



**Tempest i5000PW**

**/ / /**

**S5382**

**Revision 1.00**

## **Copyright**

Copyright © TYAN Computer Corporation, 2006. All rights reserved. No part of this manual may be reproduced or translated without prior written consent from TYAN Computer Corp.

## **Trademark**

All registered and unregistered trademarks and company names contained in this manual are property of their respective owners including, but not limited to the following.

TYAN, Tempest i5000PW are trademarks of TYAN Computer Corporation.  
Intel, Blackford, and combinations thereof are trademarks of Intel Corporation.  
PhoenixBIOS are trademarks of Phoenix Technologies.  
Microsoft, Windows are trademarks of Microsoft Corporation.  
SuSE, is a trademark of SuSE AG.  
IBM, PC, AT, and PS/2 are trademarks of IBM Corporation.

## **Notice**

Information contained in this document is furnished by TYAN Computer Corporation and has been reviewed for accuracy and reliability prior to printing. TYAN assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TYAN products including liability or warranties relating to fitness for a particular purpose or merchantability. TYAN retains the right to make changes to product descriptions and/or specifications at any time, without notice. In no event will TYAN be held liable for any direct or indirect, incidental or consequential damage, loss of use, loss of data or other malady resulting from errors or inaccuracies of information contained in this document.

## Table of Contents

Before you begin...	4
Check the box contents!	
<b>Chapter 1: Introduction</b>	6
1.00 Congratulations.....	6
1.01 Hardware Specifications.....	6
1.02 Software Specifications.....	8
<b>Chapter 2: Board Installation</b>	
2.00 Board Image.....	10
2.01 Block Diagram.....	11
2.02 Board Parts, Jumpers and Connectors.....	12
2.03 Jumper Settings.....	13
2.04 Audio Front Panel (J15).....	14
2.05 SMDC CON25X2_M3291 (J79).....	15
2.06 IPMB Pin Header (J80).....	15
2.07 COM PORT Pin Header (J88).....	16
2.08 IEEE 1394a Pin Header (J91 J96).....	16
2.09 Front Panel (JP16).....	17
2.10 USB Header (5Pin x 1) (P25).....	17
2.11 USB Header (5Pin x 2) (P93).....	18
2.12 FAN Connectors (4Pin x 1) (P12 P13 P92 P8 P9).....	18
2.13 CD-IN (4Pin x 1) (P94).....	19
2.14 AUX-IN (4Pin x 1) (P95).....	19
2.15 Intel High Definition Audio Digital Header (P96).....	20
2.16 Clear CMOS Jumper (E50).....	20
2.17 LAN0/LAN1 DISABLE (JP7 JP8).....	21
2.18 Integrated VGA DISABLE (JP24).....	21
2.19 Onboard Buzzer DISABLE (JP25).....	22
2.20 LAN0 & LAN1 LED HDR (JP31, JP32).....	22
2.21 LPT Pin Header (13Pin x 2) (LPT1).....	23
2.22 Tips on Installing Motherboard in Chassis.....	24
2.23 Installing the Processor(s).....	26
2.24 Heatsink Installation Procedures.....	28
2.25 Installing the Memory.....	29
2.26 Memory Configuration.....	30
2.27 Memory Installation Procedures.....	31
2.28 Installing the Memory Riser Cards.....	32
2.29 Attaching Drive Cables.....	34
2.30 Installing Add-in Cards.....	37
2.31 Connecting External Devices.....	38
2.32 Installing the Power Supply.....	39
2.33 Finishing up.....	40
<b>Chapter 3: BIOS Setup</b>	
3.1 About the BIOS.....	41
3.1.1 Setup Basics.....	41
3.1.2 Getting Help.....	41
3.1.3 In Case of Problems.....	42
3.1.4 Setup Variations.....	42
3.2 BIOS Main Menu.....	43
3.2.1 IDE Primary/Master/Slave Setup.....	45
3.2.2 Memory Cache.....	47
3.2.3 Boot Features.....	49
3.3 BIOS Advanced Menu.....	51
3.3.1 Advanced Chipset Control.....	53
3.3.1.1 ICH USB Control Sub-Menu.....	55
3.3.1.2 LAN Control Sub-Menu.....	56

