

# PCI-755

## Industrial Single Board Computer

### User's Guide



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### Customer Service

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Kontron reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology. Changes which affect the operation of the unit will be documented in the next revision of this user's guide.

Revision	Date	Edited by	Changes
1.00	03/05/2006	JC	Initial Release
1.01	23/05/2006	JC	Correct Front Panel Connector error
1.10	20/06/2006	JC	Remove Case Open function
1.20	06/07/2006	JC	Update BIOS Chapter
1.21	12/07/2006	JC	Correct BIOS Write Protect error
1.22	14/08/2006	JC	Update website info
1.30	30/08/2006	JC	Correct connector label errors
1.40	20/09/2006	JC	AT Power Mode Appendix added

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# Preface

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## ► *How to Use This Guide*

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.



**Note:** Drivers, updates, and available technical information are available on our website at [www.kontron.com.tw/products/HTML/slot\\_cpu/PCI-755.htm](http://www.kontron.com.tw/products/HTML/slot_cpu/PCI-755.htm).

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The following is a summary of the chapter contents:

- ◆ **Chapter 1, Introduction**, presents the product specifications and system architecture for the PCI-755.
- ◆ **Chapter 2, Jumpers and Connectors**, shows the definitions and locations of jumpers and connectors that you can easily configure for your system.
- ◆ **Chapter 3, System Installation**, describes how to properly mount the CPU, heat sink and main memory.
- ◆ **Chapter 4, BIOS Setup Information**, specifies the meaning of each setup parameter and describes how to get advanced BIOS performance.
- ◆ **Chapter 5, Driver Installation**, provides information on installing installing the drivers for the PCI-755.
- ◆ **Appendix A, System Resources**, provides information on IRQ lines, DMA channels, memory and I/O mapping, PCI interrupts, and I2C addressing
- ◆ **Appendix B, AT Power Mode**, provides information on simulating AT power behaviour using an ATX power supply.

## ► *Advisory Conventions*

Four types of advisories are used throughout this user's guide to provide helpful information or to alert you to the potential for hardware damage or personal injury. They are Notes, Cautions, and Warnings. The following is an example of each type of advisory. Use caution when servicing any electrical component.



**Note:** A note is used to make helpful information stand out.

---



**Important:** An important note indicates information that is important for you to know.

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### CAUTION

A CAUTION indicates potential damage to hardware and tells you how to avoid the problem.

---



### WARNING

A WARNING indicates the potential for bodily harm and tells you how to avoid the problem.

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**Disclaimer:** We have tried to identify all situations that may pose a warning or caution condition in this user's guide. However, Kontron does not claim to have covered all situations that might require the use of a Caution or Warning.

## ► *Unpacking*

When unpacking, follow these steps:

- 1) After opening the box, save it and the packing material for possible future shipment.
- 2) Remove all items from the box. If any items listed on the purchase order are missing, notify Kontron customer service immediately.
- 3) Inspect the product for damage. If there is damage, notify Kontron customer service immediately. Refer to “Warranty Policy” for the return procedure.

## ► **Regulatory Compliance Statements**

This section provides the FCC compliance statement for Class A devices.

### ► *FCC Compliance Statement for Class A Devices*

The product(s) described in this user's guide has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

Changes or modifications not expressly approved by Kontron could void the user's authority to operate the equipment.



**Note:** The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

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## ➤ **Warranty Policy**

### ➤ **Limited Warranty**

Kontron Asia Inc.'s detailed Limited Warranty policy can be found at <http://support.kontron.com.tw/eRMA/>. Please consult your distributor for warranty verification.

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Kontron or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Kontron or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever. Kontron reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

### ➤ **Return Procedure**

For any Limited Warranty return, please contact Kontron Customer Service at <http://support.kontron.com.tw/eRMA/> and login to obtain a Return Material Authorization (RMA) Number. If you do not have an account, send an email to [support@kontron.com.tw](mailto:support@kontron.com.tw) to apply for one.

All product(s) returned to Kontron for service or credit **must** be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items **must** be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty **must** include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing the date of purchase.

To reduce risk of damage, returns of product must be in a Kontron shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Kontron Customer Service at a nominal cost.

Kontron owns all parts removed from repaired products. Kontron uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Kontron repairs or replaces a product, its warranty term is not extended.

Shipments not in compliance with this Limited Warranty Return Policy will not be accepted by Kontron.

### ➤ **Limitation of Liability**

In no event shall Kontron be liable for any defect in hardware, software, loss, or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Kontron's liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Kontron or its authorized agent.

## ➤ ***Maintaining Your Computer***

### ➤ **Cleaning Components**

Internal fans cool the computer by drawing in air through air vents in the front of the computer and blowing it out the rear-side panels. Dust and other debris is drawn in with the air and, if allowed to build up, will interfere with the operation of various system components and insulate components, preventing heat from dissipating. To prevent this, an air filter has been installed in front of the air vents in the front panel to block dust and other debris from entering the computer.

Dust and debris builds up on the air filter over time. When the air filter becomes very dirty, it is difficult for cooling air to pass through the air filter and enter the computer. So, the air filter must be cleaned to prevent the computer from overheating. Remove and clean the air filter on a regular basis following the steps described in the “Air Filter” section of Chapter 2. Also, regularly vacuum the exterior of the chassis to remove dust that has accumulated around the air vents.

### ➤ **Environmental Factors**

#### ➤ *Temperature*

The ambient temperature within an enclosure may be greater than room ambient temperature. Installation in an enclosure should be such that the amount of air flow required for safe operation is not compromised. Consideration should be given to the maximum rated ambient temperature. Overheating can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices.

If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

#### ➤ *Humidity*

High-humidity can cause moisture to enter and accumulate in the system. This moisture can cause corrosion of internal components and degrade such properties as electrical resistance and thermal conductivity. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system.

Buildings in which climate is controlled usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range. Refer to the “Specifications” section of this user’s guide for the operating and storage humidity specifications.

#### ➤ *Altitude*

Operating a system at a high altitude (low pressure) reduces the efficiency of the cooling fans to cool the system. This can cause electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

## ► Power Protection

The greatest threats to a system's supply of power are power loss, power spikes, and power surges caused by electrical storms, which interrupt system operation and/or damage system components. To protect your system, always properly ground power cables and one of the following devices.

### ► *Surge Protector*

Surge protectors are available in a variety of types and usually provide a level of protection proportional with the cost of the device. Surge protectors prevent voltage spikes from entering a system through the AC power cord. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

### ► *Line Conditioner*

Line conditioners go beyond the overvoltage protection of surge protectors. Line conditioners keep a system's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors. However, line conditioners cannot protect against a complete loss of power.

### ► *Uninterruptible Power Supply*

Uninterruptible power supply (UPS) systems offer the most complete protection against variations on power because they use battery power to keep the server running when AC power is lost. The battery is charged by the AC power while it is available, so when AC power is lost, the battery can provide power to the system for a limited amount of time, depending on the UPS system.

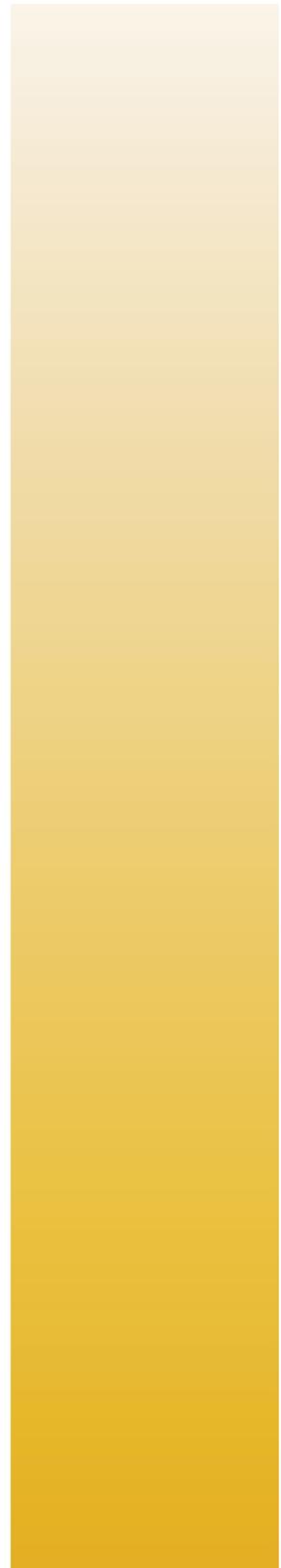
UPS systems range in price from a few hundred dollars to several thousand dollars, with the more expensive units allowing you to run larger systems for a longer period of time when AC power is lost. UPS systems that provide only 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety approved.

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# ► Safety Instructions

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## ► Before You Begin

Before handling the PCI-755, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the “Advisories” section in the Preface for advisory conventions used in this user’s guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- ◆ Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- ◆ Use extreme caution when installing or removing components. Refer to the installation instructions in this user’s guide for precautions and procedures. If you have any questions, please contact Kontron Post-Sales Technical Support.



### WARNING



High voltages are present inside the chassis when the unit’s power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.

---

## ► ***When Working Inside a Computer***

Before taking covers off a computer, perform the following steps:

- 1) Turn off the computer and any peripherals.
- 2) Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.
- 3) Follow the guidelines provided in “Preventing Electrostatic Discharge” on the following page.
- 4) Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- ◆ To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- ◆ When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.



### **CAUTION**

Do not attempt to service the system yourself except as explained in this user's guide. Follow installation and troubleshooting instructions closely.



## ► **Preventing Electrostatic Discharge**

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Kontron strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- ◆ When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.
- ◆ When transporting a sensitive component, first place it in an antistatic container or packaging.
- ◆ Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- ◆ Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- ◆ Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

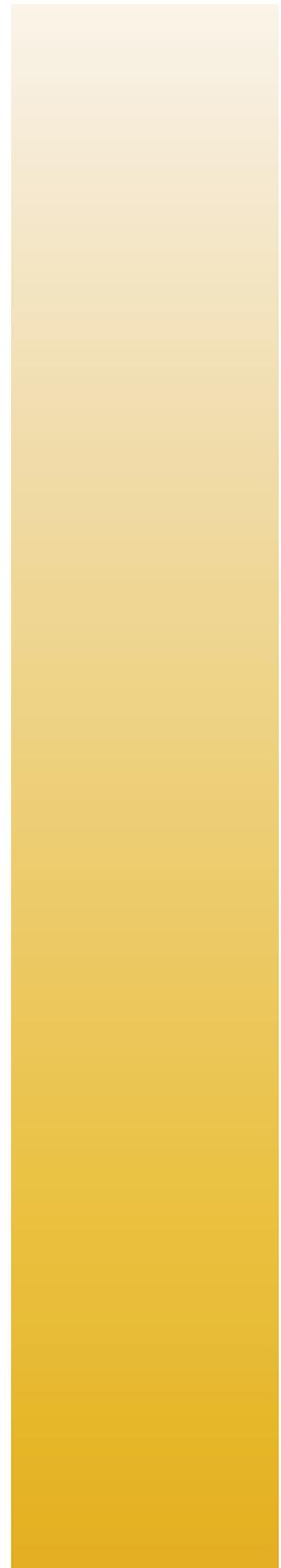
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## Chapter 1

# ► Introduction

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## ► *Overview*

The PCI-755 is a full-size PICMG 1.0 form factor single-processor system host board, based on the Intel® 915G chipset with ICH6 I/O Controller Hub. It features the new 90nm process Intel® Pentium® 4 Processor with LGA775 socket, 800MHz Front Side Bus, and 1MB L2 cache, and supports unbuffered, non-ECC, DDR2 DIMM 400/533MHz, up to 2 DIMMs up to 2GB.

