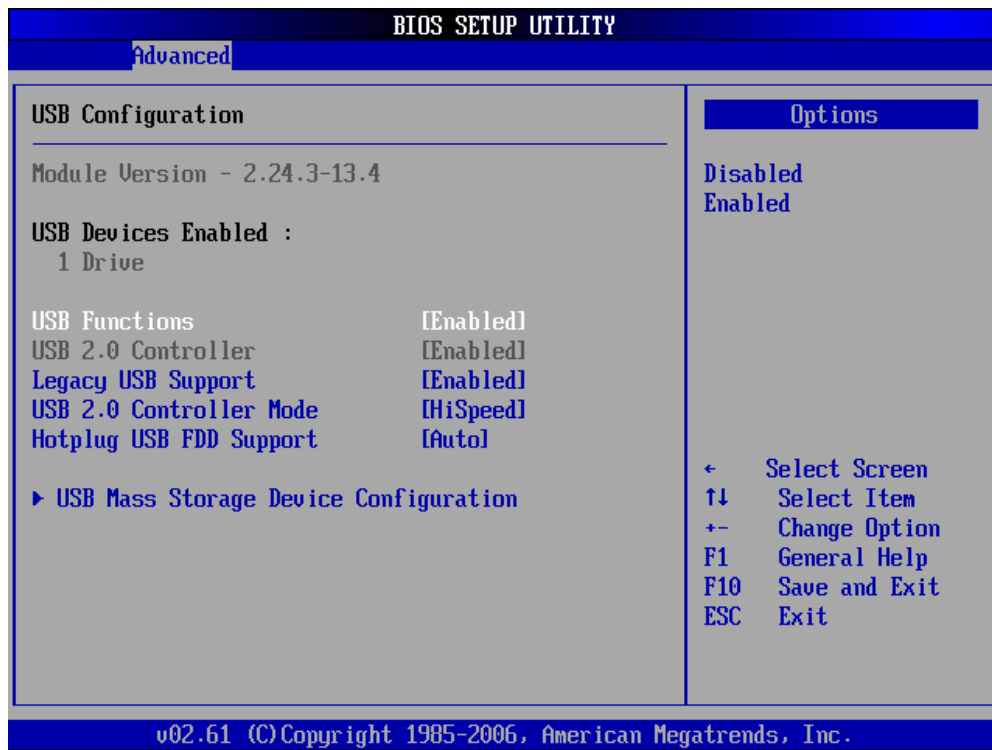
   **BIOS Menu 10: USB Configuration**

➔   **USB Configuration**

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

■  Module Version: x.xxxxx.xxxxx

➔   **USB Devices Enabled**

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

➔   **USB Function [Enabled]**

Use the **USB Function** BIOS option to enable or disable the USB function.

➔   **Disabled**                    USB function support disabled

➔   **Enabled**    DEFAULT    USB function support 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

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

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

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

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

➔ **Hotplug USB FDD Support [Auto]**

Use the **Hotplug USB FDD Support** option to enable or disable USB FDD support.

➔ **Disabled**           Hot-plug USB FDD support disabled.

➔ **Enabled**            A virtual FDD drive is created and will be associated with the hotplugged FDD later.

➔ **Auto**      DEFAULT   A virtual FDD drive is created only if there is no USB FDD present.

### 6.3.7.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (**BIOS Menu 11**) to configure USB mass storage class devices.

```
                         BIOS SETUP UTILITY
        Advanced

USB Mass Storage Device Configuration            Number of seconds
                                                 POST waits for the
USB Mass Storage Reset Delay     [20 Sec]        USB mass storage
                                                 device after start
    Device #1          JetFlash TS1GJF2A/120     unit command.
    Emulation Type             [Auto]




                                                 ←    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit


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```

**BIOS Menu 11: USB Mass Storage Device Configuration**

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

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

➔ **10 Sec**        POST waits 10 seconds for the USB mass storage device after the start unit command.

➔ **20 Sec**    DEFAULT    POST waits 20 seconds for the USB mass storage device after the start unit command.

➔ **30 Sec**        POST waits 30 seconds for the USB mass storage

device after the start unit command.

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

➔ **Device ##**

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

➔ **Emulation Type [Auto]**

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

**NOTE:**

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

➔ **Auto** **DEFAULT** BIOS auto-detects the current USB.

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

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

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

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

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

## 6.3.8 Power Configuration

Use the **Power Configuration** menu (**BIOS Menu 12**) configures the Advanced Configuration and Power Interface (ACPI) and Power Management (APM) options.
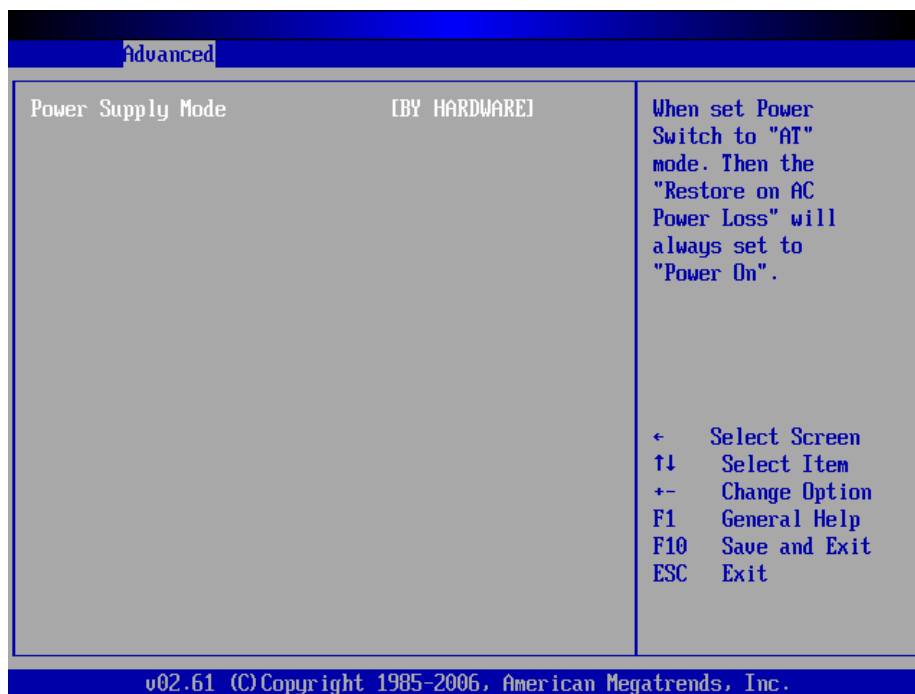


**BIOS Menu 12: Power Configuration**

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

➔ **BY HARDWARE**  DEFAULT  The power supply mode is depends on hardware

# 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 PCIPnP BIOS menu may cause the system to malfunction.

```
                    BIOS SETUP UTILITY
 Main    Advanced   PCIPnP    Boot    Security    Chipset    Exit

 Advanced PCI/PnP Settings                    ▲  Available: Specified
                                                 IRQ is available to be
 WARNING: Setting wrong values in below sections  used by PCI/PnP
          may cause system to malfunction.        devices.
                                                 Reserved: Specified
 IRQ3                        [Reserved]           IRQ is reserved for
 IRQ4                        [Reserved]           use by Legacy ISA
 IRQ5                        [Available]          devices.
 IRQ7                        [Available]
 IRQ9                        [Available]
 IRQ10                       [Reserved]
 IRQ11                       [Available]
 IRQ14                       [Available]       ←    Select Screen
 IRQ15                       [Available]       ↑↓   Select Item
                                               +-   Change Option
 DMA Channel 0               [Available]       F1   General Help
 DMA Channel 1               [Available]       F10  Save and Exit
 DMA Channel 3               [Available]       ESC  Exit
 DMA Channel 5               [Available]
 DMA Channel 6               [Available]    ▼

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```

**BIOS Menu 13: PCI/PnP Configuration**

➔ **IRQ#**

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

➔ **Available**          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 options 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 SETUP UTILITY

| Main | Advanced | PCIPnP | Boot | Security | Chipset | Exit |

Boot Settings

▶ Boot Settings Configuration

▶ Boot Device Priority
▶ Removable Drives

Configure Settings
during System Boot.

←    Select Screen
↑↓   Select Item
Enter Go to Sub Screen
F1   General Help
F10  Save and Exit
ESC  Exit

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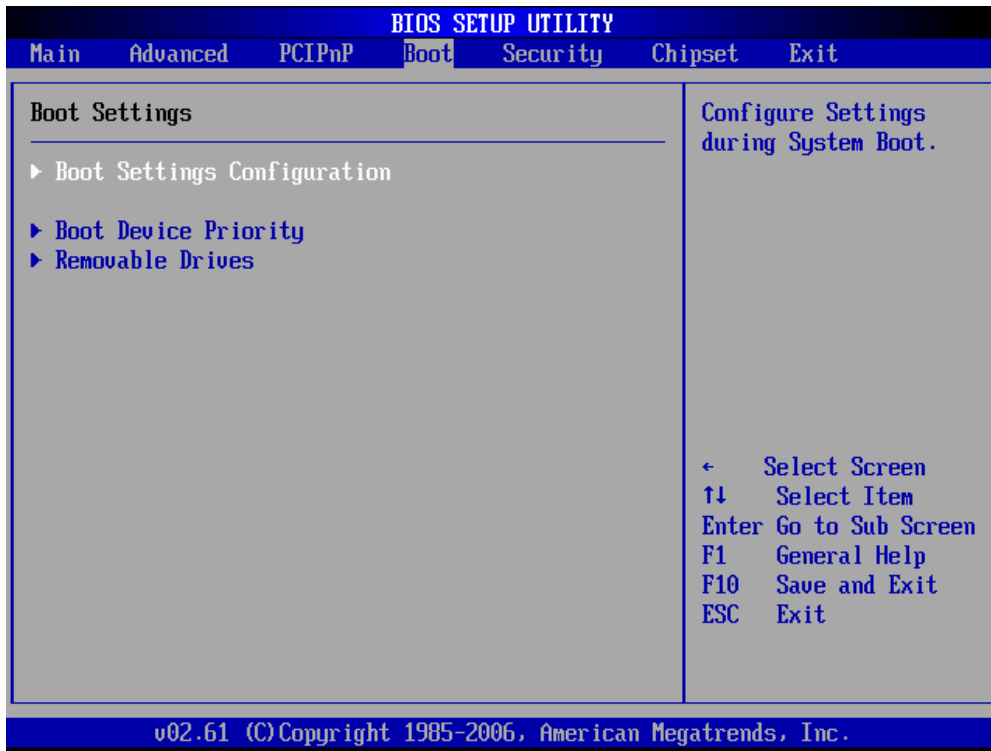
**BIOS Menu 14: Boot**

## 6.5.1 Boot Settings Configuration

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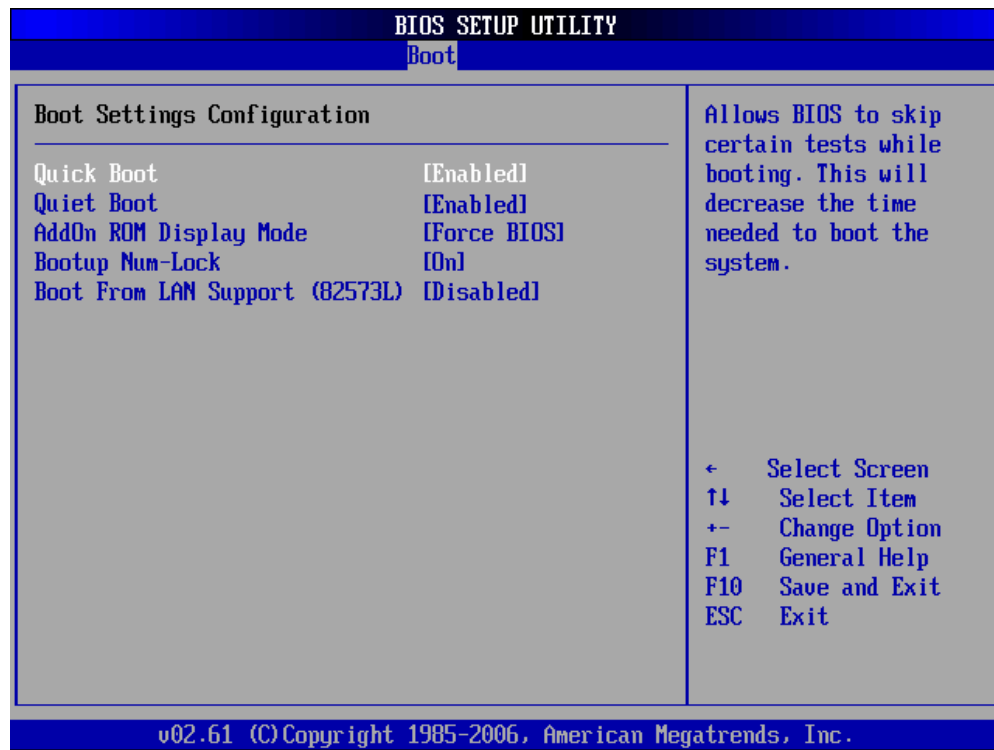
**BIOS Menu 15: Boot Settings Configuration**

➔ **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 [Enabled]**

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

➔ **Disabled**   Normal POST messages displayed

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

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

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

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

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

➔ **Bootup Num-Lock [On]**

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

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

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

➔ **Boot From LAN Support (82573L) [Disabled]**

Use the **BOOT From LAN Support (82573L)** option to enable the Intel® 82573L PCIe GbE controller to boot the system.