3.3.2	Advanced Processor Options.....	57
3.3.3	I/O Device Configuration.....	59
3.3.4	DMI Event Logging.....	61
3.3.5	Hardware Monitor.....	62
3.3.5.1	Voltage Monitoring .....	63
3.3.6	IPMI .....	64
3.3.7	Console Redirection.....	66
3.4	Power Menu.....	68
3.5	Boot Menu.....	69
3.6	Exit Menu.....	70
<b>Chapter 4: Diagnostics</b>		
4.0	Beep Codes.....	71
4.1	Flash Utility.....	71
<b>Glossary</b>		72

## Before you begin...

### Check the box contents!

The retail motherboard package should contain the following:



1 x Tempest i5000PW motherboard



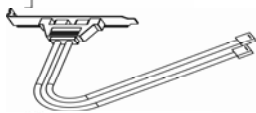
1 x 34-pin floppy drive cable



1 x Ultra-ATA-HD IDE cable



1 x Cable set: 9-pin Serial and 25-pin Parallel



1 x 1394 cable



1 x 2x5 pin USB cable



2 x Standard SAS cable



4 x SATA cable



2 x SATA Power Adapter



1 x I/O shielding



2 x CPU Heatsink CEK



1 x TYAN Driver CD



1 x Tempest i5000PW User's Manual



1 x Tempest i5000PW Quick Reference Guide



2 x M5382 (Memory riser card)



2 x Memory Riser Card Bracket  
(with 4 Press Brackets and 4 screws)



2 x Bracket Holder



1 x Backplate



10 x Screws



4 x Hand Screws



4 x Screw Nuts

If any of these items are missing, please contact your vendor/dealer for replacement before continuing with the installation process.

# Chapter 1: Introduction

## 1.00 – Congratulations!

You are now the owner of one of the most powerful Intel processor solutions, the Tempest i5000PW (S5382). The Tempest i5000PW (S5382) is a flexible Intel® platform for multiple applications, based on the Intel® “Blackford” MCH, ESB2 and PXH-V chipsets. Designed to support the Intel® Dempsey / Woodcrest / Clovertown processors and up to 64GB DDR2-533/667 FBDIMM. This motherboard features an E-ATX form factor, 8 USB ports, 2 IEEE1394 Headers, Dual Gigabit Ethernet port, an onboard ATI ES1000 VGA, 6 SATAII ports, and 8 SAS ports. The S5382 offers exceptional performance and versatility for all your server platform needs.

Remember to visit TYAN’s Website at <http://www.tyan.com>. There you can find information on all of TYAN’s products with FAQs, distributors list and BIOS setting explanations.

## 1.01 – Hardware Specifications

### Processor

- Dual LGA771 sockets
- Supports up to two Intel® “Dempsey / Woodcrest / Clovertown” processors
- 1333 / 1066 / 667 MT/s FSB
- VRD 11.0

### Chipset

- Intel® “Blackford “(5000P) MCH + ESB2 + PXH-V chipset
- Supports 667/1066/1333 MT/s FSB CPU’s
- Winbond 83627HF Super I/O chip
- Intel PXH-V supports one PCI-X bus

### Memory

- Sixteen (16) 240-pin DDR2 FBDIMM sockets via two memory riser cards (M5382)
- Eight (8) FBDIMMs on each memory riser card
- Maximum of 64GB DDR2-533/667

### Expansion Slots

- Two (2) PCI-X 64/100MHz slots from ESB2
- Two (2) PCI-X 64/133MHz slots from PXH-V
- One (1) PCI Express x16 slot (w/ x8 signals from MCH)
- One (1) PCI Express x 16 slot (w/ x8 signals from ESB2)
- One (1) PCI 32-bit/33MHz slot (from ESB2)
- Seven expansion slots in total