Intel® Graphic Media Accelerator 900 technology, PCI-Express X1 LAN, USB 2.0 and SATA round out the package for a powerful rack-mount or wall-mount system. The PCI-755 is designed to run Windows 2000/XP and Linux operating systems as well as embedded real time applications.

I/O features of the PCI-755 include a 32-bit/33MHz PCI Bus, onboard Gigabit Ethernet, LPC, EIDE Ultra ATA/100, 4 Channels SATA-150, Mini PCI card slot, UART compatible serial ports, parallel port, floppy drive port, PS/2 Keyboard and Mouse port and VGA at 2048x1536x8bit at 75Hz resolution.

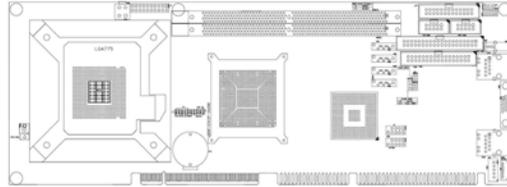
The PCI-755 provides high performance at a low cost and is ideal for ATM machine, gaming, kiosk, and thin client applications.

## ▶ Checklist

1. Take out the PCI-755 unit from the carton box, check if the unit is properly secure in the plastic bag.

2. Check the contents of the carton box:

- ◆ PICMG 1.0 Single Board Computer



- ◆ ATA-66/100 HDD ribbon cable x1
- ◆ Floppy ribbon cable x1
- ◆ SATA cable x2
- ◆ USB 2.0 2-port PCI bracket and cable
- ◆ COM 1-port PCI bracket and cable
- ◆ LPT port PCI bracket and cable
- ◆ Keyboard/Mouse Y-cable

## ➤ Product Specifications

Specifications	<ul style="list-style-type: none"> <li>♦ Full-size PICMG 1.0 Single Board Computer</li> <li>♦ PCI Local Bus Specification, Rev 2.3 compliant</li> </ul>
Processors	<ul style="list-style-type: none"> <li>♦ Single Processor with Intel® Land Grid Array 775 (LGA775) package</li> <li>♦ Intel® Pentium® 4 Processor or Celeron® D with 1MB L2 cache</li> <li>♦ 533/800MHz Front Side Bus</li> <li>♦ Auto-selection of CPU frequency and core voltage</li> <li>♦ Intel Hyper-Threading Technology supported</li> </ul>
Chipsets	<ul style="list-style-type: none"> <li>♦ Intel® 915G Graphics and Memory Controller Hub (GMCH)</li> <li>♦ Intel® I/O Controller Hub 6 (ICH6)</li> </ul>
BIOS	<ul style="list-style-type: none"> <li>♦ Support for 4 Mb Firmware Hub.</li> <li>♦ BIOS write protection provides anti-virus capability</li> <li>♦ DMI BIOS Support</li> <li>♦ Supports system soft power-off (via ATX power supply), PXE Remote Boot, boot from USB Device</li> </ul>
System Memory	<ul style="list-style-type: none"> <li>♦ 2 DIMMs unbuffered, non-ECC, DDR2 400/533MHz</li> <li>♦ Maximum 2GB system memory</li> </ul>
Graphics	<ul style="list-style-type: none"> <li>♦ GMCH analog RGB output on the faceplate</li> <li>♦ Resolution up to 2048 x 1536 at 75Hz</li> </ul>
Form Factor	<ul style="list-style-type: none"> <li>♦ PICMG 1.0 Full-size Single Board Computer</li> <li>♦ Dimensions: 338.6mm (L) x 122mm (W) (13.33"x4.8")</li> </ul>
PCI Support	<ul style="list-style-type: none"> <li>♦ PCI Golden Fingers</li> </ul>
Bus on PICMG 1.0	<ul style="list-style-type: none"> <li>♦ Support ISA Interface, I/O &amp; IRQ supported only, not support DMA &amp; bus master</li> <li>♦ Supports one PCI bus (32-bit at 33MHz)</li> </ul>
Clock Generator	<ul style="list-style-type: none"> <li>♦ Integrated Device Technology CV110N (CK410)</li> </ul>
I/O Controller	<ul style="list-style-type: none"> <li>♦ LPC Super IO controller ITE IT8712F/IX</li> </ul>
On-board LAN	<ul style="list-style-type: none"> <li>♦ Onboard Marvell 88E8053 supports 2 GbE ports on the faceplate.</li> <li>♦ Supports IEEE 802.3x compliant flow control, IEEE 802.3ab Auto-Negotiation of speed, duplex and flow control</li> </ul>
Peripheral Support	<ul style="list-style-type: none"> <li>♦ One IDE Channel supports one Ultra ATA 100/66/33 device (Master)</li> <li>♦ Supports 4 Channels SATA-150 devices</li> <li>♦ Compliant with USB Specification Rev. 2.0, supports 5 port USB2.0 (one on bracket, four internal)</li> <li>♦ Two 16550 UART compatible serial ports with ESD protection</li> <li>♦ One internal bi-direction parallel port with SPP/ECP/EPP mode</li> <li>♦ One internal Floppy port</li> <li>♦ Internal PS/2 Keyboard and Mouse port</li> </ul>
Watchdog Timer	<ul style="list-style-type: none"> <li>♦ Two-stage watchdog timer</li> </ul>
Miscellaneous	<ul style="list-style-type: none"> <li>♦ Voltage, fans and CPU/System temperature monitoring.</li> <li>♦ Fan speed monitoring</li> </ul>

Table 1-1. PCI-755 Specifications

## ► Features

### ► Chipset

The PCI-755 is based on the **Intel® 915G Graphics and Memory Controller Hub (GMCH)** chipset with **ICH6 I/O Controller Hub**. A single **Intel® Pentium® 4 (Celeron® D) Processor** with LGA775 socket is supported with up to 800MHz front side bus.

The **Intel® 915G GMCH** provides:

- ◆ support for the 90nm process **Intel® Pentium® 4** Processor with Hyper-Threading Technology
- ◆ 800/533 MHz system bus
- ◆ Support for DDR2 533/DDR2 400 or DDR400/DDR333 memory, up to 2 GB RAM
- ◆ Intel® Graphics Media Accelerator 900 (Intel® GMA 900 graphics) provides stunning media, incredible visuals and new 3D capabilities
- ◆ Direct Media Interface (DMI) between GMCH and ICH6 delivers up to 2.0 GB/s concurrent bandwidth between the memory and I/O controller
- ◆ Package: 37.5 mm × 37.5 mm, 1210 Flip Chip Ball Grid Array (FCBGA)

The **Intel® 915G GMCH** features the Integrated Graphics Media Accelerator 900:

- ◆ 256-bit graphics core, 8/16/32 bpp, up to 8.5 GB/sec memory bandwidth with DDR2 533 MHz, and 1.3 GP/sec and 1.3 GT/sec fill rate
- ◆ 128 MB maximum video memory
- ◆ 400 MHz DAC frequency for up to 2048x1526 at 85 Hz maximum resolution for both analog and digital displays
- ◆ Dynamic Display Modes for flat-panel and wide-screen support
- ◆ Two Serial Digital Video Out (SDVO) ports for flat-panel monitors
- ◆ Multiple display types (LVDS, CRT) for dual monitor capabilities

The **Intel® ICH6 I/O Controller Hub** provides:

- ◆ PCI Express Base Specification, Rev. 1.0a compliant
- ◆ PCI Local Bus Specification, Rev. 2.3 compliant with support for 33MHz PCI operations
- ◆ ACPI Power Management Logic Support
- ◆ Enhanced DMA controller, interrupt controller, and timer functions

- ◆ Integrated Serial ATA host controller with independent DMA operations on four ports
- ◆ Integrated IDE controller support Ultra ATA 100/66/33
- ◆ USB host interface with support for eight USB ports; four UHCI host controllers; one EHCI high-speed USB 2.0 Host controller
- ◆ Integrated LAN controller
- ◆ SMBus Specification, Ver. 2.0 with additional support for I<sup>2</sup>C devices
- ◆ Supports AC '97, Rev. 2.3 Specifications (up to 7 channels)
- ◆ Supports Intel High Definition Audio
- ◆ Low Pin Count (LPC) interface
- ◆ Firmware Hub (FWH) interface support
- ◆ Package: 31mm x 31mm, 609 pin mBGA

#### ► BIOS

- ◆ Award® BIOS Plug & Play
- ◆ Flash-write protection will be implemented under software control

#### ► Onboard Gigabit Ethernet Control

The PCI-755 provides two 10/100/1000BASE-T Ethernet interfaces via two Marvell 88E8053 Ethernet Controllers.

- ◆ Two Marvell 88E8053 10/100/1000BASE-T Ethernet Controllers (PCI Express x1 Host Interface, functionality identical to PCI)
- ◆ Compliant to 802.3x flow control support
- ◆ IEEE 802.1p and 802.1q support
- ◆ 10/100/1000 IEEE 802.3 compliant
- ◆ Wake on LAN (WOL) power management support
- ◆ ACPI 2.0 specification compliant
- ◆ Serial Peripheral Interface (SPI) for remote boot (PXE) (\*see Note below)
- ◆ LAN disable will be implemented under software control

**Note:** \*If PXE LAN Boot is enabled, USB functionality must be disabled.

▶ **Onboard Watchdog Timer**

The PCI-755 supports a two-stage software programmable watchdog timer, implemented on the IT8712F/HX Super IO and ICH6.

- ◆ 1 sec to 65535 sec
- ◆ Generates IRQ, NMI, or hardware
- ◆ Two stage configuration for NMI and Reset

▶ **Hardware Monitor**

The PCI-755 supports hardware monitoring via the IT8712F/IX Super I/O which provides temperature, fan, and voltage monitoring. It has analog-to-digital converters that allow software to monitor the voltages on the PCI-755. Please see Appendix A for detailed parameters.