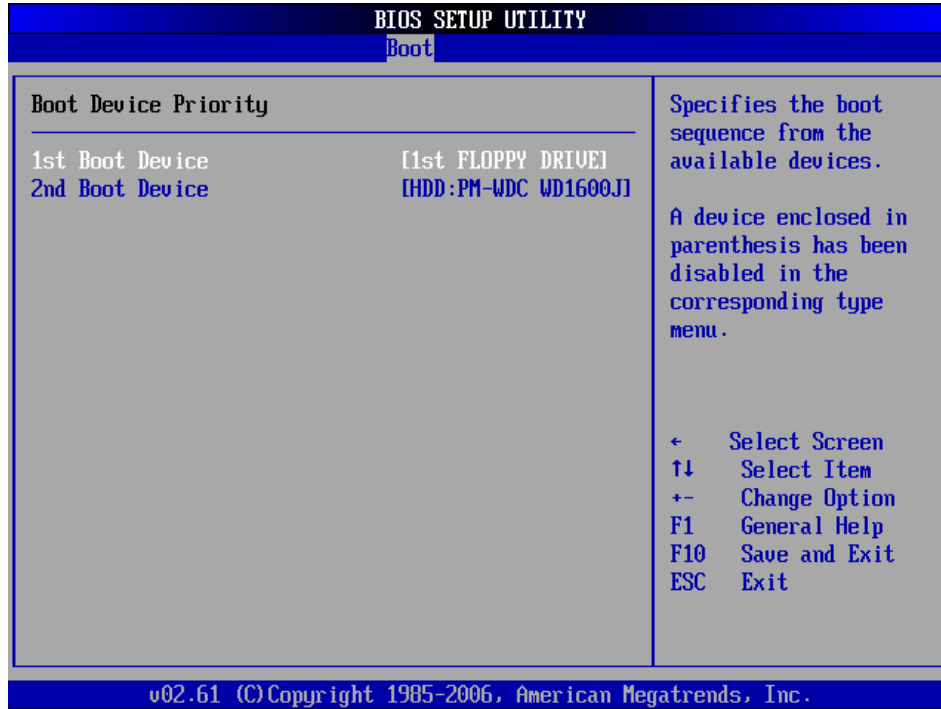➔ **Disabled**   DEFAULT   Cannot be booted from a remote system through the Intel® 82573L PCIe GbE controller

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

Intel® 82573L PCIe GbE controller

## 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:

- USB
- HDD
- CD/DVD



```
                            BIOS SETUP UTILITY
                                    Boot

 Boot Device Priority                            Specifies the boot
                                                 sequence from the
 1st Boot Device          [1st FLOPPY DRIVE]     available devices.
 2nd Boot Device          [HDD:PM-WDC WD1600J]
                                                 A device enclosed in
                                                 parenthesis has been
                                                 disabled in the
                                                 corresponding type
                                                 menu.


                                                 ←     Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit

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```

**BIOS Menu 16: Boot Device Priority Settings**

## 6.5.3 Removable Drives

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

■ 1st Drive        [1$^{st}$ USB]
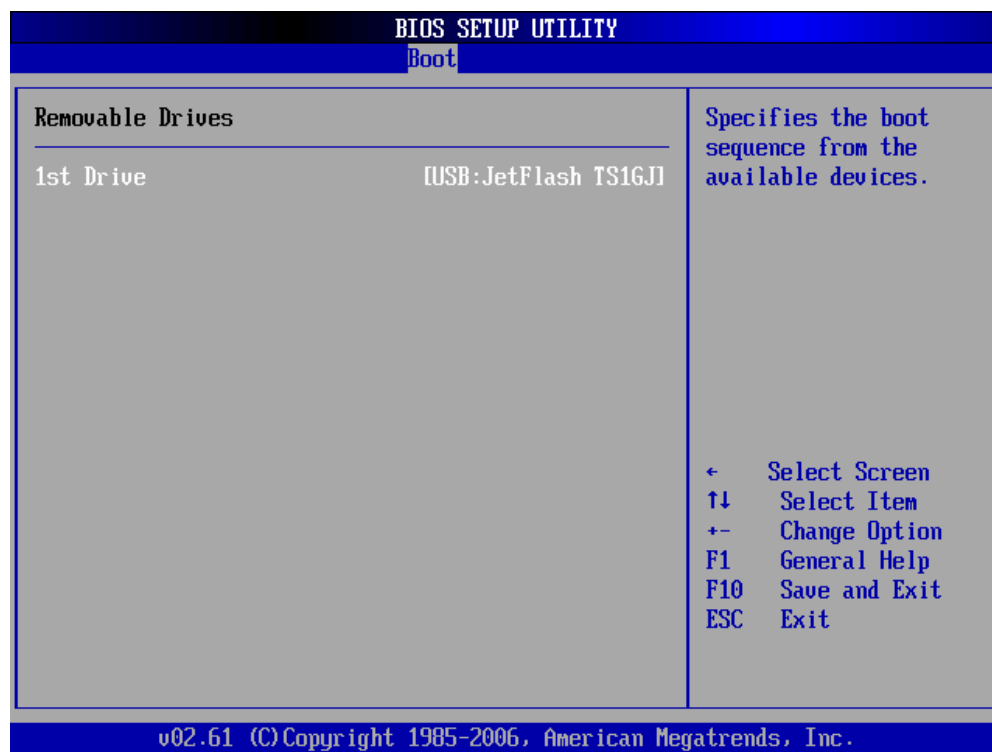
■ 2nd Drive        [2$^{nd}$ USB]

---

![NOTE icon] **NOTE:**

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

---

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

```
                    BIOS SETUP UTILITY
                          Boot

Removable Drives                              Specifies the boot
─────────────────────────────────            sequence from the
1st Drive                  [USB:JetFlash TS1GJ]  available devices.




                                              ←    Select Screen
                                              ↑↓    Select Item
                                              +-    Change Option
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit


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```

**BIOS Menu 17: Removable Drives**

## 6.6 Security

Use the **Security** menu (**BIOS Menu 18**) to set system and user passwords.
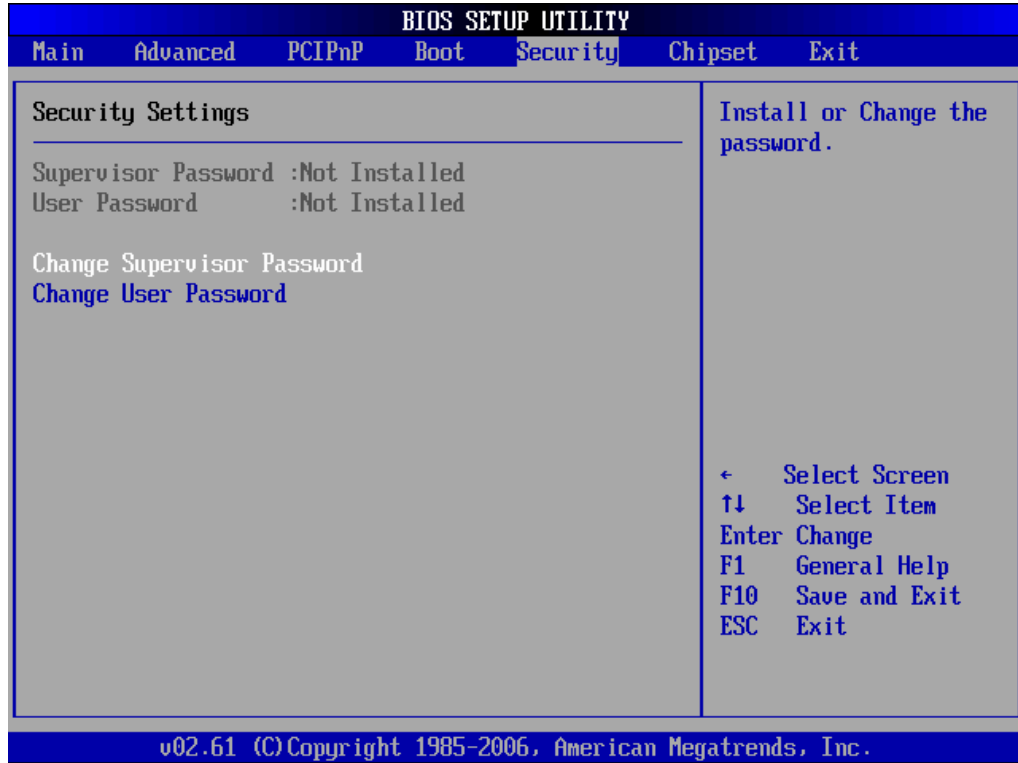
**BIOS Menu 18: Security**

➔ **Change Supervisor Password**

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

➔ **Change User Password**

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

## 6.7 Chipset

Use the **Chipset** menu to access the NorthBridge, SouthBridge and ME Subsystem configuration menus.

---

 **WARNING!**

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

---

### 6.7.1 NorthBridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 19**) to configure the Northbridge chipset.



**BIOS Menu 19:Northbridge Chipset Configuration**

➔  **Memory Remap Feature [Enabled]**

Use the **Memory Remap Feature** option to allow the overlapped PCI memory above the total physical memory to be remapped.

➔ **Disabled**                    Overlapped PCI memory cannot be remapped

➔ **Enabled**      DEFAULT    Overlapped PCI memory can be remapped

➔ **Memory Hole [Disabled]**

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

➔ **Disabled**       DEFAULT    Memory is not reserved for ISA expansion cards

➔ **15MB – 16MB**                Between 15MB and 16MB of memory is reserved for
                                 ISA expansion cards

➔ **Boots Graphics Adapter Priority [IGD]**

Use the **Boots Graphics Adapter Priority** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

■ IGD              DEFAULT
■ PCI/IGD

➔ **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, 8MB**      DEFAULT    8MB of memory used by internal graphics device

### 6.7.1.1 Video Function Configuration

Use the **Video Function Configuration** menu to configure the video device connected to the system.

➔ **Boot Display Device [Auto]**

Use the **Boot Display Device** option to select the display device used by the system when it boots. Configuration options are listed below.

- Auto       **DEFAULT**
- CRT
- TV
- LFP

➔ **Flat Panel Type [BY HARDWARE]**

Use the **Flat Panel Type** option to select the type of flat panel connected to the system. Configuration options are listed below.

- 640x480 18b
- 800x600 18b
- 1024x768 18b
- 1024x768 24b
- 1280x1024 48b
- 1600x1200 48b
- BY HARDWARE

➔ **TV Standard [VBIOS-Default]**

Use the **TV Standard** option to select the standard of the television connected to the system. The configuration options are listed below.