# System Block Diagram

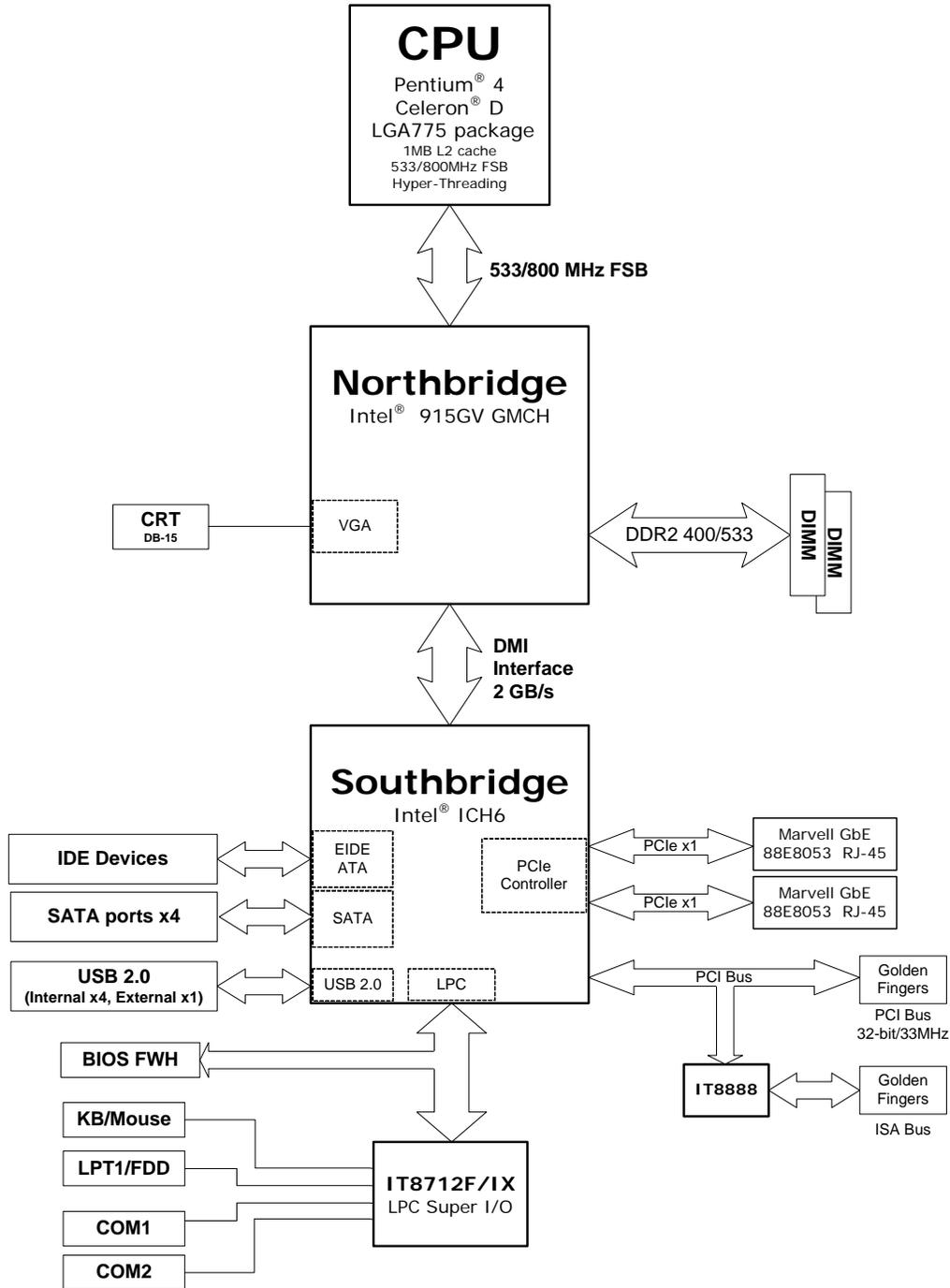


Figure 1-1. PCI-755 System Block Diagram

## ► Mechanical Dimensions

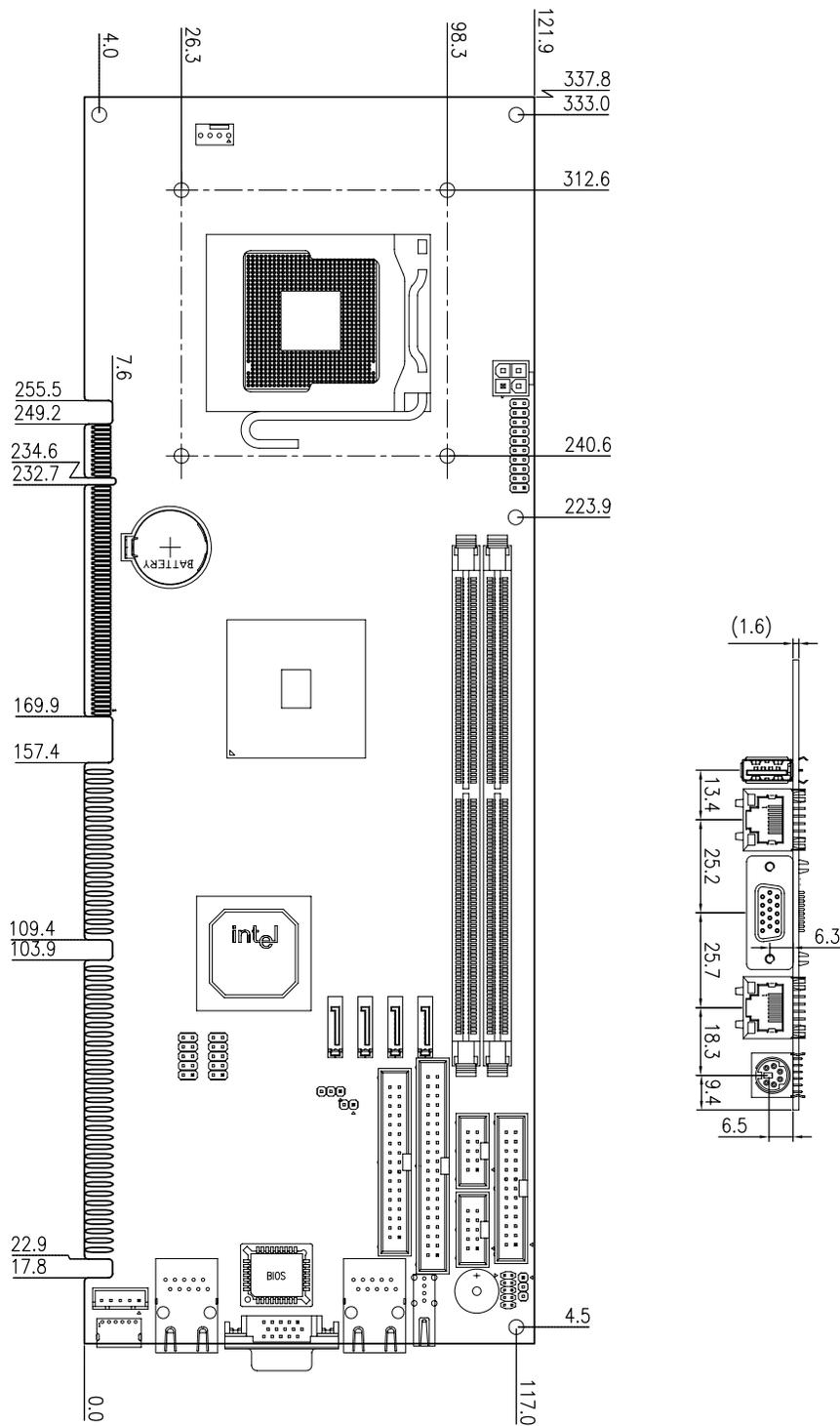


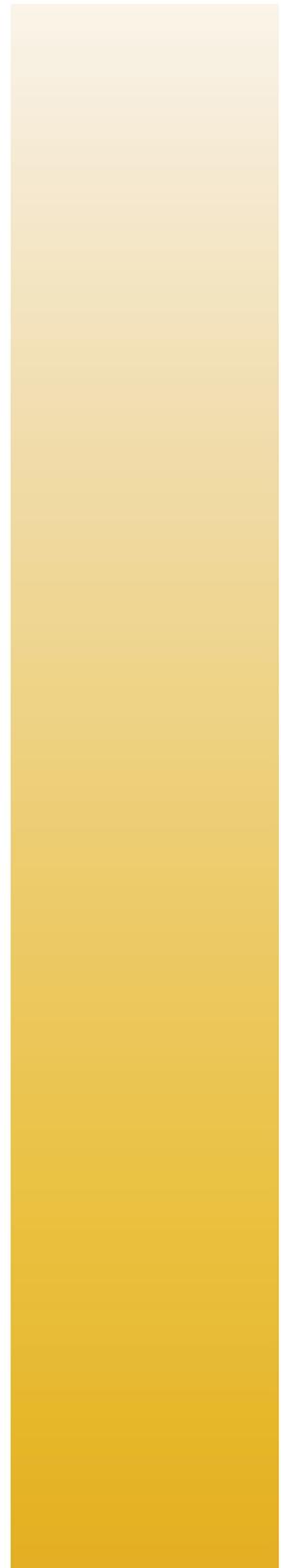
Figure 1-2. PCI-755 Mechanical Dimensions

## Chapter 2

# ▶ Hardware Settings

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Jumper Settings .....	2-5
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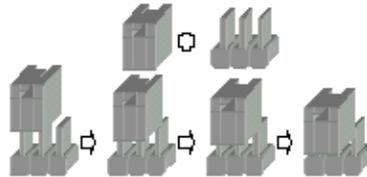
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## ► **Overview**

This chapter provides the definitions and locations of jumpers, headers, and connectors.

## ► **Jumpers**

The PCI-755 has several jumpers which must be properly configured to ensure correct operation.)



*Figure 2-1. Jumper Connector*

For a three-pin jumper (see Figure 2-1), the jumper setting is designated “1-2” when the jumper connects pins 1 and 2. The jumper setting is designated “2-3” when pins 2 and 3 are connected and so on. You will see that one of the lines surrounding a jumper pin is thick, which indicates pin No.1.

To move a jumper from one position to another, use needle-nose pliers or tweezers to pull the pin cap off the pins and move it to the desired position.

## ► Jumper Settings and Pin Definitions

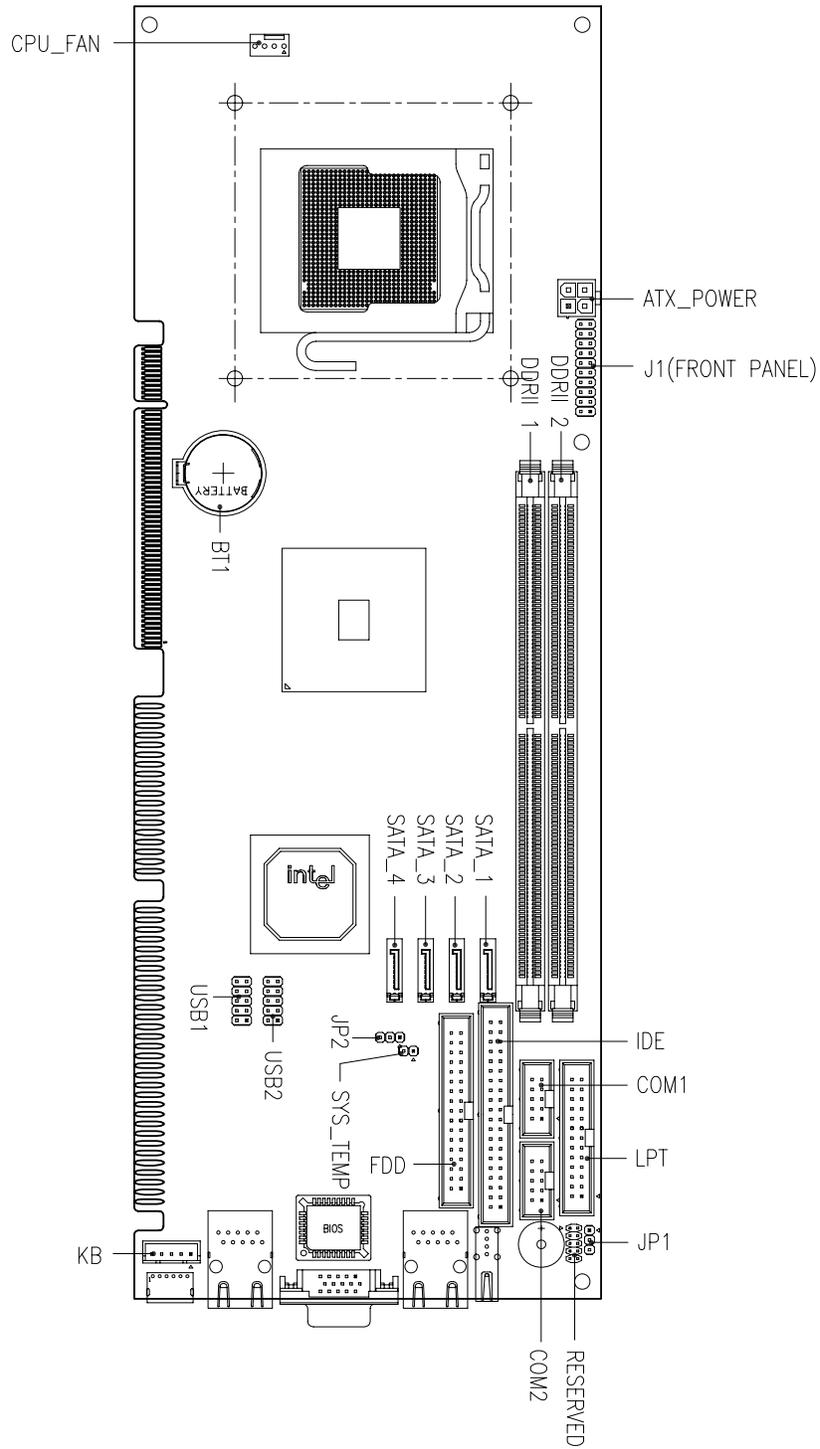


Figure 2-2. Jumper and Connector Locations

## ▶ Jumper Settings

Use the information in the following tables to change the jumpers.

Jumper	Function
JP1	BIOS Write Protect
JP2	Clear CMOS

Table 2-1. Jumper Location Description

To ensure the correct configuration, the following describes how to set the jumpers to enable/disable or change functions. For jumper locations please refer to jumper location diagram.

### ▶ BIOS Write Protect setting (JP1: 3-pin 2.54mm pitch header)

Function	JP1
Enable (Default)	1-2 Shorted
Disable	2-3 Shorted

Table 2-2. BIOS Write Protect setting

### ▶ Clear CMOS setting (JP2: 3-pin 2.54mm pitch header)

Function	JP2
Normal (Default)	1-2 Shorted
Clear CMOS	2-3 Shorted

Table 2-3. Clear CMOS setting

## ► Main Board Pin Assignments

Connector	Function
ATX_POWER	ATX Power_12V Connector
COM1-2	RS-232 Serial Port Connectors
CPU_FAN	CPU Fan Connector
DDRII-1/2	240Pin DDRII DIMM Socket Channel A
FDD	Floppy Connector
IDE	EIDE Connector
J1 (FRONT PANEL)	Front Panel Connector(Reset Button/ HD LED/ Speaker/ Power LED/ Power Button)
KB	Internal Keyboard Connector
LPT	LPT connector
SATA_1-4	Serial ATA Connectors
SYS_TEMP	System Temperature Connector
USB1-2	USB Connectors

Table 2-4. PCI-755 Main Board Connector Description

### ► ATX Power\_12V Connector (ATX\_POWER: 2x2 pin female)

PIN	SIGNAL	PIN	SIGNAL
1	Ground	3	+12V
2	Ground	4	+12V

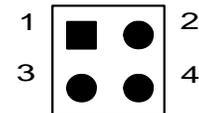


Table 2-5. ATX Power\_12V Connector

### ► RS232 Serial Port Header (COM1-2: 5x2 box header 2.54mm pitch)

PIN	SIGNAL	PIN	SIGNAL
1	DCD (Data Carrier Detect)	2	DSR (Data Set Ready)
3	RXD (Receive Data)	4	RTS (Request to Send)
5	TXD (Transmit Data)	6	CTS (Clear to Send)
7	DTR (Data Terminal Ready)	8	RI (Ring Indicator)
9	Ground	10	Reverse

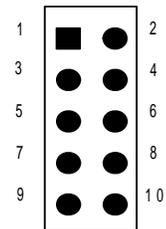


Table 2-6. RS232 Serial Port Header

► CPU Fan Connector (CPU\_FAN: Wafer 4-pin male)

PIN	SIGNAL
1	GND
2	+12V
3	Speed Sense
4	N.C.

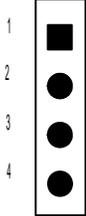


Table 2-7. CPU Fan Connector

► Floppy Connector (FDD: 17x2 box header 2.54mm pitch)

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	#REDWC (#DENSITYSEL)
3	GND	4	N.C
5	GND	6	#DS1
7	GND	8	#INDEX
9	GND	10	#MOTOR A
11	GND	12	#DRIVE SELECT B
13	GND	14	#DRIVE SELECT A
15	GND	16	#MOTOR B
17	GND	18	#DIR
19	GND	20	#STEP
21	GND	22	#WRITE DATA
23	GND	24	#WRITE GATE
25	GND	26	#TRACK0
27	GND	28	#WRITE PROTECT
29	GND	30	#READ DATA
31	GND	32	#SIDE1(#HEADSEL)
33	GND	34	#DISK CHANGE

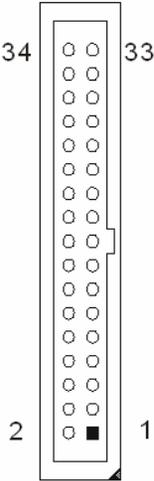


Table 2-8. Floppy Connector

► *EIDE Connector (IDE: 20x2 box header 2.54mm pitch)*

PIN	SIGNAL	PIN	SIGNAL
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N.C
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	IRQ14	32	N.C
33	ADDR1	34	UDMA DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	LED	40	GND

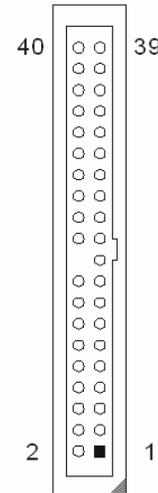


Table 2-9. EIDE Connector

► *Front Panel Connector (J1: 10x2 pin header 2.54mm pitch)*

PIN	SIGNAL	PIN	SIGNAL
1	Power LED (+)/ WDT LED (+)	11	External Speaker (+)
2	WDT LED (-)	12	N.C
3	Power LED (-)	13	N.C
4	N.C	14	External Speaker (-)
5	GND	15	Reset Button (+)
6	GND	16	Reset Button (-)
7	N.C	17	IDE LED (-)
8	PS_ON#	18	IDE LED (+)
9	+5VSB	19	Power Button (+)
10	PME# (Reverse)	20	Power Button (-)

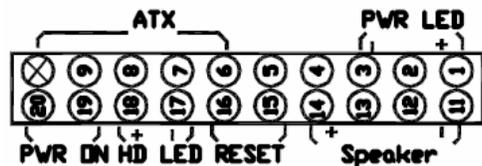


Table 2-10. Front Panel Connector

**Note:** To simulate AT power behaviour with an ATX power supply, +5VSB (standby) must be connected to Pin 9.

➤ *Internal Keyboard Connector (KB: Wafer 5-pin male 2.5mm pitch)*

PIN	SIGNAL
1	KB Clock
2	KB Data
3	N.C
4	GND
5	VCC



Table 2-11. Internal Keyboard Connector

➤ *LPT Port Connector (LPT: 13x2 box header 2.54mm pitch)*

PIN	SIGNAL	PIN	SIGNAL
1	Line Printer Strobe	14	Auto Feed
2	PD 0, Parallel Data 0	15	Error
3	PD 1, Parallel Data 1	16	Initialize
4	PD 2, Parallel Data 2	17	Select
5	PD 3, Parallel Data 3	18	Ground
6	PD 4, Parallel Data 4	19	Ground
7	PD 5, Parallel Data 5	20	Ground
8	PD 6, Parallel Data 6	21	Ground
9	PD 7, Parallel Data 7	22	Ground
10	ACK, Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Select		

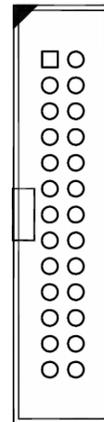


Table 2-12. LPT Port Connector

➤ *Serial ATA Connector (SATA1-4: 7-pin "L" type)*

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SATA_TXP
3	SATA_TXN	4	GND
5	SATA_RXN	6	SATA_RXP
7	GND		

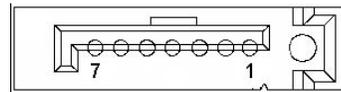


Table 2-13. Serial ATA Connector

➤ *System Temperature Connector (SYS\_TEMP: 2-pin 2.54mm pitch)*

PIN	SIGNAL
1	GND
2	System_Temp

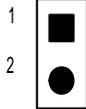


Table 2-14. System Temperature Connector

➤ *USB Headers (USB1-2: 5x2-pin header 2.54mm pitch)*

PIN	SIGNAL	PIN	SIGNAL
1	+5V	2	+5V
3	USB1-	4	USB2-
5	USB1+	6	USB2+
7	GND	8	GND
9	"key"	10	GND

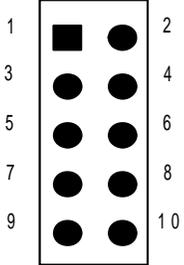


Table 2-15. USB0/1, USB2/3 Headers

## ➤ Rear Panel Pin Assignments

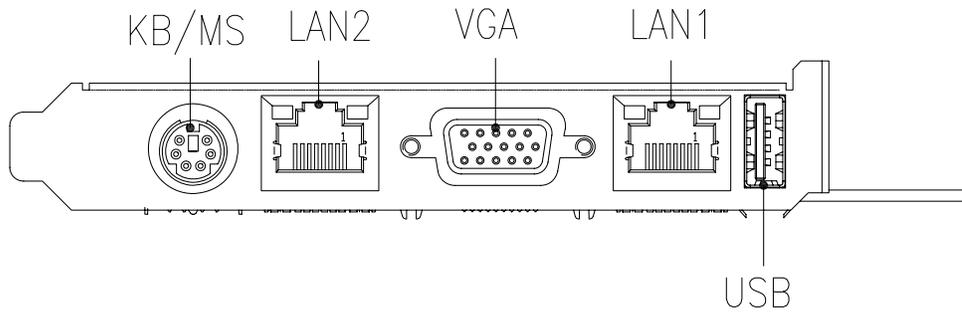


Figure 2-3. Rear Panel connector locations

Connector	Function
KB/MS	PS2 Mouse / Keyboard Connector
LAN1-2	LAN1-2 (PCI Express x1 Port 1) 100/1000 Base-T Ethernet
VGA	VGA Display Connector
USB	USB Connector