- VBIOS-Default     **DEFAULT**
- NTSC
- PAL
- SECAM

- SMPTE240M
- ITU-R television
- SMPTE295M
- SMPTE296M
- EIA-770.2
- EIA-770.3

## 6.7.2 Southbridge Configuration

The **Southbridge Configuration** menu (**BIOS Menu 20**) allows the Southbridge chipset to be configured.

```
                    BIOS SETUP UTILITY
                                        Chipset

South Bridge Chipset Configuration                Options

HDA Controller                [Enabled]       Enabled
                                              Disabled




                                              ←    Select Screen
                                              ↑↓   Select Item
                                              +-   Change Option
                                              F1   General Help
                                              F10  Save and Exit
                                              ESC  Exit


        v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

**BIOS Menu 20:Southbridge Chipset Configuration**

➔ **HDA Controller [Enabled]**

Use the **HDA Controller** option to enable the Southbridge high definition audio controller. If the HDA device has been connected to the system, this option should be enabled.

➔ **Enabled**    **DEFAULT**    Southbridge HDA controller is enabled

➔ **Disabled**          Southbridge HDA controller is disabled

## 6.8 Exit

Use the **Exit** menu (**BIOS Menu 21**) to load default BIOS values, optimal failsafe values and to save configuration changes.



```
                         BIOS SETUP UTILITY
 Main     Advanced    PCIPnP    Boot    Security   Chipset   Exit

 Exit Options                                     Exit system setup
 ─────────────────────────                        after saving the
 Save Changes and Exit                            changes.
 Discard Changes and Exit
 Discard Changes                                  F10 key can be used
                                                  for this operation.
 Load Optimal Defaults
 Load Failsafe Defaults




                                                  ←    Select Screen
                                                  ↑↓   Select Item
                                                  Enter Go to Sub Screen
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit


          v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

**BIOS Menu 21: 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.**

Chapter

7

# Software Drivers

## 7.1 Available Software Drivers

**NOTE:**

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

The following drivers can be installed on the system:

- Intel® chipset driver
- VGA driver
- LAN drivers
- Audio driver
- SATA driver

Installation instructions are given below.

## 7.2 Driver CD Auto-run

All the drivers for the PCISA-9652 are on the CD that came with the system. To install the drivers, please follow the steps below.

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

**NOTE:**

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

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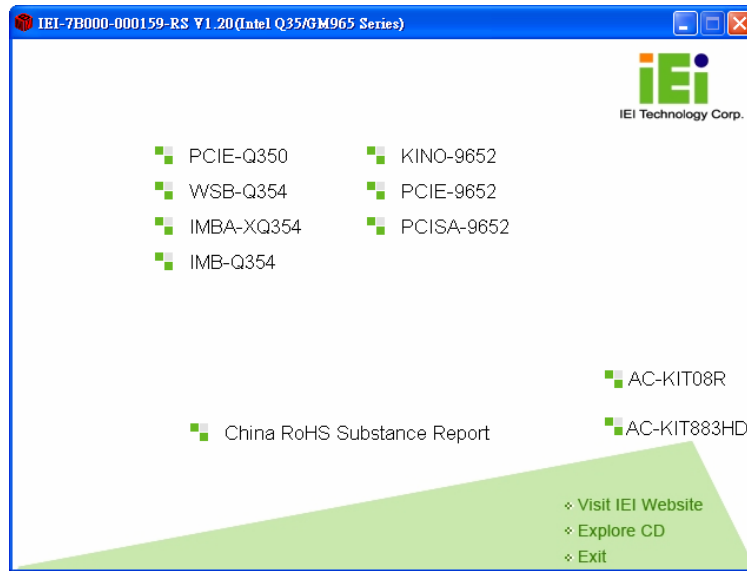
**Figure 7-1: Introduction Screen**

**Step 3:** Click PCISA-9652.

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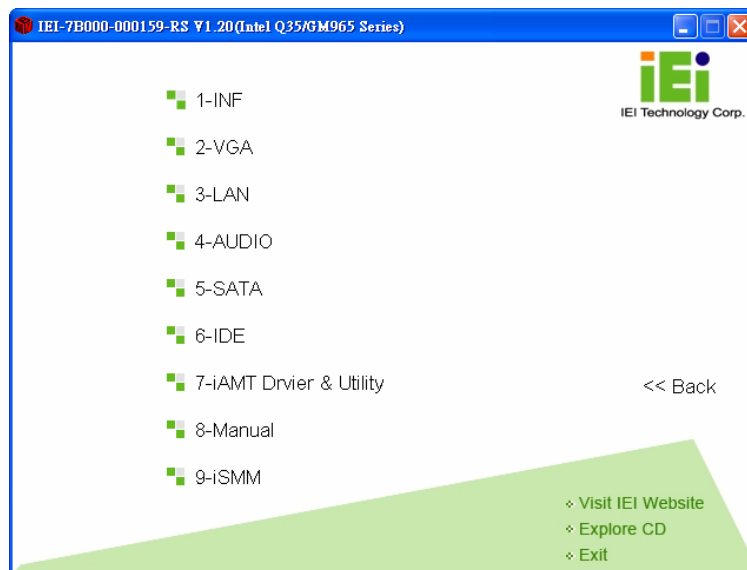


**Figure 7-2: Available Drivers**

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

## 7.3 Intel® Chipset Driver

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

**Step 1:** Select **PCISA-9652** from the list in **Figure 7-1**.

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

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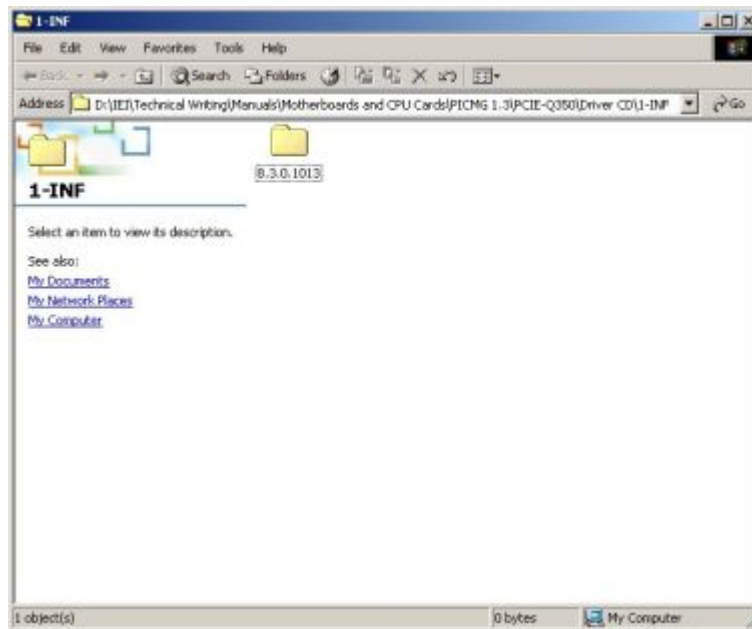


**Figure 7-3: Intel® Chipset Driver Directory**

**Step 4:** Click on the directory icon in **Figure 7-3**.

**Step 5:** The window in **Figure 7-4** appears.
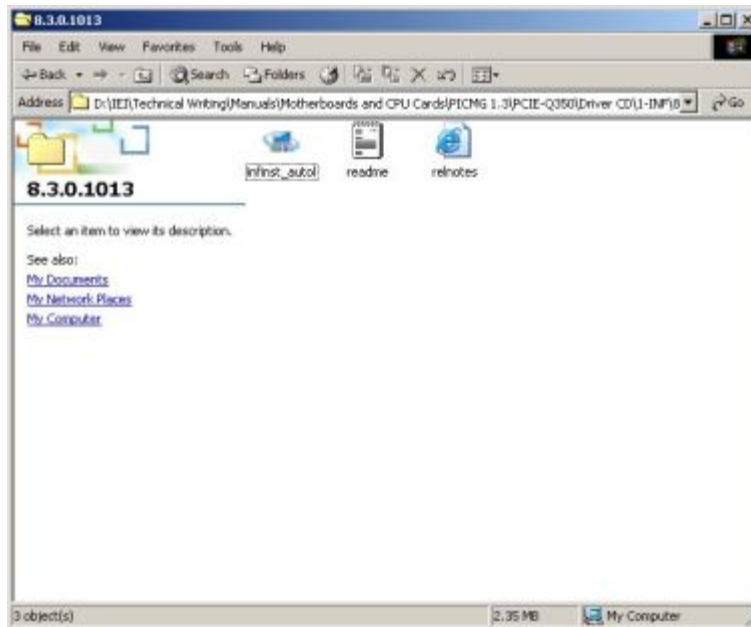
**Figure 7-4: Intel® Chipset Driver Setup Icon**

**Step 6:** Click on the **infinst_autol** setup icon in **Figure 7-4**.

**Step 7:** The **Intel® Package Manager** begins to extract the installation files. See **Figure 7-5**.

**Figure 7-5: Intel® Package Manager**

**Step 8:** The **Intel® Setup Welcome** screen. See **Figure 7-6**.



**Figure 7-6: Intel® Setup Welcome Screen**

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

**Step 10:** The Intel® license agreement in appears.

**Figure 7-7: Intel® Chipset Driver License Agreement**

**Step 11:** Accept the terms and conditions by clicking **YES**.

**Step 12:** The **Readme** file in **Figure 7-8** appears.
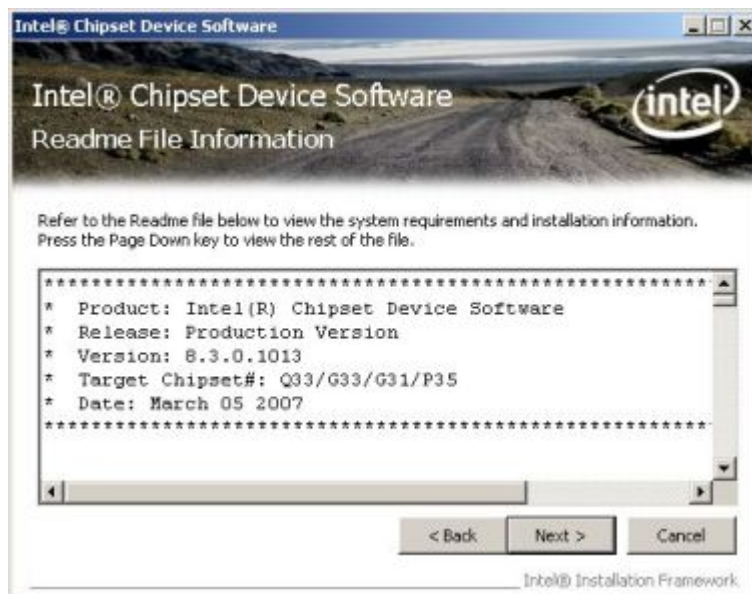


**Figure 7-8: Readme File**

**Step 13:** Click **NEXT** to continue.

**Step 14:**  The driver is then installed.

**Step 15:**  When the installation process is complete, the Setup Complete screen appears.

See **Figure 7-9**.