Table 2-16. PCI-755 Rear Panel Connector Descriptions

### ➤ Keyboard/Mouse Connector (KB/MS: 6-pin purple Mini DIN)

PIN	SIGNAL	PIN	SIGNAL
1	Keyboard data	2	Mouse data
3	Ground	4	+5V
5	Keyboard clock	6	Mouse clock

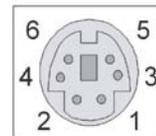
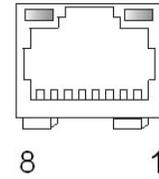


Table 2-17. Keyboard/Mouse Connector

► *10/100/1000 Base-Tx Ethernet Connectors (LAN1-2: RJ-45)*

PIN	SIGNAL	PIN	SIGNAL
1	MDIO(+)	5	MDI2(+)
2	MDIO(-)	6	MDI1(-)
3	MDI1(+)	7	MDI3(+)
4	MDI2(-)	8	MDI(-)



LAN LED	Function
Yellow	LINK / ACTIVE
OFF / Green / Orange	Speed 10 / Speed 100 / Speed 1000

Table 2-18. 10/100/1000 Base-Tx Ethernet Connectors

► *VGA Display Connector (VGA: D-Sub 15-pin female)*

PIN	SIGNAL	PIN	SIGNAL
1	Red	2	Green
3	Blue	4	NC
5	Ground	6	Ground
7	Ground	8	Ground
9	VCC	10	Ground
11	NC	12	DDCData
13	HSync	14	VSync
15	DDCclk		

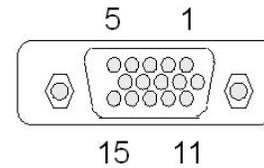


Table 2-19. VGA Display Connector

► *USB Connector (USB: 4-pin Type A female)*

PIN	SIGNAL
1	VCC
2	USB4 -
3	USB4 +
4	GND

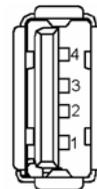


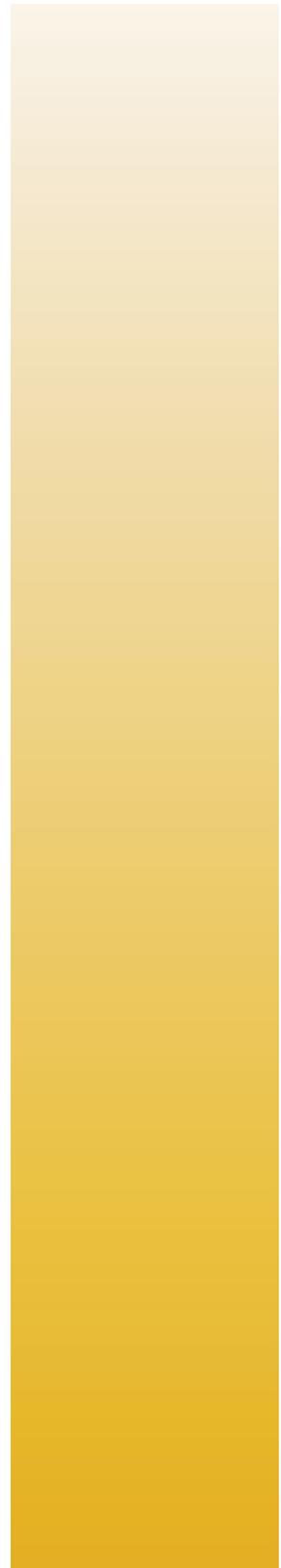
Table 2-20. USB4 Connector

## Chapter 3

# ▶ System Installation

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## ► *Overview*

This chapter describes how to set up your system and add processors and memory.

## ► *Processor Installation*

### ► *Processor Handling*

Carefully follow the steps below in order to prepare the CPU for installation:

- 1) Remove processor from packaging.
- 2) Visually inspect to ensure processor protective cover is present and properly secured.
- 3) Handle the CPU by grasping the substrate edges only with thumb and forefinger.



**CAUTION**

DO NOT TOUCH PROCESSOR CONTACTS TO PREVENT DAMAGING THE CPU.



- 4) Remove protective cover with the opposite hand by depressing larger retention tab and peeling the cover away.
- 5) Set and reserve the protective cover aside. Always keep the protective side cover on the processor when not in the socket.

### ► *Installing the CPU*

Carefully follow the steps below in order to install the CPU:

- 1) Check and confirm that you are installing the correct CPU type.
- 2) Align the gold triangle with the corner of the socket nearest the Load Lever that is trimmed at a 45 degree angle (see Figure 3-1). Carefully place the CPU into the socket body using a purely vertical motion. (Tilting the processor into place or shifting it into place on the socket can damage the sensitive socket contacts.)

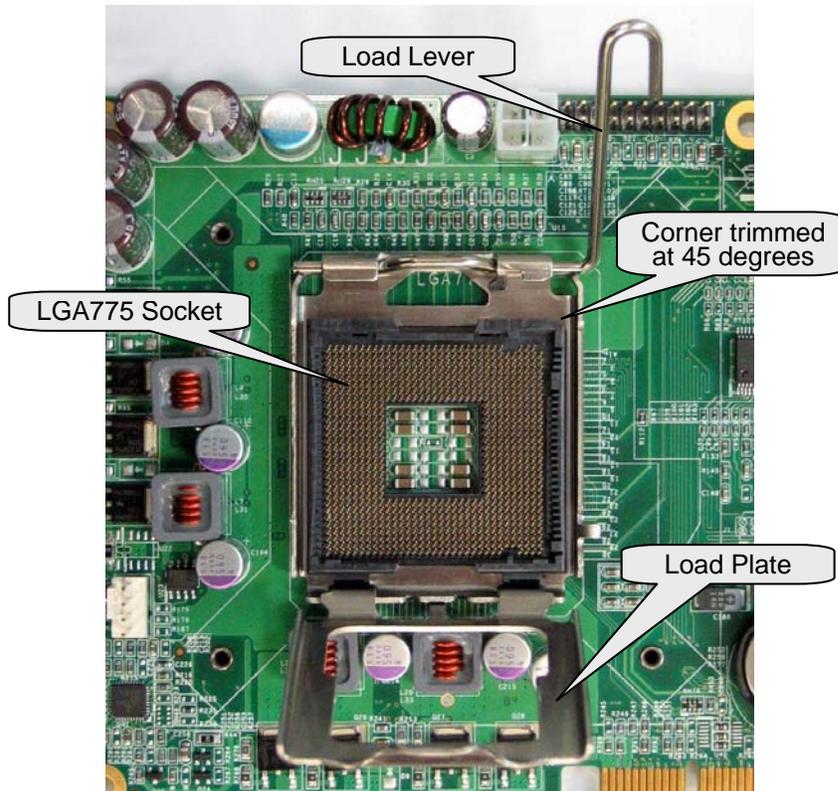


Figure 3-1. LGA775 CPU Socket

- 3) Verify that package is within the socket body and that the Orientation Keys are properly mated (see Figure 3-2).

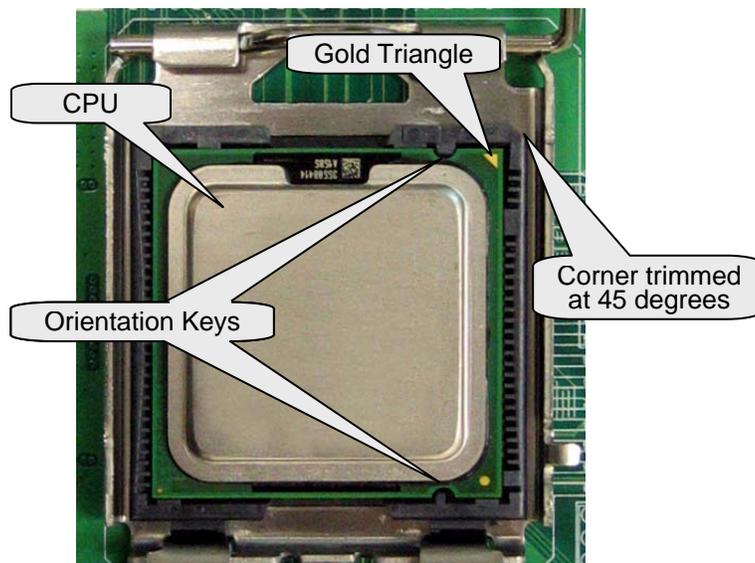


Figure 3-2. CPU Alignment in LGA775 Socket

- 4) Close the Load Plate. While pressing down lightly on Load Plate, engage the Load Lever. Secure the Load Lever with Load Plate tab under the retention tab of the Load Lever (see Figure 3-3).

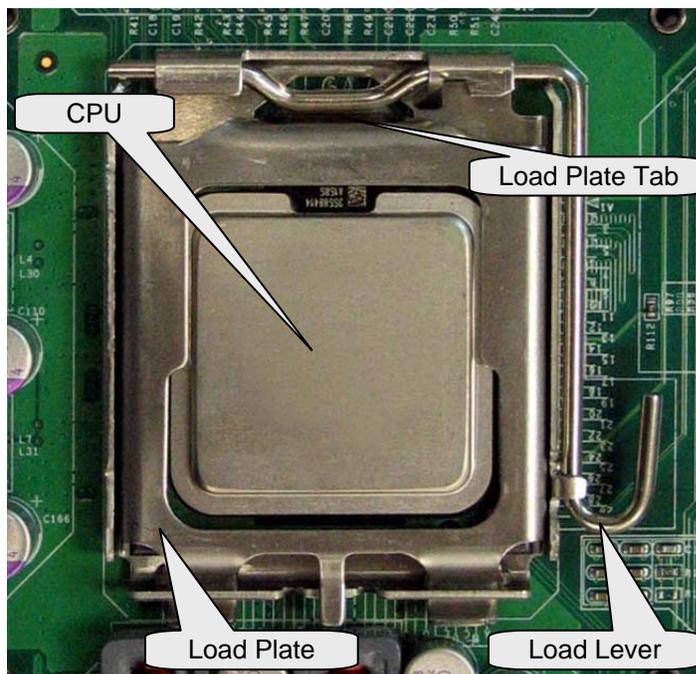


Figure 3-3. CPU Secured in LGA775 Socket

### ► Removing the CPU:

*To remove the CPU, reverse the installation steps.*

- 1) Before removing the CPU, turn off the system power and wait for about 20 minutes until the heat radiation plate of the cooling fan and the CPU cools down.
- 2) To remove the CPU, first release the Load Lever of the LGA775 Socket and raise the Load Plate.
- 3) Remove the CPU by grasping the substrate edges only with thumb and forefinger and lifting it out with a purely vertical motion.
- 4) Replace the protective cover.



#### WARNING

The CPU and the heatsink may be hot and could cause burns.



## ► *Heatsink Installation*

The system must not be operated without a heat sink and fan to provide the necessarily cooling. Install the heat sink and fan supplied by the CPU manufacturer, or other suitable heat sink and fan assembly.



**Important:** Make sure that good thermal contact is made between the processor and heat sink. Insufficient contact or incorrect use of heat sink, fan, or thermal compound can cause the processor to overheat, which may crash the system or cause permanent damage to the CPU.

---

## ► **Memory Module Installation**

Figure 3-4 below displays the notch marks as they should look on your DIMM memory modules.

DDR2 DIMMs have 240-pins and one notch that will match with the onboard DIMM sockets. DIMM modules are installed by placing the chip firmly into the socket at a 90-degree angle and pressing straight down (Figure 3-4) until it fits tightly into the DIMM socket.

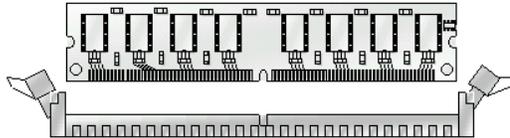


Figure 3-4. DIMM Memory and 240-pin Socket

### ► **Carefully follow the steps below in order to install the DIMMs:**

- 1) To avoid generating static electricity and damaging the DIMM, ground yourself by touching a grounded metal surface or using a ground strap before you touch the DIMM.
- 2) Do not touch the connectors of the DIMM. Dirt or other residue may cause a malfunction.
- 3) Hold the DIMM with its notch aligned with the memory socket of the PCI-755 and insert it completely into the socket. Lift the locking tabs at each end of the DIMM socket to lock it in position.

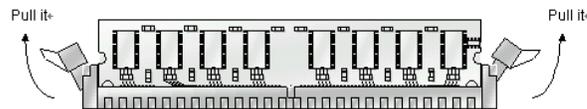


Figure 3-5. Memory Installation

- 4) If you install two DIMMs, install the second DIMM using the same procedure as above.
- 5) If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.
- 6) Make sure the DIMM is properly installed and locked by the tabs on both sides of the socket.

▶ **Removing a DIMM:**

To remove the DIMM, use your fingers or a small screwdriver to carefully push away the plastic tabs that secure the DIMM at each end. Lift it out of the socket.

**Make sure you store the DIMM in an anti-static bag. The socket must be populated with memory modules of the same size and manufacturer.**

## Chapter 4

# ► Award BIOS Setup

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## ► Overview

This chapter provides a generic description of the Award BIOS. The BIOS setup menus and available selections will vary from those of your product. For specific information on the BIOS for your product, please contact Kontron.



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**Note:** The BIOS menus and selections for your product will vary from those in this chapter. For the BIOS manual specific to your product, please contact Kontron.

---

Award's ROM BIOS provides a built-in Setup program, which allows the user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will not need to be changed unless there is a configuration change in the system, such as a hard drive replacement or when a device is added.

It is possible for the CMOS battery to fail, which will cause data loss in the CMOS only. If this happens you will need to reconfigure your BIOS settings.

## ► Determining the BIOS Version

To determine the AwardBIOS version, immediately press the Pause key on your keyboard as soon as you see the following text display in the upper left corner of your screen:

```
Phoenix - Award BIOS v6.00PG, An Energy Ally  
Copyright 1984-2003, Phoenix Technology, LTD.  
PCI-755 BIOS RX.XX
```

## ► Starting the BIOS Setup Utility

To start the AwardBIOS setup utility, press <del> when the following string appears during bootup.

```
Press <del> to enter Setup
```

The Main Menu then appears.

This page intentionally left blank.



➤ **PnP / PCI Configuration:**

This entry appears if your system supports PnP / PCI.

➤ **PC Health Status:**

This menu displays the current CPU temperature, the fan speeds, voltages etc.

➤ **Load Optimized Defaults:**

Use this menu to load the BIOS default values that are factory settings for optimal performance and system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

➤ **Supervisor / User Password::**

Use this menu to set User and Supervisor Passwords.

➤ **Save & Exit Setup:**

Save CMOS value changes to CMOS and exit setup.

➤ **Exit Without Save:**

Abandon all CMOS value changes and exit setup.

## ► Standard CMOS Features

The items in the Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more setup items. Use the arrow keys to highlight the item and <PgUp> or <PgDn> keys to select the value you want for each item. Note the “Halt On” option which allows you to select the situation in which you want the BIOS to stop the POST process and notify you.

Standard CMOS Features		Item Help
Date (mm:dd:yy):	Mon, Mar 6 2006	
Time (hh:mm:ss):	16:19:20	
► IDE Channel 0 Master	[13579 MB]	Menu Level ►
► IDE Channel 0 Slave	[None]	
► IDE Channel 1 Master	[None]	Change the day, month, year and century
► IDE Channel 1 Slave	[None]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Based Memory	640K	
Extended Memory	515072K	
Total Memory	516096K	
↑↓→← Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Table 4-2. Standard CMOS Features

### ► Date:

Options- Month/DD/YYYY

Set the system date. Note that the 'Day' automatically changes when you set the date.

### ► Time:

Options- HH : MM : SS

Set the system time.

### ► IDE Channel 0/1 Master:

Options are available in the sub-menu (described in the IDE Adapters section below)

Press <Enter> to enter the sub-menu and select detailed options.

### ► IDE Channel 0/1 Slave:

Options are available in the sub-menu (described in the IDE Adapters section below)

Press <Enter> to enter the sub-menu and select detailed options.

▶ **Drive A/ Drive B:**

Options- None/360K, 5.25 in/1.2M, 5.25 in/720K, 3.5 in/1.44M, 3.5 in/2.88M, 3.5 in

Select the type of floppy disk drive installed in your system.

▶ **Video:**

Options- EGA/VGA/CGA 40/CGA 80/MONO

Select the default video device.

▶ **Halt On:**

Options- All Errors/No Errors/All, but Keyboard/All, but Diskette/All, but Disk/Key

Select the situation in which you want the BIOS to stop the POST process and notify you.

▶ **Base Memory:**

Options- N/A

Displays the amount of conventional memory detected during boot.

▶ **Extended Memory:**

Options- N/A

Displays the amount of extended memory detected during boot.

▶ **Total Memory:**

Options- N/A

Displays the total memory available on the system.

## ► IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub-menu to configure each hard disk drive.

Phoenix - AwardBIOS CMOS Setup Utility		
IDE Channel 0 Master		
IDE HDD Auto-Detection	Press Enter	Item Help
IDE Channel 0 Master	Auto	Menu Level >> To auto-detect the HDD's size, head... on this channel
Access Mode	Auto	
Capacity	13579 MB	
Cylinder	26310	
Head	16	
Precomp	0	
Landing Zone	26309	
Sector	63	
↑↓→← Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help F5: Previous Values   F6: Fail-safe defaults   F7: Optimized Defaults		

Table 4-3. IDE Primary Master

### ► IDE HDD Auto-Detection:

Options- Press Enter

Press Enter to auto-detect the HDD on this channel. If detection is successful, the utility will fill the remaining fields on this menu.

### ► IDE Primary Master:

Options- None, Auto and Manual

Selecting "Manual" lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE!

### ► Access Mode:

Options- CHS, LBA, Large and Auto

Choose the access mode for this hard disk

### ► Capacity:

Options- Auto Display your disk drive size

Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.

**\*The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'**

➤ **Cylinder:**

Options- Min = 0, Max = 65535

Set the number of cylinders for this hard disk.

➤ **Head:**

Options- Min = 0, Max = 255

Set the number of read/write heads.

➤ **Precomp:**

Options- Min = 0, Max = 65535

\*\*\*\* Warning: Setting a value of 65535 means no hard disk!

➤ **Landing zone:**

Options- Min = 0, Max = 65535

➤ **Sector:**

Options- Min = 0, Max = 255

Number of sectors per track

## ► Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Phoenix - AwardBIOS CMOS Setup Utility		
Advanced BIOS Features		
► Hard Disk Boot Priority	[Press Enter]	Item Help
Virus Warning	[Enabled]	
Hyper-Threading Technology	[Enabled]	
First Boot Device	[Floppy]	Menu Level ►
Second Boot Device	[Hard Disk]	
Third Boot Device	[LS-120]	
Swap Floppy Drive	[Disabled]	
Boot Up NumLock Status	[On]	
Security Option	[Setup]	
x APIC Mode	Enabled	
↑↓→← Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		

Table 4-4. Advanced BIOS Features

### ► Hard Disk Boot Priority:

Press Enter to show the Bootable add-in Card.

### ► Virus Warning:

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, the BIOS will show a warning message on the screen and sound an alarm beep.

- ♦ Enabled---Activates automatically when the system boots up and causes a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
- ♦ Disabled---No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

### ► Hyper-Threading Technology:

This option will enable or disable the Hyper-Threading Technology function of the CPU.

➤ **First/Second/Third Boot Device:**

The BIOS will attempt to load the operating system from the devices specified here as the first, second and third boot devices.

Options-Floppy, LS/ZIP, Hard Disk, CDROM, LAN and Disabled.

➤ **Swap Floppy Drive:**

If the system has two floppy drives, you can swap the logical drive name assignments.

Options- Enabled, Disabled.

➤ **Boot Up NumLock Status:**

Select the power-on state for NumLock.

Options- On, Off

➤ **Security Option:**

Select whether a password is required every time the system boots or only when you enter setup.

- ◆ System---The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
- ◆ Setup---The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at the Main Menu. You will be asked to enter password. Do not type anything and just press <Enter> to disable security. Once security is disabled, the system will boot and you can enter Setup freely.

➤ **APIC Mode:**

This item enables or disables the Advanced Programmable Interrupt Controller (APIC) feature.

## ➤ Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. Please note that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Phoenix - AwardBIOS CMOS Setup Utility		
Advanced Chipset Features		
DRAM Timing Selectable	By SPD	Item Help
x CAS Latency Time	4	
x DRAM RAS# To CAS# Delay	4	
x DRAM RAS# Precharge	4	
x Precharge delay (tRAS)	12	
x System Memory Frequency	533MHz	
** VGA Setting **		
Init Display First	[PCI Slot]	
↑↓→←Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		

Table 4-5. Advanced Chipset Features

### ➤ DRAM Timing Selectable:

This selection provides the option to select DRAM timing detection using Serial Presence Detect (SPD) or by manually setting it.