**Figure 7-9: Intel® Chipset Driver Complete Installation Screen**

**Step 16:**  To complete the chipset driver installation, click **FINISH**.

## 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 **Figure 7-2**.

**Step 2:**    A new window opens. See **Figure 7-10**.
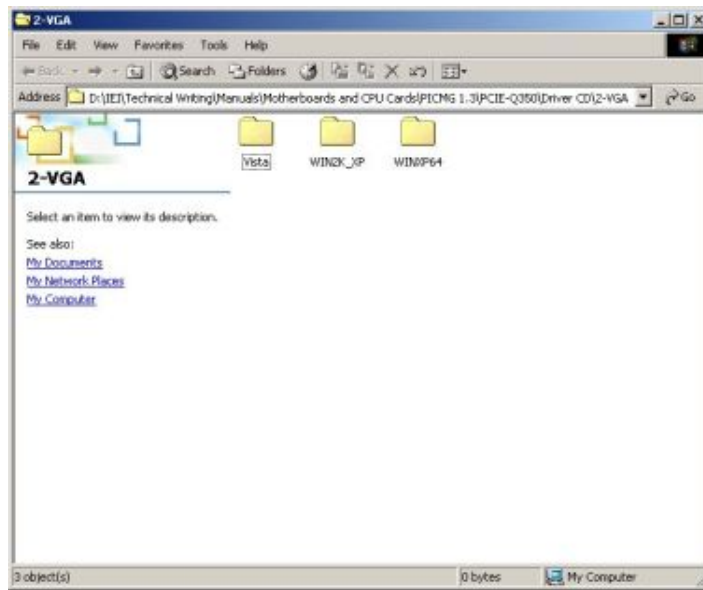
**Figure 7-10: Select the Operating System**

**Step 3:** Select the operating system from those shown in **Figure 7-10**.

**Step 4:** A new window appears. See **Figure 7-11**.
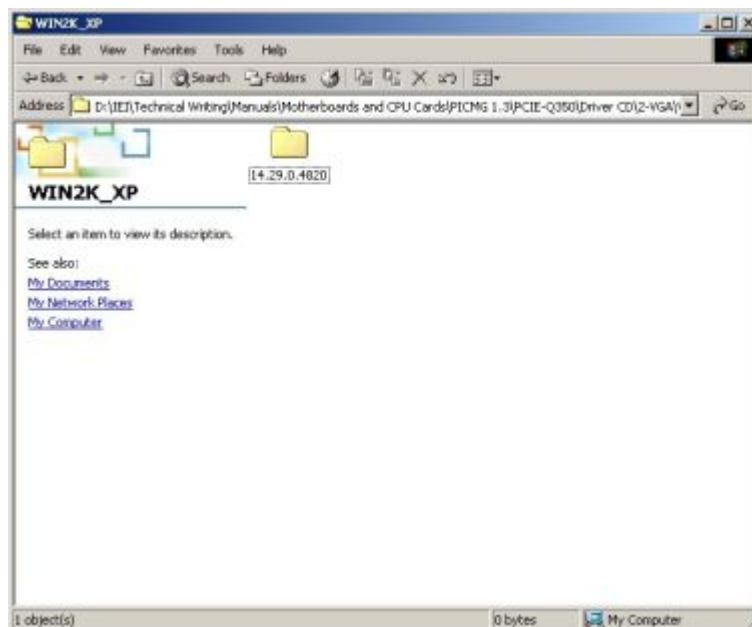


**Figure 7-11: Intel® Driver Directory**

**Step 5:** Click the directory icon in **Figure 7-11**.

**Step 6:** A new window appears. See **Figure 7-12**.
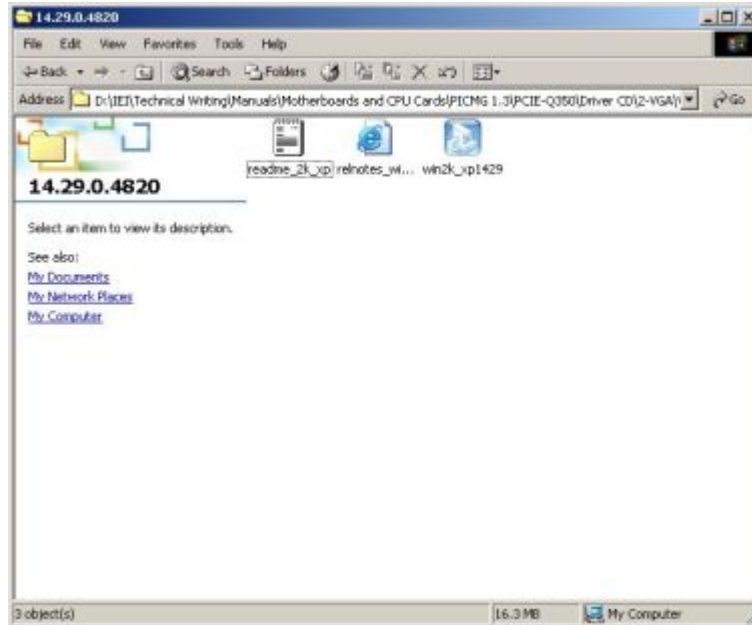


**Figure 7-12: Intel® VGA Driver Setup Icon**

**Step 7:** Click on the VGA driver installation icon in See **Figure 7-12**.

**Step 8:** The Readme information file shown in **Figure 7-13** appears.

**Figure 7-13: GMA Driver Readme File**

**Step 9:** Click **NEXT** to extract the GMA driver files. See **Figure 7-14**.
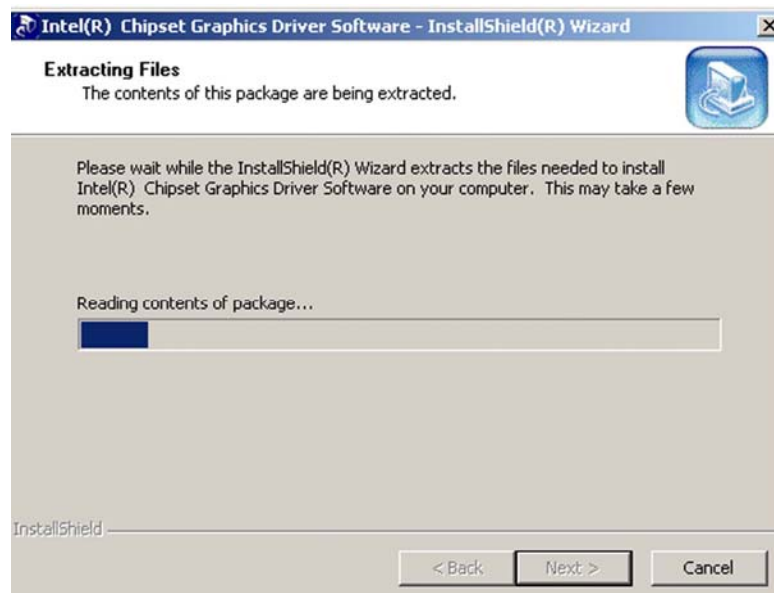


**Figure 7-14: GMA Driver File Extraction**

**Step 10:** The welcome screen shown in **Figure 7-15** appears.
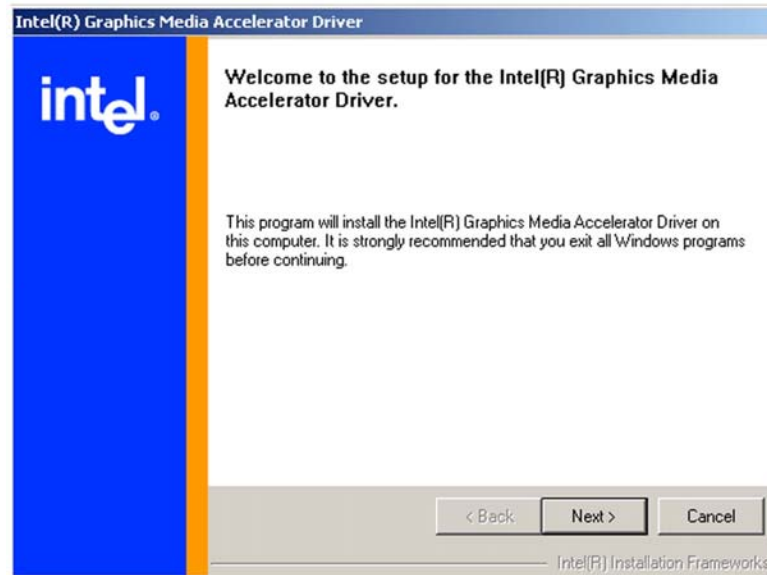
**Figure 7-15: GMA Driver Installation Welcome Screen**

**Step 11:** To continue the installation process, click **NEXT**.

**Step 12:** The license agreement in **Figure 7-16** appears.



**Figure 7-16: GMA Driver License Agreement**

**Step 13:** Click the **YES** in **Figure 7-16** to continue.

**Step 14:** The installation notice shown in **Figure 7-17** appears.



**Figure 7-17: GMA Driver Installing Notice**

**Step 15:** A confirmation screen shown in **Figure 7-18** appears.
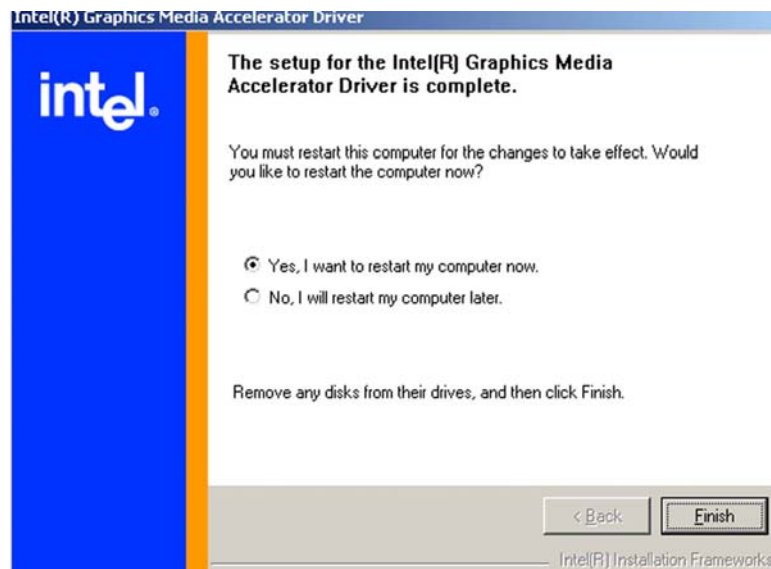


**Figure 7-18: GMA Driver Installation Complete**

**Step 16:** After selecting when to restart the computer in **Figure 7-18**, click **FINISH**.

## 7.5 Intel® 82573 PCI Express Gigabit Ethernet Controller Driver

To install the Intel® 82573 PCIe GbE controller, please follow the steps below.

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

**Step 2:** The window in **Figure 7-19** appears.
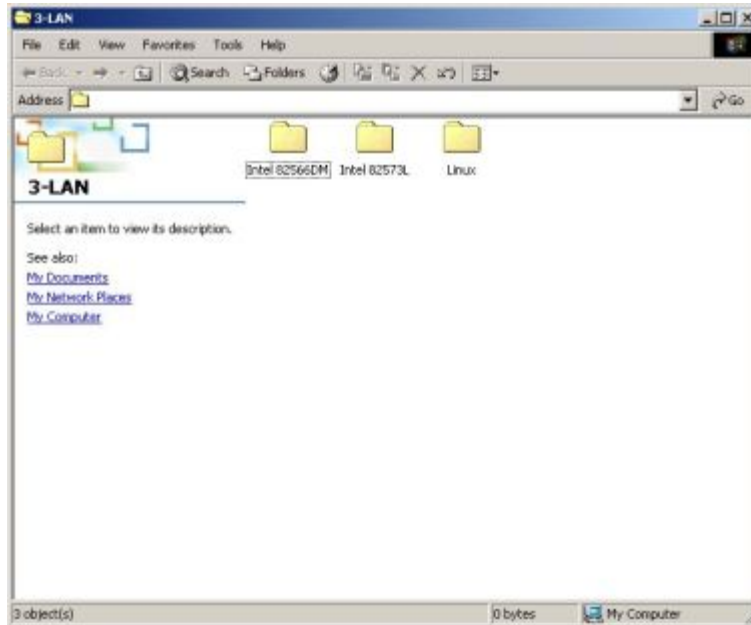
**Figure 7-19: Intel® 82573 Driver Directory Icon**