Options- Manual, By SPD.

### ➤ CAS Latency Time:

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

Options- 2, 2.5.

▶ **DRAM RAS# To CAS# Delay:**

This option allows you to insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and Slow gives more stable performance. This option applies only when synchronous DRAM is installed in the system.

Options- 2, 3.

▶ **DRAM RAS# Precharge:**

If an insufficient number of cycles are allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This option applies only when synchronous DRAM is installed in the system.

Options- 2, 3.

▶ **Precharge delay (tRAS):**

This item controls the number of DRAM clocks to activate the precharge delay.

▶ **System Memory Frequency:**

This item allows you to determine the system memory frequency.

▶ ***\*\*On-Chip VGA Setting\*\****

▶ **Init Display First:**

This item allows you to decide whether to first activate the PCI slot, PCI Express Slot, or on-chip VGA.

## ➤ Integrated Peripherals

Phoenix - AwardBIOS CMOS Setup Utility		
Integrated Peripherals		
➤ OnChip IDE Device	[Press Enter]	Item Help ----- Menu Level ➤
➤ Onboard Device	[Press Enter]	
➤ SuperIO Device	[Press Enter]	
↑↓→← Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		

Table 4-6. Integrated Peripherals

## ➤ OnChip IDE Device:

OnChip IDE Device		
IDE HDD Block Mode	[Enabled]	Item Help ----- Menu Level ➤  If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support
IDE DMA transfer access	[Enabled]	
On-Chip Primary PCI IDE	[Enabled]	
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
** On-Chip Serial ATA Setting **		
On-Chip Serial ATA	[Enabled]	
↑↓→← Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		

Table 4-7. OnChip IDE Device

➤ **IDE HDD Block Mode:**

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

Options- Enabled, Disabled

➤ **IDE DMA transfer access:**

This item allows you to allow enable or disable of the IDE DMA transfer access.

➤ **OnChip Primary/Secondary PCI IDE:**

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select "Enabled" to activate each channel separately.

Options- Enabled, Disabled.

➤ **IDE Primary/Secondary Master/Slave PIO:**

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

Options- Auto, Mode 0, Mode 1, Mode 2, Mode 3 and Mode 4.

➤ **IDE Primary/Secondary Master/Slave UDMA:**

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select "Auto" to enable BIOS support.

Options- Auto, Disabled.

➤ **On-Chip Serial ATA:**

This item allows you to enable or disable the On-Chip Serial ATA.

## ► Onboard Device

Onboard Device		Item Help
USB Controller	[Enabled]	
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	
Giga LAN_1	[Enabled]	
Giga LAN_2	[Enabled]	
Onboard LAN Boot ROM	[Enabled]	
Watchdog Timer Select	[Disabled]	
↑↓→←Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		Menu Level ►

Table 4-8. Onboard Device

### ► USB / USB 2.0 Controller:

Select "Enabled" if your system contains a Universal Serial Bus (USB) / USB 2.0 controller and you have USB peripherals.

Options- Enabled, Disabled.

### ► USB Keyboard Support:

Select "Enabled" if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

Options- Enabled, Disabled.

### ► USB Mouse Support:

Select "Enabled" if your system contains a Universal Serial Bus (USB) controller and you have a USB mouse.

Options- Enabled, Disabled.

### ► Giga LAN\_1/2:

Allows you to enable or disable the LAN function.

### ► Onboard LAN Boot ROM:

Allows you to enable or disable the Onboard LAN Boot ROM function.

### ► Watchdog Timer Select:

Allows you to enable or disable the Watchdog Timer function.

## ► SuperIO Device

SuperIO Device		Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
UR2 Duplex Mode	Half	
Onboard Parallel Port	[378/IRQ7]	Menu Level ►
Parallel Port Mode	[SPP]	
x ECP Mode Use DMA	3	
PWRON After PWR-Fail	[Off]	
↑↓→←Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		

Table 4-9. SuperIO Device

### ► Onboard Serial Port 1/Port 2:

Select an address and corresponding interrupt for the first and second serial ports.

Options- 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled and Auto.

### ► UR2 Duplex Mode:

This item allows you to select the IR half/full duplex function.

Options- Half, Full.

### ► Onboard Parallel Port:

This item allows you to determine which access onboard parallel port controller goes with which I/O address.

Options- 3BC/IRQ7, 378/IRQ7, 278/IRQ5 and Disabled.

### ► Parallel Port Mode:

Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes.

Options- SPP, EPP, ECP and ECP+EPP.

### ► ECP Mode Use DMA:

Select a DMA channel for the parallel port for use during ECP mode.

Options- 3, 1.

### ► PWRON After PWR-Fail:

This field sets the system power status whether on or off when power returns to the system from a power failure situation.

## ► Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

Phoenix - AwardBIOS CMOS Setup Utility  
Power Management Setup

ACPI Function	[Enabled]	Item Help	
ACPI Suspend Type	[S1 (POS)]		
x Run VGABIOS if S3 Resume	Auto	Menu Level >	
Power Management	[User Define]		
Video Off Method	DPMS]		
Video Off In Suspend	[Yes]		
Suspend Type	[Stop Grant]		
Suspend Mode	Disabled		
HDD Power Down	Disabled		
Soft-Off by PWR-BTTN	[Instant-Off]		
↑↓→← Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults			

Table 4-10. Power Management Setup

### ► ACPI Function:

This item allows you to enable or disable the Advanced Configuration and Power Management(ACI).

Options- Enabled, Disabled.

### ► ACPI Suspend Type:

Sets the following power saving modes for the ACPI function.

- ♦ S1 (POS): Power on Suspend
- ♦ S3 (STR): Suspend to RAM
- ♦ S1 & S3: POS + STR

### ► Run VGABIOS if S3 Resume:

Choosing Enabled will run VGA BIOS to initialize the VGA card when system wakes up from S3 state.

► **Power Management:**

This item allows you to select the type (or degree) of power saving and is directly related to the following modes:

- 1) HDD Power Down
- 2) Doze Mode
- 3) Suspend Mode

**Min. Power Saving:**

Minimum power management. Doze Mode = 1 hr., Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.

**Max. Power Saving:**

Maximum power management -- ONLY AVAILABLE FOR SL CPU's. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.

Allows you to set each mode individually. When not disabled, each of the ranges is from 1 min. to 1 hr. except for HDD Power Down, which ranges from 1 min. to 15 min. and disabled.

► **Video Off Method:**

This determines the manner in which the monitor is blanked.

- ♦ Blank Screen: This option only writes blanks to the video buffer.
- ♦ V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- ♦ DPMS: Initial display power management signaling.

► **Video Off In Suspend:**

This determines the manner in which the monitor is blanked.

Options- Yes, No.

► **Suspend Type:**

Select the Suspend Type.

Options- PWRON Suspend, Stop Grant.

► **Suspend Mode:**

When "Enabled" and a set time of system inactivity has elapsed, all devices except the CPU will be shut off.

Options- Enabled, Disabled.

▶ **HDD Power Down:**

When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

▶ **Soft-Off by PWR-BTTN:**

Configures the power button function:

- ◆ Instant-Off: The power button functions as a normal power-on/-off button.
- ◆ Delay 4 Sec: The system is turned off if the power button is pressed for more than four seconds.

## ► PnP/PCI Configurations

This section describes the configuration of the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users make any changes to the default settings.

Phoenix - AwardBIOS CMOS Setup Utility		
PnP/PCI Configurations		
Resources Controlled By	[Auto (ESCD)]	Item Help
x IRQ Resources	Press Enter	
x DMA Resources	Press Enter	
		Menu Level ►
↑↓→←Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Table 4-11. PnP/PCI Configurations

### ► Resources Controlled By:

This item allows you to automatically configure all the boot- and Plug and Play-compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields are cleared, as the BIOS automatically assigns them.

## ► PC Health Status

Phoenix - AwardBIOS CMOS Setup Utility  
PC Health Status

VCore	0.92V	Item Help
3.3 V	3.39V	
+5 V	5.13V	
+12V	12.23V	Menu Level ►
+5VSB	4.96V	
Voltage Battery	3.32V	
SYS Temperature	24°C / 75°F	
CPU Temperature	36°C / 96°F	
CPU FAN Speed	4326 RPM	
↑↓→← Move <b>Enter</b> : Select <b>+/-/PU/PD</b> : Value <b>F10</b> : Save <b>ESC</b> : Exit <b>F1</b> : General Help <b>F5</b> : Previous Values <b>F6</b> : Fail-safe defaults <b>F7</b> : Optimized Defaults		

Table 4-12. PC Health Status

### ► Shutdown Temperature:

This item allows you to set up the CPU shutdown Temperature.

Options- Disabled, 60°C / 140°F, 65°C / 149°F, 70°C / 159°F and 75°C / 167°F.

### ► VCore/3.3V/+5V/12V/+5VSB/Voltage Battery:

Detect the system's voltage status automatically.

### ► SYS/CPU Temperature:

Shows the current CPU temperature.

### ► CPU Fan Speed:

This field displays the current CPU FAN speed.

## ➤ Frequency/Voltage Control

Phoenix - AwardBIOS CMOS Setup Utility		
Frequency/Voltage Control		
CPU Clock Ratio	14 X	Item Help
Auto Detect PCI CLK	Enabled	
Spread Spectrum	-0.25%	
		Menu Level ➤
↑↓→←Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-safe defaults F7: Optimized Defaults		

Table 4-13. Frequency/Voltage Control

### ➤ CPU Clock Ratio:

By default, the CPU Clock Ratio, is set to 14X.

### ➤ Auto Detect PCI CLK:

When "Enabled", this item will auto detect if the PCI slot has any devices and will send the clock signal to the PCI devices. When disabled, it will send the clock signal to the PCI slot.

Options- Enabled, Disabled.

### ➤ Spread Spectrum Modulated:

This item allows you to enable or disable the Spread Spectrum Modulated.

Options- Disabled, -0.25%, -0.50% and -0.75%.

## ► *Load Optimized Defaults*

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Pressing 'Y' loads the default values which are the factory settings for optimal-performance system operation.

## ► *Supervisor/User Password Setting*

You can set either the supervisor or the user password, or both. The differences between them are:

**Supervisor:** is allowed to enter Setup and change the options.

**User:** is allowed to enter Setup but not to change the options.

When you select either function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the new password, up to eight characters in length, and press <Enter>. The new password will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the change.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that password protection will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration. Additionally, when you have enabled a password, you can also require the BIOS to request the password every time your system is rebooted. This would prevent unauthorized use of your computer.

You can determine when the password is requested in the BIOS Features Setup Menu and its Security option (see above). If the Security option is set to "System", a password will be required both at boot and on entry into Setup. If set to "Setup", a password is required only when trying to enter Setup.