**Step 3:** Click on the **Intel® 82573L** directory icon in **Figure 7-19**.

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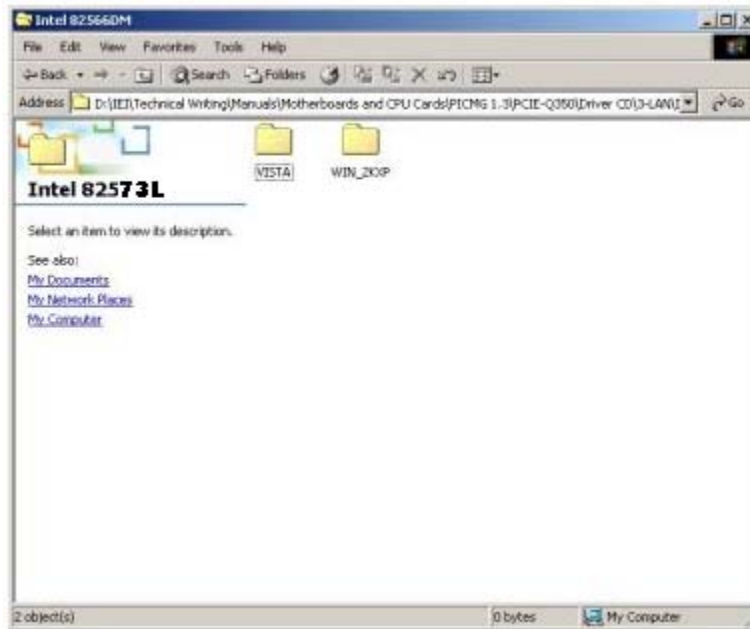


**Figure 7-20: Intel® 82573 Operating System**

**Step 5:** Select the Operating System in **Figure 7-20**.

**Step 6:** The window in **Figure 7-21** appears.

**Step 7:** In **Figure 7-21** select the operating system type installed on the system.
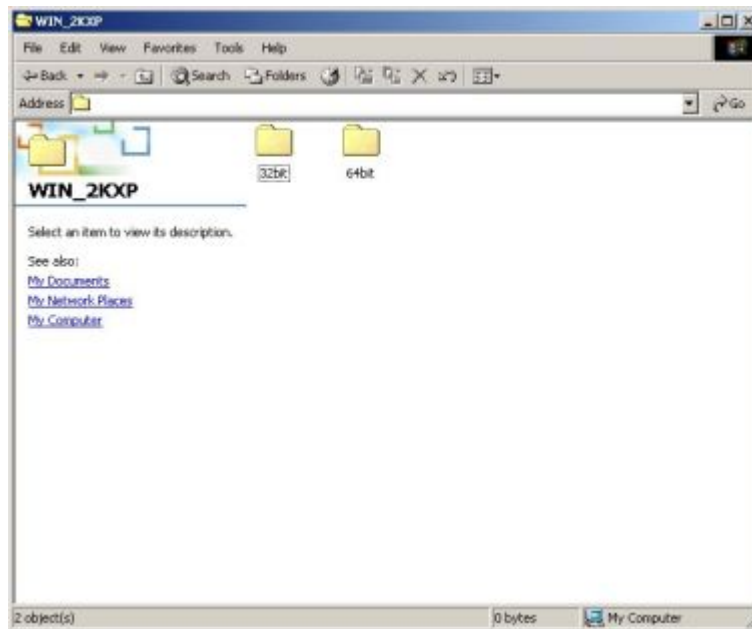


**Figure 7-21: Select Operating System Type**

**Step 8:** The window in **Figure 7-22** appears.
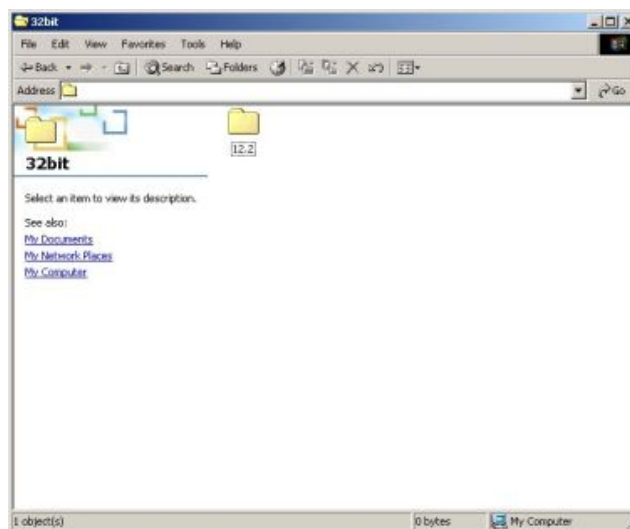


**Figure 7-22: Driver Directory**

**Step 9:** Click on the directory icon in **Figure 7-22**.

**Step 10:** A window containing the Intel® 82573 driver startup icon appears. See **Figure 7-22**.
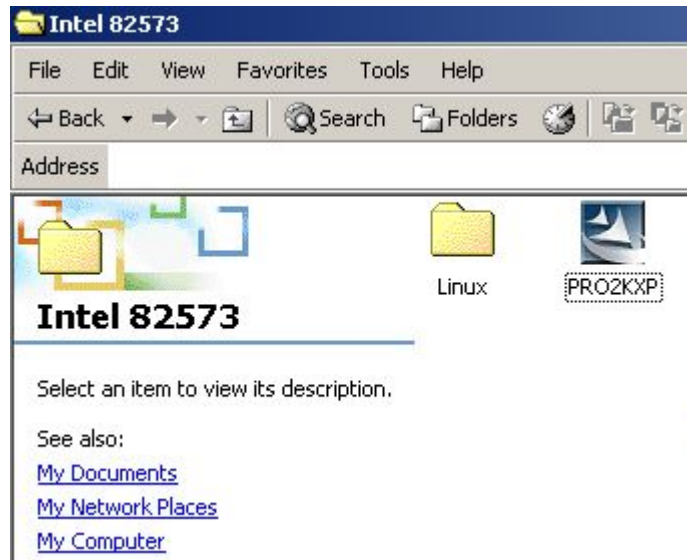


Figure 7-23: Intel® 82573 Driver Startup Icon

**Step 11:** Click the startup icon in **Figure 7-23**.

**Step 12:** The **License Agreement** for the Intel® 82573 appears. See **Figure 7-24**.

**Figure 7-24: Intel® 82573 License Agreement**

**Step 13:** Accept the license terms and agreements in and click NEXT to continue.

**Step 14:** Next, select the directory in which the files must be saved. See **Figure 7-25**.



**Figure 7-25: Intel® 82573 File Location Select**

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

**Step 16:** The driver begins to extract the installation files. See **Figure 7-26**.



**Figure 7-26: Intel® 82573 Installation Files Extraction**

**Step 17:** The Intel® PRO Network Connections window appears. See **Figure 7-27**.
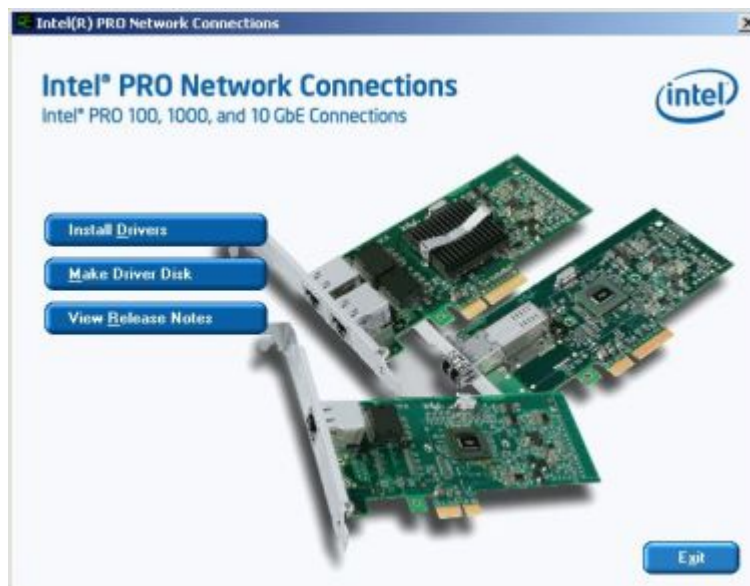


**Figure 7-27: Intel® PRO Network Connections window**

**Step 18:** Click **INSTALL DRIVERS** in **Figure 7-27**.

**Step 19:** The **Intel® PRO Network Connections Welcome** screen in **Figure 7-28**

appears.



**Figure 7-28: Intel® PRO Network Connections Welcome**

**Step 20:** Click **NEXT** to continue.

**Step 21:** A new **License Agreement** appears. See **Figure 7-29**.



**Figure 7-29: License Agreement**

**Step 22:** Accept the terms and conditions in **Figure 7-29** and click **NEXT** to continue.

**Step 23:** The **Setup Type** window in **Figure 7-30** appears.



**Figure 7-30: Setup Type**

**Step 24:** Select the setup type in **Figure 7-30** and click **NEXT** to continue.

**Step 25:** The drivers are installed. See **Figure 7-31**.
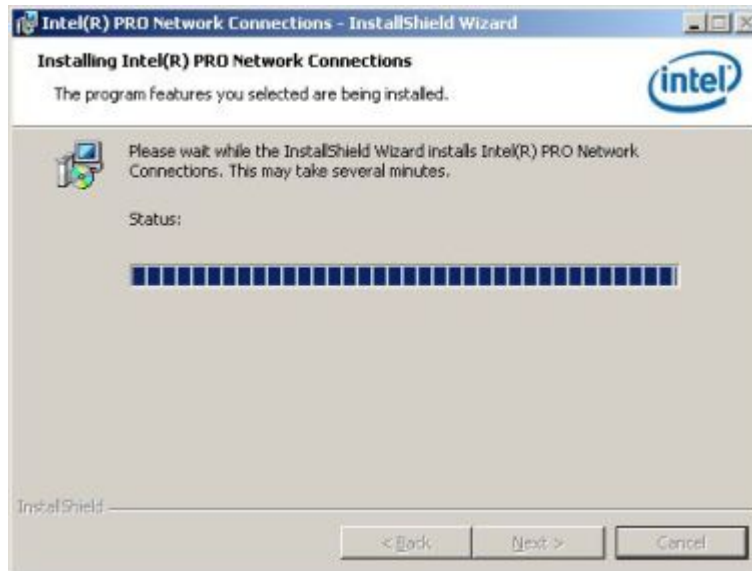


**Figure 7-31: Intel® 82573 Driver Installation Progress**

**Step 26:** When the driver is installed. Click **FINISH** in the termination screen.

## 7.6 Realtek HD Audio Driver (ALC883) Installation

To install the Realtek High Definition (HD) Audio driver, please follow the steps below.

**NOTE:**

This driver only needs to be installed if an external audio kit with a RealTek ALC883 codec is installed.

### 7.6.1 BIOS Setup

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

**Step 2:**   Go to the Southbridge Configuration menu. Enable the High Definition Audio controller.

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

### 7.6.2 Driver Installation

To install the audio driver please follow the steps below.

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

**Step 2:**   A new window opens (**Figure 7-32**).
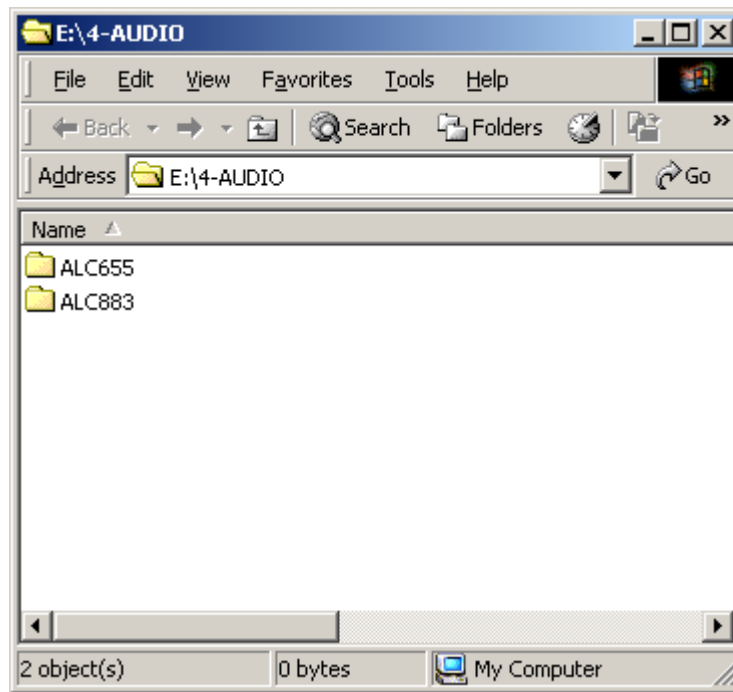
**Figure 7-32: Select the Audio CODEC**

**Step 3:** Double-click the ALC883 folder.

**Step 4:** Double-click the appropriate operating system folder (**Figure 7-33**).
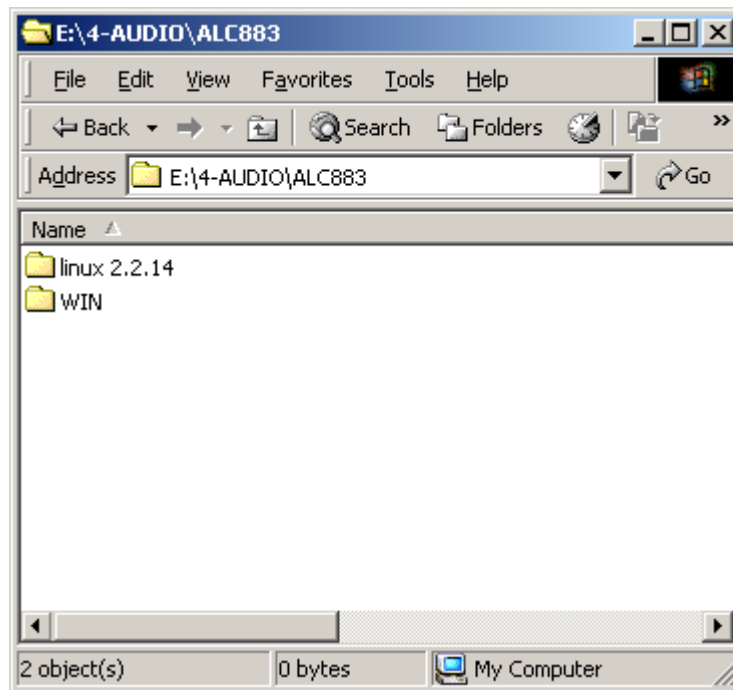
**Figure 7-33: Select the OS**

**Step 5:**   Double-click the appropriate operating system version folder (**Figure 7-34**).
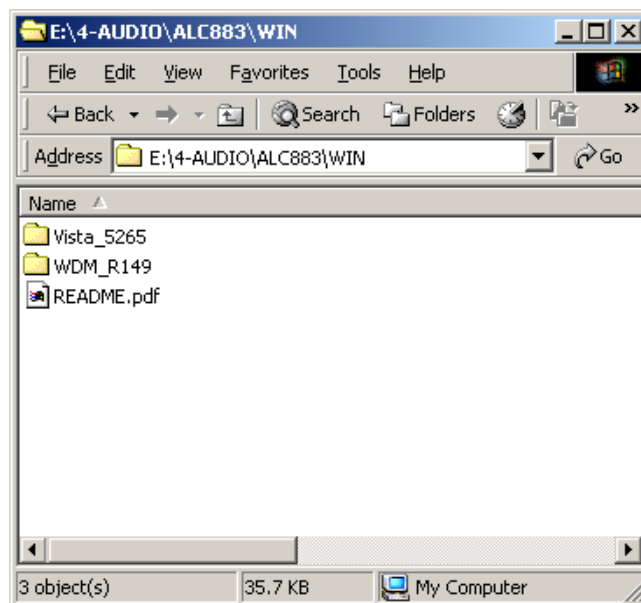


**Figure 7-34: Select the OS Version**

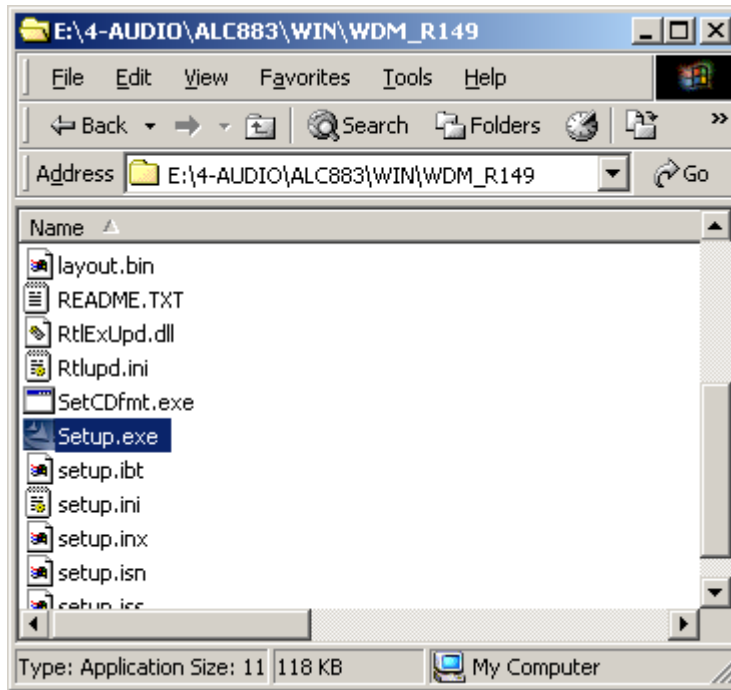**Step 6:**   Double-click the **Setup.exe** program icon in **Figure 7-35**.

**Figure 7-35: Locate the Setup Program Icon**

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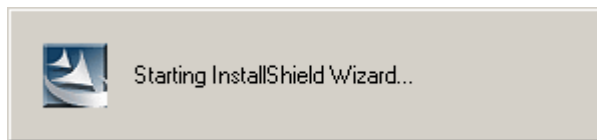


**Figure 7-36: The InstallShield Wizard Starts**

**Step 8:** The **InstallShield Wizard** is prepared to guide the user through the rest of the

process (**Figure 7-37**).
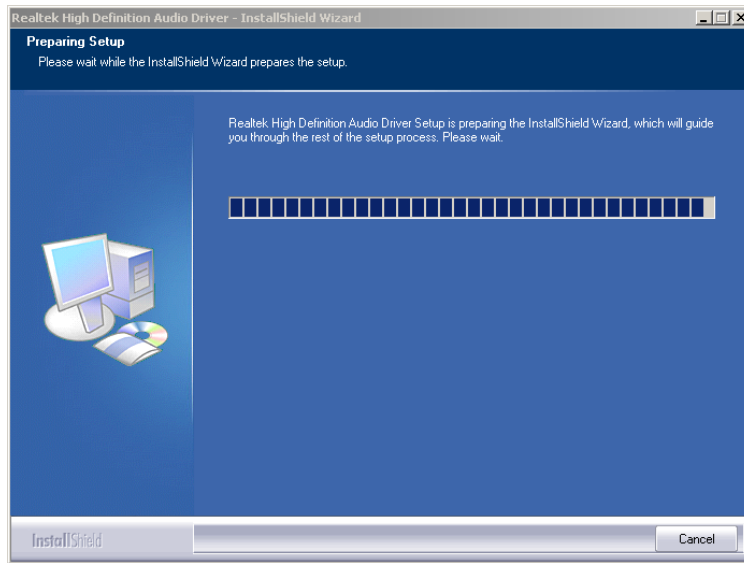
**Figure 7-37: Preparing Setup Screen**

**Step 9:** Once initialized, the **InstallShield Wizard** welcome screen appears

(**Figure 7-38**).
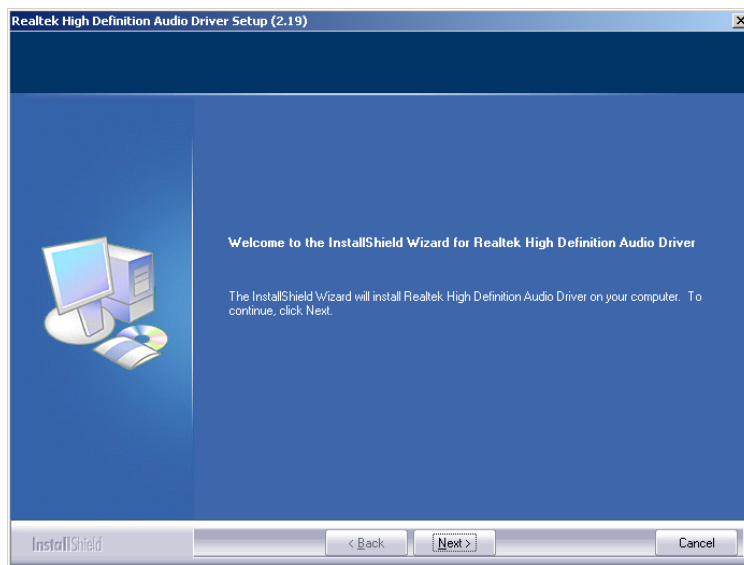


**Figure 7-38: InstallShield Wizard Welcome Screen**

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

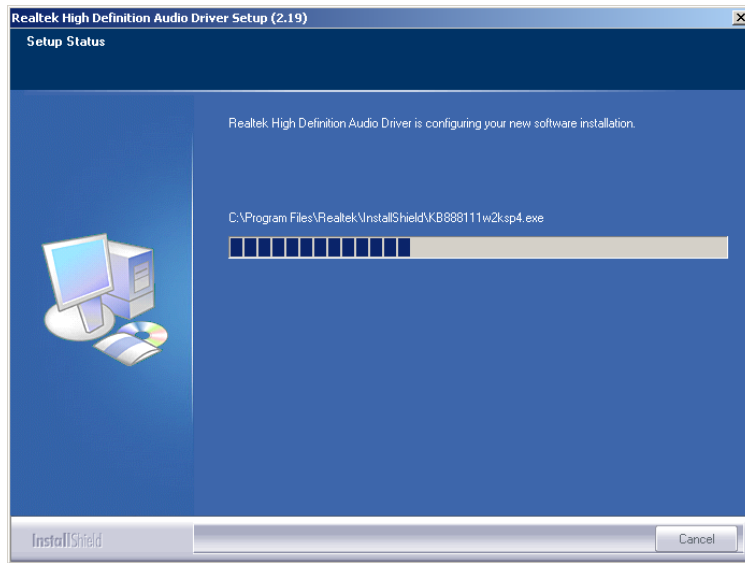**Step 11:** InstallShield starts to install the new software as shown in **Figure 7-39**.

Figure 7-39: Audio Driver Software Configuration

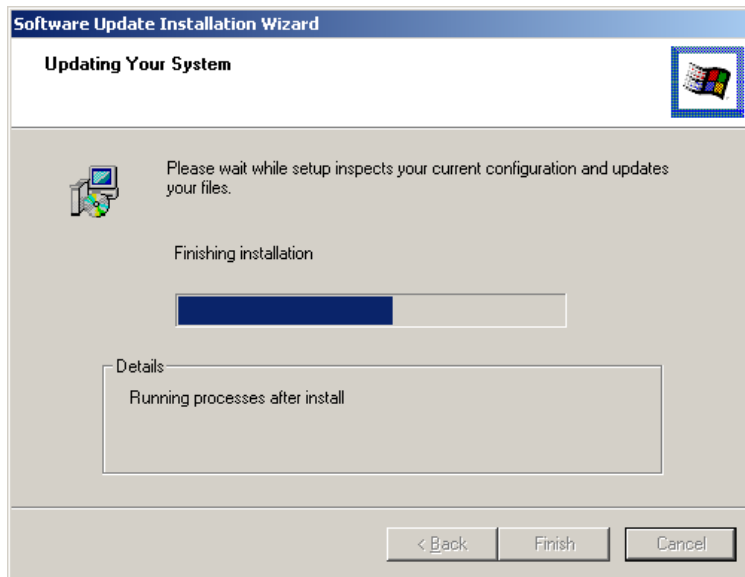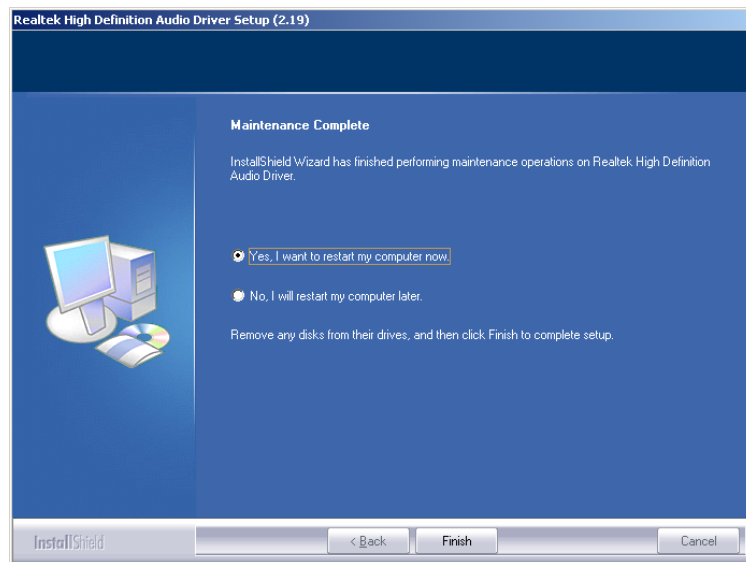Step 12: The Installation Wizard updates the system as shown in Figure 7-40.