## ▶ **Exit Selection**

### ▶ **Save & Exit Setup**

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections you made in CMOS - a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values, the system is restarted.

### ▶ **Exit Without Saving**

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

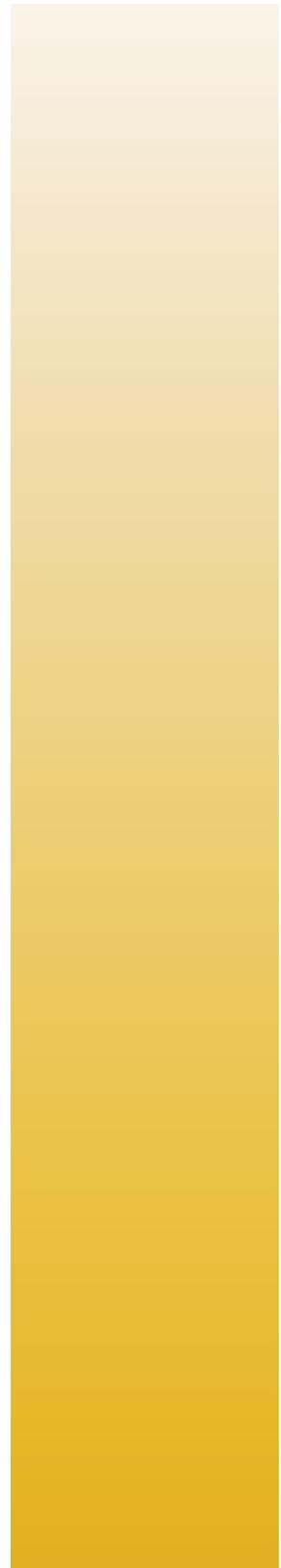
This allows you to exit Setup without storing any changes in CMOS. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

## Chapter 5

# ▶ Driver Installation

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## ➤ *Overview*

This chapter provides information on installing the necessary drivers for the PCI-755. The following sections describe driver installation procedures for Windows operating systems. Download the drivers from the Kontron website and install them in the order they are listed below. For other operating systems, please contact Kontron.

## ➤ *Chipset Driver Installation*

To install the Intel® 915G chipset drivers, run the file "setup.exe" in the **Intel® Chipset Software Installation Utility**, Version: 6.3.0.1007, located in the folder **ICH Driver**. When asked to reboot the system, click "yes".

## ➤ *Graphics Driver Installation*

After installing the chipset driver, install the graphics driver by running the file "setup.exe" in **Intel Graphics\_V14.18**. After installation is complete, reboot the system.

## ➤ *LAN Driver Installation*

Install the **Marvell LAN Driver** (version 7.24.1.3) by using the Windows "Device Manager". Select the one of Ethernet controllers marked with an exclamation mark ("!") under "Other Devices" and install the appropriate driver for your operating system. Repeat for the remaining Ethernet controller.

## ➤ *ISA Bridge Driver Installation*

To install the ISA Bridge driver, open the Windows "Device Manager" and look for the "Other PCI Bridge Device" marked with an exclamation mark ("!"). Install the driver from the **IT8888G** folder.

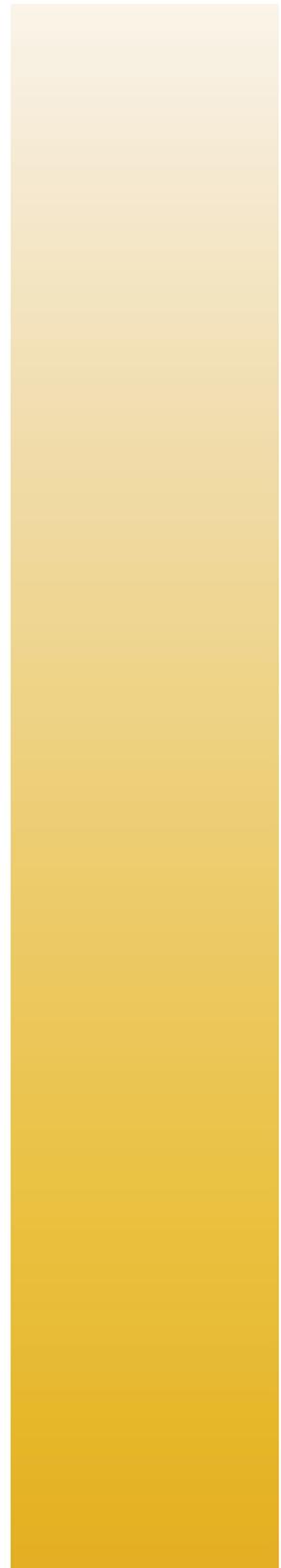
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## Appendix A

# ▶ System Resources

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## ► Interrupt Request (IRQ) Lines

IRQ #	Used For	Comment
0	Timer0	
1	Keyboard Controller	
2	Cascade	
3	COM2	Note (1)
4	COM1	Note (1)
5	Sound	Note (1)
6	Floppy Disk Controller	Note (1)
7	LPT1	Note (1)
8	Real Time Clock	
9	free	
10	free	
11	free	
12	PS/2 Mouse	Note (1)
13	Floating Point Unit (FPU/NPU/Math coprocessor)	
14	Primary IDE Channel	Note (1)
15	SATA channel	Note (1)

Table A-1. IRQ Assignments

**Note:** If the "Used For" device is disabled in setup, the corresponding interrupt is available for other devices.

## ► DMA Channels

DMA #	Used for	Comment
0	Memory Refresh	
1	Sound	Note (1)
2	Floppy disk controller	Note (1)
3	free	Unavailable if LPT used in ECP mode.
4	Cascade	
5	Sound	Note (1)
6	free	
7	free	

Table A-2. DMA Assignments

**Note:** If the "Used For" device is disabled in setup, the corresponding interrupt is available for other devices.

## ➤ Memory Mapping

Upper Memory	Used for	Available
C0000h - CBFFFh	VGA BIOS	No
CC000h - CFFFFh	OHCI Open Registers	Yes
CC000h - CFFFFh CD000h - CDFFFh	LAN Option ROM	Yes
E0000h - FFFFFh	System BIOS	No

Table A-3. Memory Mapping

**Note:** If PXE LAN Boot is enabled, USB functionality must be disabled.

## ➤ I/O Address Map

I/O Address	Used for	Comment
00h – 0Fh C0h – DFh	8237DMA Controller	
20h, 21h	8259A PIC	
2Eh, 2Fh	SuperIO Access Port	
A0h, A1h	8259A PIC	
40h – 43h (XT/AT) 44h – 47h (PS/2)	8254PIT	
60h – 64h	KeyBoard Controller	
90h – 96h	PS/2 P OS	
F0h – FFh	Math Co-Processor, X87 Unit	
170h – 177h	Secondary IDE	
1F0h – 1F7h	Primary IDE	
200h – 22Fh	GAME I/O	
220h – 22Fh	Sound Blaster / AD Lib	
279h, A79h	Plug and Play Configuration Register	
295h, 296h	HW Monitor Access Port	
2F8h – 2FFh	COM2	
378h – 37Ah	Parallel Printer Port	
3B0h – 3BFh	MDA / MGA	
3C0h – 3CFh	EGA / VGA	
3D4h – 3D9h	CGA/CRT Register, Controller and Palette Register	
3F0h – 3F7h	Floppy Diskette	
3F6h, 3F7h	Enhanced IDE	
3F8h – 3FFh	COM1	
0CF8h	PCI Configuration Register/address	
0CFCh	PCI Configuration Register/data	

Table A-4. I/O Address Map

## ► PCI Devices

PCI Device	PCI Interrupt	Comment
Ethernet	INTE	Uses an internal REQ/GNT pair
Slot 1	INTF	AD31
Slot 2	INTG	AD30
Slot 3	INTH	AD29
Slot 4	INTE	AD28
P2I Bridge	-	AD22

Table A-5. PCI Devices

## ► Inter-IC Bus (I<sup>2</sup>C)

I2C Address	Used For	Comment
A0h	DDR2-RAM DIMM Socket 0 Address	
A2h	DDR2-RAM DIMM Socket 1 Address	

Table A-6. Inter-IC Bus (I<sup>2</sup>C)

## ➤ Hardware Monitor Parameters

IT8712F/IX Pin Name	Voltage/Temperature	Function/Comments
CPUVCORE	VCORE	LGA 775 processor core voltage
VIN1	DDR 1.8V	+/- 5%
VIN2	+3.3V	+/- 5%
VIN3	+5V	+/- 5%
VIN4	+12V	+/- 5%
VIN5	Chip core 1.5V	+/- 5%
VIN6	DDR Vtt 0.9V	+/- 5%
VIN7	5VSB	+/- 5%
SYS_TEMP	System_Temperature	
PWM_TEMP	PWM_Temperature	
CPU_TEMP	CPU_Temperature	
PRDCHOT#		CPU over temperature shutdown output
CPUFANIN	CPU Fan	Fan Tachometer input
CPUFANOUT	CPU Fan	DC/PWM Fan output control
BEEP		Beep function for hardware monitor

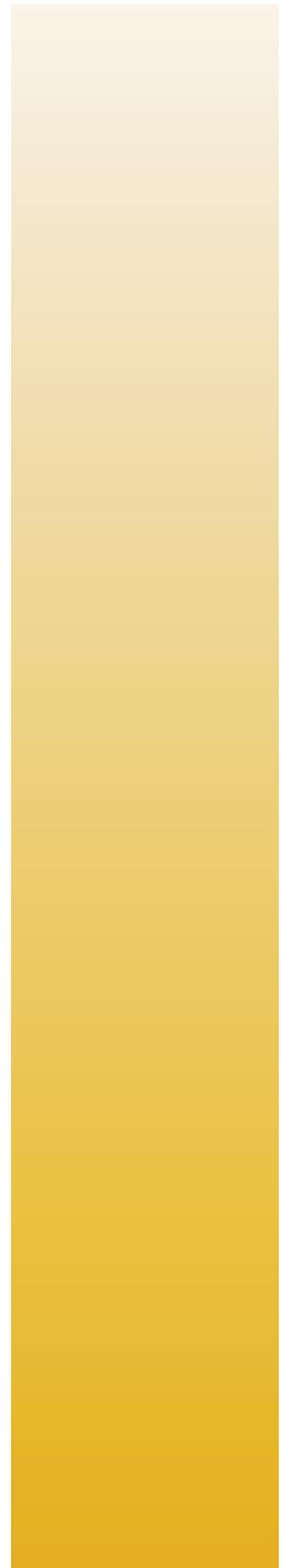
Table A-7. Hardware Monitor Parameters

## Appendix B

# ▶ **AT Power Mode**

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## ▶ ***AT Power Mode using ATX Power***

In order to simulate AT power behaviour using an ATX power supply, +5VSB (standby) must be connected to Pin 9 of the Front Panel Connector (J1). See Figure 2-2. Jumper and Connector Locations (p. 2-4) for the connector location and Table 2-10. Front Panel Connector (p. 2-8) for the pin definition.