Figure 7-40: Installation Wizard Updates the System

Step 13: After the driver installation process is complete, a confirmation screen appears

(Figure 7-41).

**Figure 7-41: Restart the Computer**

**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.

## 7.7 Intel® Matrix Storage Manager Driver Installation

To install the Intel® Matrix Storage Manager driver, please follow the steps below:

**Step 1:** Select **SATA** from the list in **Figure 7-2**.
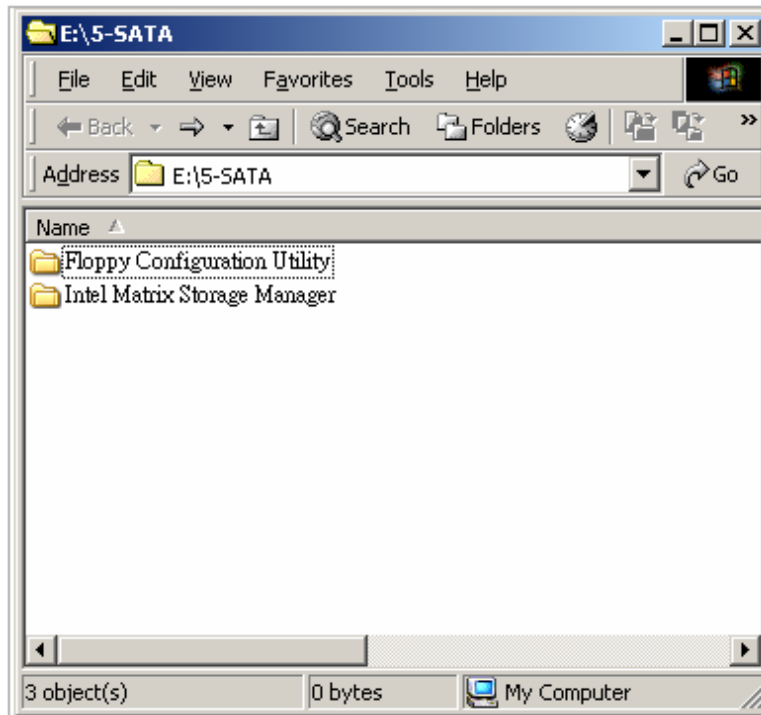
**Step 2:** A new window opens (**Figure 7-42**).

**Figure 7-42: SATA RAID Driver Installation Program**

**Step 3:** Double-click the **Intel Matrix Storage Manager** folder.

**Step 4:** Double-click the **iata75_cd.exe** program icon in **Figure 7-43**.
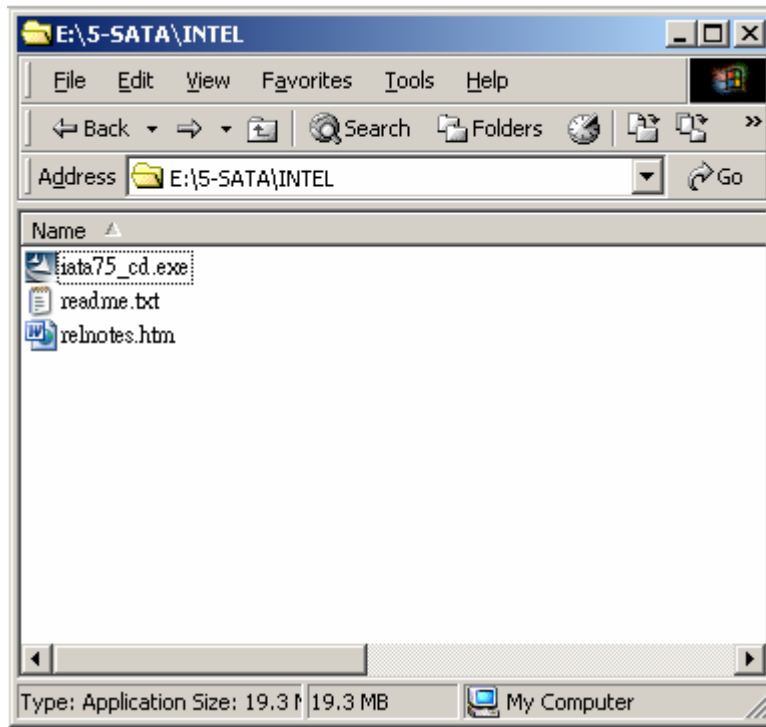
**Figure 7-43: SATA RAID Setup Program Icon**

**Step 5:** **Figure 7-44** shows the **InstallShield Wizard** preparing to guide the user

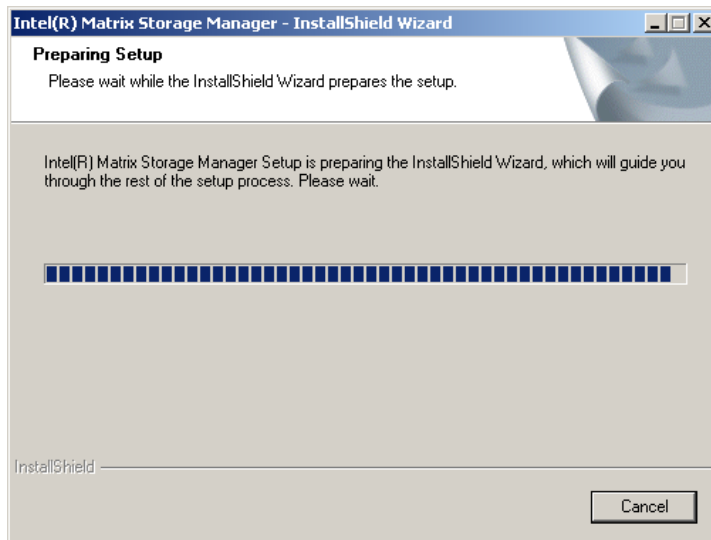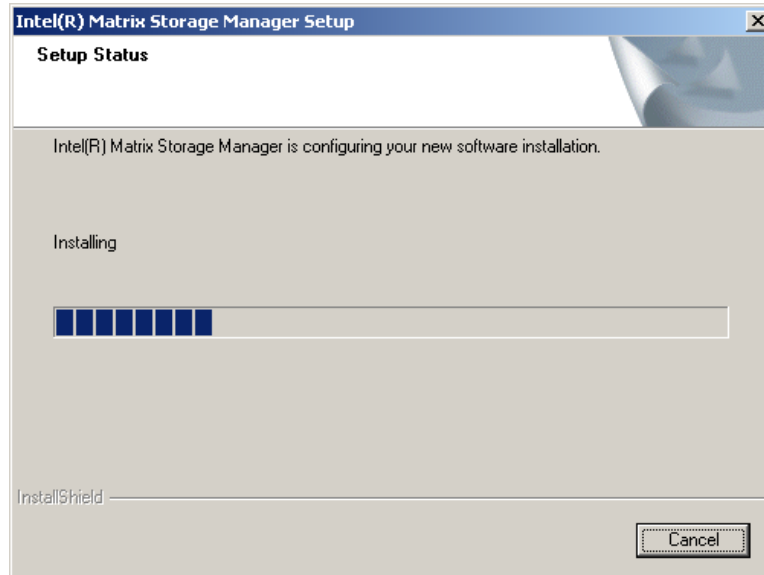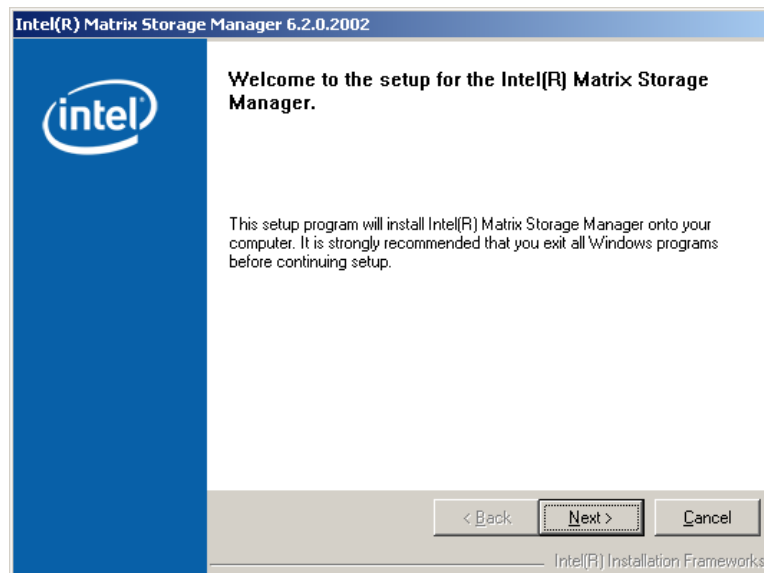through the rest of the process.



**Figure 7-44: InstallShield Wizard Setup Screen**

**Step 6:** **Figure 7-45** shows the **Matrix Storage Manager** software configuring the

installation process.



**Figure 7-45: Matrix Storage Manager Setup Screen**

**Step 7:** **Figure 7-46** shows the **Matrix Storage Manager** welcome screen.
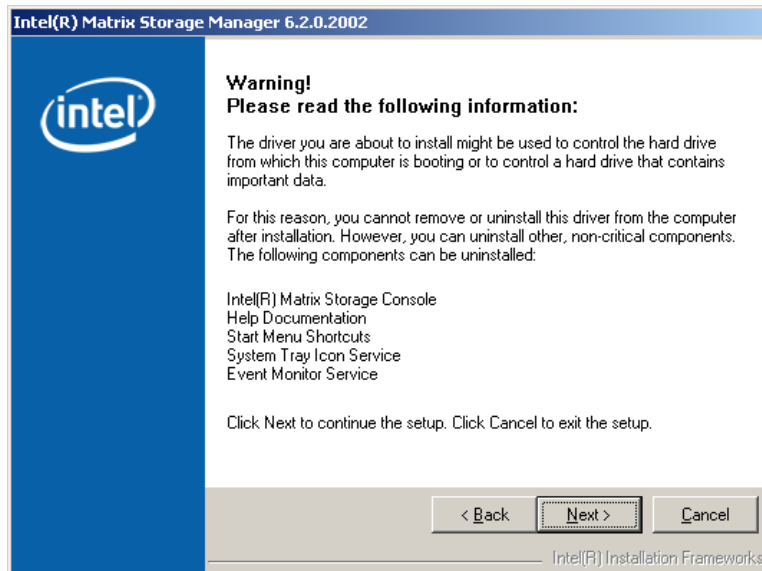


**Figure 7-46: Matrix Storage Manager Welcome Screen**

**Step 8:** Click **NEXT** and a warning appears (**Figure 7-47**). Read the warning carefully

and decide whether or not to continue the installation process.



**Figure 7-47: Matrix Storage Manager Warning Screen**

**Step 9:**   Click **NEXT** and a license agreement appears (**Figure 7-48**).
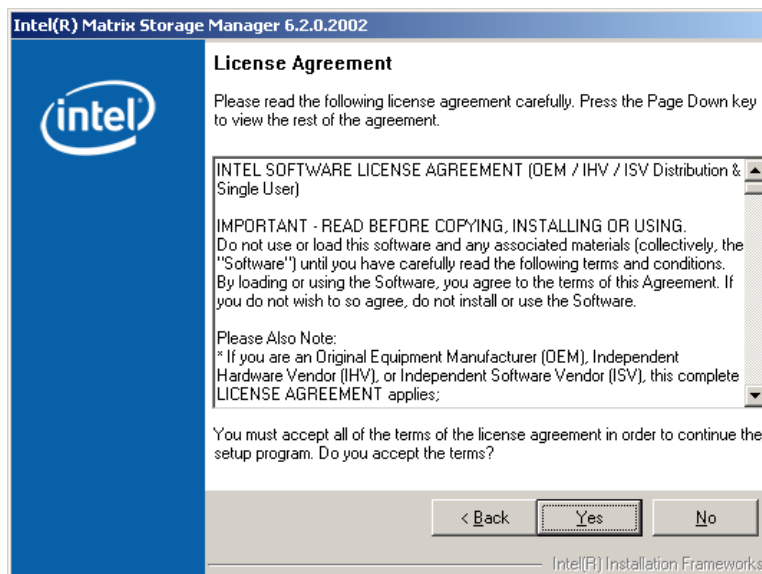


**Figure 7-48: Matrix Storage Manager License Agreement**

**Step 10:** Read the license agreement. To accept the terms and conditions stipulated in

the license agreement shown, click **YES** and the Readme information file shown

in **Figure 7-49** appears.
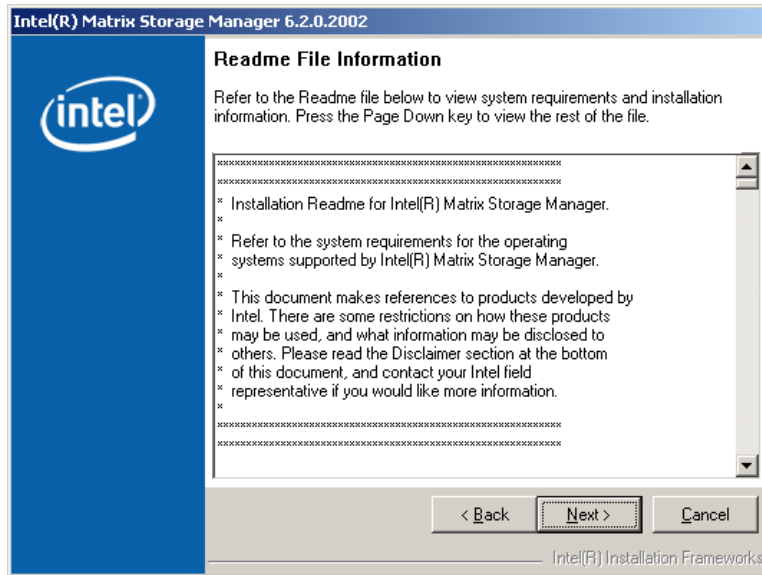
**Figure 7-49: Matrix Storage Manager Readme File**

**Step 11:** Read the Readme file information and click **NEXT**.

**Step 12:** After the driver installation process is complete, a confirmation screen appears

(**Figure 7-50**).
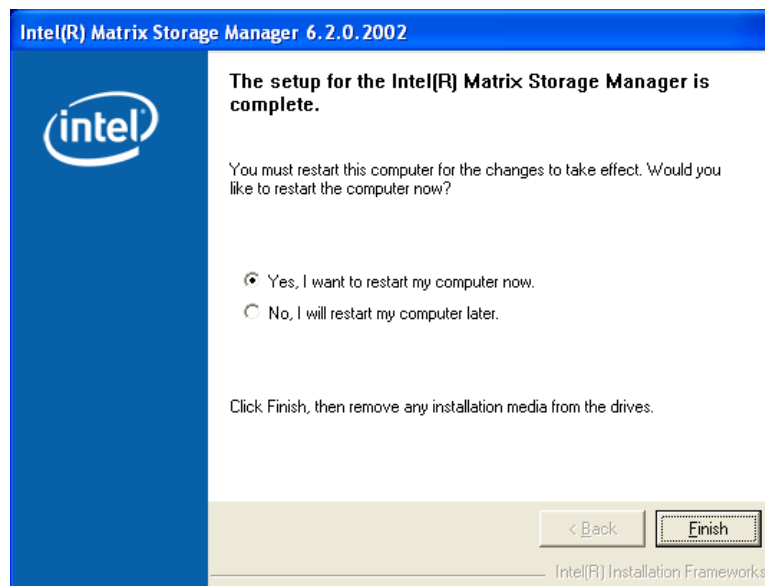


**Figure 7-50: Matrix Storage Manager Setup Complete**

**Step 13:** 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 Configuration Options

## A.1 BIOS Configuration Options

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

Appendix

# B

# Terminology

| | |
|---|---|
| AC '97 | Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997. |
| ACPI | Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface. |
| AHCI | Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface. |
| ATA | The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer. |
| APM | The Advanced Power Management (APM) application program interface (API) enables the inclusion of power management in the BIOS. |
| ARMD | An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives. |
| ASKIR | Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1. |
| BIOS | The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user |
| CODEC | The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system. |
| CompactFlash® | CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types. |
| CMOS | Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors. |

| | |
|---|---|
| COM | COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector. |
| DAC | The Digital-to-Analog Converter (DAC) converts digital signals to analog signals. |
| DDR | Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal. |
| DMA | Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory. |
| DIMM | Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module. |
| DIO | The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions. |
| EHCI | The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers. |
| FSB | The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset. |
| GbE | Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard. |
| GPIO | General purpose input |
| HDD | Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data. |
| ICH | The Input/Ouput Controll Hub (ICH) is an Intel® Southbridge chipset. |
| IrDA | Infrared Data Association (IrDA) specify infrared data transmission |

protocols used to enable electronic devices to wirelessly communicate with each other.

| | |
|---|---|
| L1 Cache | The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor. |
| L2 Cache | The Level 2 Cache (L2 Cache) is an external processor memory cache. |
| LCD | Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between. |
| LVDS | Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer. |
| MAC | The Media Access Control (MAC) protocol enables several terminals or network nodes to communicate in a LAN, or other multipoint networks. |
| PCIe | PCI Express (PCIe) is a communications bus that uses dual data lines for full-duplex (two-way) serial (point-to-point) communications between the SBC components and/or expansion cards and the SBC chipsets. Each line has a 2.5 Gbps data transmission rate and a 250 MBps sustained data transfer rate. |
| POST | The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on. |
| RAM | Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives. |
| SATA | Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps. |
| S.M.A.R.T | Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers |

to automatic status checking technology implemented on hard disk

drives.

UART    Universal Asynchronous Receiver-transmitter (UART) is responsible for

asynchronous communications on the system and manages the

system's serial communication (COM) ports.

UHCI    The Universal Host Controller Interface (UHCI) specification is a

register-level interface description for USB 1.1 Host Controllers.

USB    The Universal Serial Bus (USB) is an external bus standard for

interfacing devices. USB 1.1 supports 12Mbps data transfer rates, while

USB 2.0 supports 480Mbps data transfer rates.

VGA    The Video Graphics Array (VGA) is a graphics display system

developed by IBM.

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Appendix

C

# DIO Interface

## C.1 DIO Interface Introduction

The DIO connector on the PCISA-9652 is interfaced to GPIO ports on the IT8712F Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

> **NOTE:**
>
> For further information, please refer to the datasheet for the IT8712F Super I/O chipset.

## C.2 DIO Connector Pinouts

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

| Pin | Description | Super I/O Pin | Super I/O Pin Description |
|---|---|---|---|
| 1 | Ground | N/A | N/A |
| 2 | VCC | N/A | N/A |
| 3 | Output 3 | GP27 | General purpose I/O port 2 bit 7. |
| 4 | Output 2 | GP26 | General purpose I/O port 2 bit 6. |
| 5 | Output 1 | GP25 | General purpose I/O port 2 bit 5. |
| 6 | Output 0 | GP24 | General purpose I/O port 2 bit 4. |
| 7 | Input 3 | GP23 | General purpose I/O port 2 bit 3. |
| 8 | Input 2 | GP22 | General purpose I/O port 2 bit 2 |
| 9 | Input 1 | GP21 | General purpose I/O port 2 bit 1 |
| 10 | Input 0 | GP20 | General purpose I/O port 2 bit 0 |

## C.3 Assembly Language Samples

### C.3.1 Enable the DIO Input Function

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

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

### C.3.2 Enable the DIO Output Function

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

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

Appendix

**D**

# Watchdog Timer

---

**NOTE:**

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

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

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

**INT 15H:**

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

**Table D-1: AH-6FH Sub-function**

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

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

 **NOTE:**

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

**Example program:**

; **INITIAL TIMER PERIOD COUNTER**

;

W_LOOP:

    MOV     AX, 6F02H     ;setting the time-out value

    MOV     BL, 30     ;time-out value is 48 seconds

    INT     15H

 ;

; **ADD THE APPLICATION PROGRAM HERE**

;

    *CMP*     *EXIT_AP, 1*     ;is the application over?

    *JNE*     *W_LOOP*     ;No, restart the application

    *MOV*     *AX, 6F02H*     ;disable Watchdog Timer

    *MOV*     *BL, 0*     ;

    *INT*     *15H*

;

; **EXIT** ;

Appendix

E

Compatibility

 **NOTE:**

The compatible items described here have been tested by the IEI R&D
team and found to be compatible with the PCISA-9652.

## E.1 Compatible Processors

The following Socket 478 processors have been successfully tested on the PCISA-9652.

| CPU | Model Number | Frequency | FSB |
|---|---|---|---|
| Intel® Core™2 Duo | T7500 | 2.20 GHz | 800 MHz |
| Intel® Core™2 Duo | T7300 | 2.00 GHz | 800 MHz |
| Intel® Core™2 Duo | T7100 | 1.80 GHz | 800 MHz |
| Intel® Celeron® | 550 | 2.00 GHz | 533 MHz |
| Intel® Celeron® | 540 | 1.86 GHz | 533 MHz |

## E.2 Compatible Memory Modules

 **NOTE:**

The memory modules listed below have been tested on the
PCISA-9652 other memory modules that comply with the specifications
may also work on the PCISA-9652 but have not been tested.

The following memory modules have been successfully tested on the PCISA-9652.

| Manufacturer | Model No. | Capacity | Speed |
|---|---|---|---|
| Kingston | KHX6400D2/2G | 1 GB | 800 MHz |
| Kingston | KVR667D2N5/512 | 512 MB | 667 MHz |

| KingBOX | DDR2 512MB 667MHz | 512 MB | 667 MHz |
|---------|-------------------|--------|---------|
| UNIGEN | UG12T6400L8DU-5AM | 1 GB | 533 MHz |
| Transcend | 1GB DDR2 533 | 1 GB | 533 MHz |
| Transcend | 1GB DDR2 667 | 1 GB | 667 MHz |
| Transcend | 2GB DDR2 800 | 2 GB | 800 MHz |
| Apacer | 2GB UNB PC2-6400 CL5 | 2 GB | 800 MHz |
| Apacer | 1GB UNB PC2-4300 CL4 | 1 GB | 533 MHz |
| UMAX | RMUMX 512DDR533C | 512 MB | 533 MHz |
| DSL | 512MB DDR2 667MHz CL5 | 512 MB | 667 MHz |
| DSL | 1GB DDR2 533MHz CL4 | 1 GB | 533 MHz |

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**Appendix**

**F**

# Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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

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

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

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

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

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (CR(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 壳体 | X | O | O | O | O | X |
| 显示 | X | O | O | O | O | X |
| 印刷电路板 | X | O | O | O | O | X |
| 金属螺帽 | X | O | O | O | O | O |
| 电缆组装 | X | O | O | O | O | X |
| 风扇组装 | X | O | O | O | O | X |
| 电力供应组装 | X | O | O | O | O | X |
| 电池 | O | O | O | O | O | O |
| O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 | | | | | | |
| X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。 | | | | | | |