### Integrated Video Controller

- ATI® ES1000
- PCI Interface
- 32MB DDR memory

### Integrated LAN Controllers

- One Intel® “Gilgal” (82563EB) PHY
- Direct link to ESB2
- Two GbE LAN ports
- Two front panel LED pin headers

### Integrated FireWire (1394a) Controller

- TI® TSB43AB22 1394a controller
- Two internal IEEE1394a pin headers

### Integrated Audio Controller

- Azalia audio link
- RealTek ALC888 controller
- Stacked Mic-in / Line-in / Line-out audio jacks
- CD-in, Aux-in connectors

### Intelligent Platform Management Interface (Manufacturing Option)

- Baseboard Management Controller (BMC)
  - BMC from daughter card M3291(Optional)
- Tailored for IPMI 2.0 specification
- Supports remote Power on/off and reset support (IPMI-over-LAN)
- Server Management Daughter card via built-in 2x25 header

### **Integrated I/O**

- PS/2 mouse and keyboard connectors
- One 9-pin serial port
- One 15-pin VGA port
- Two stacked RJ-45 with two USB2.0 ports (side-by-side)
- One stacked Mic-in / Line-in / Line-out audio jacks
- CD-in, Aux-in connectors
- One IDE port
- One Floppy port
- One 25-pin parallel port (pin header)
- One 9-pin serial port (pin header)
- Two internal IEEE1394a pin headers
- Eight USB 2.0 ports (four at rear, three headers via cable, one internal vertical USB connector)

### **System Management**

- Analog Devices ADT7470 or Winbond W83793G Hardware Monitor
- CPU thermal & voltage monitor support
- 2-pin chassis intrusion header
- Multiple 4-pin fan monitoring headers
- PECI circuit for "Woodcrest" and the processor thermal monitoring
- Infineon SLB9635 Trusted Platform Module (TPM)

### **Integrated SATA 2.0 Controller**

- Six SATA2.0 ports from Intel ESB2
- Integrated Host RAID 0, 1, 5 and 10 support (Windows support)

### **Integrated SAS Controller**

- LSI® 1068E SAS controller with PCI-E x 4 interface
- Eight SAS/SATA connectors
- Host RAID 0, 1 and 1E (Mirroring Enhanced) support

### **BIOS**

- PhoenixBIOS® on 8Mbit Flash ROM
- Support APM 1.2, ACPI 1.0b
- Serial Console Redirect
- PXE via Ethernet
- USB device boot
- PnP, DMI 2.0, WfM 2.0 Power Management
- User-configurable H/W monitoring
- Auto-configuration of hard disk types
- Multiple boot options
- 48-bit LBA support

### **Form Factor**

- SSI / Extended ATX (12" x 13")
- EPS12V/SSI (24 + 8 + 8 pin) power connectors
- Stacked PS/2 keyboard and mouse connectors
- Serial (one) and VGA (one) connectors
- Two side-by-side RJ-45+2\*USB2.0 connectors with LEDs
- Stacked Mic-in/Line-in/Line-out audio jacks

### **Regulatory**

- FCC Class B (DoC)
- European Community CE (Declaration of Conformity)
- BSMI (Optional)

## **Software Specifications**

### **OS (Operating System) Support**

Windows 2003 Server Enterprise Edition SP1 (32bit)

Windows 2003 Server Enterprise Edition SP1 (EM64T)

Red Hat Enterprise Linux 4 Advanced Server Update 3 (32bit & EM64T)

Novell SuSE Linux Enterprise Server 10 (32bit & EM64T)

**LSI SAS RAID Driver support, please refer to below web site:**

<http://www.lsillogic.com/cm/LookupDownloads.do?role=1&geo=ALL&category=2059&family=-1#Driver>

**TYAN reserves the right to add support or discontinue support for any OS with or without notice.**



## Chapter 2: Board Installation

### Installation

You are now ready to install your motherboard. The mounting-hole pattern of the Tempest i5000PW (S5382) matches the E-ATX specification. Before continuing with installation, confirm that your chassis supports an E-ATX motherboard.

### How to install our products right.... the first time!

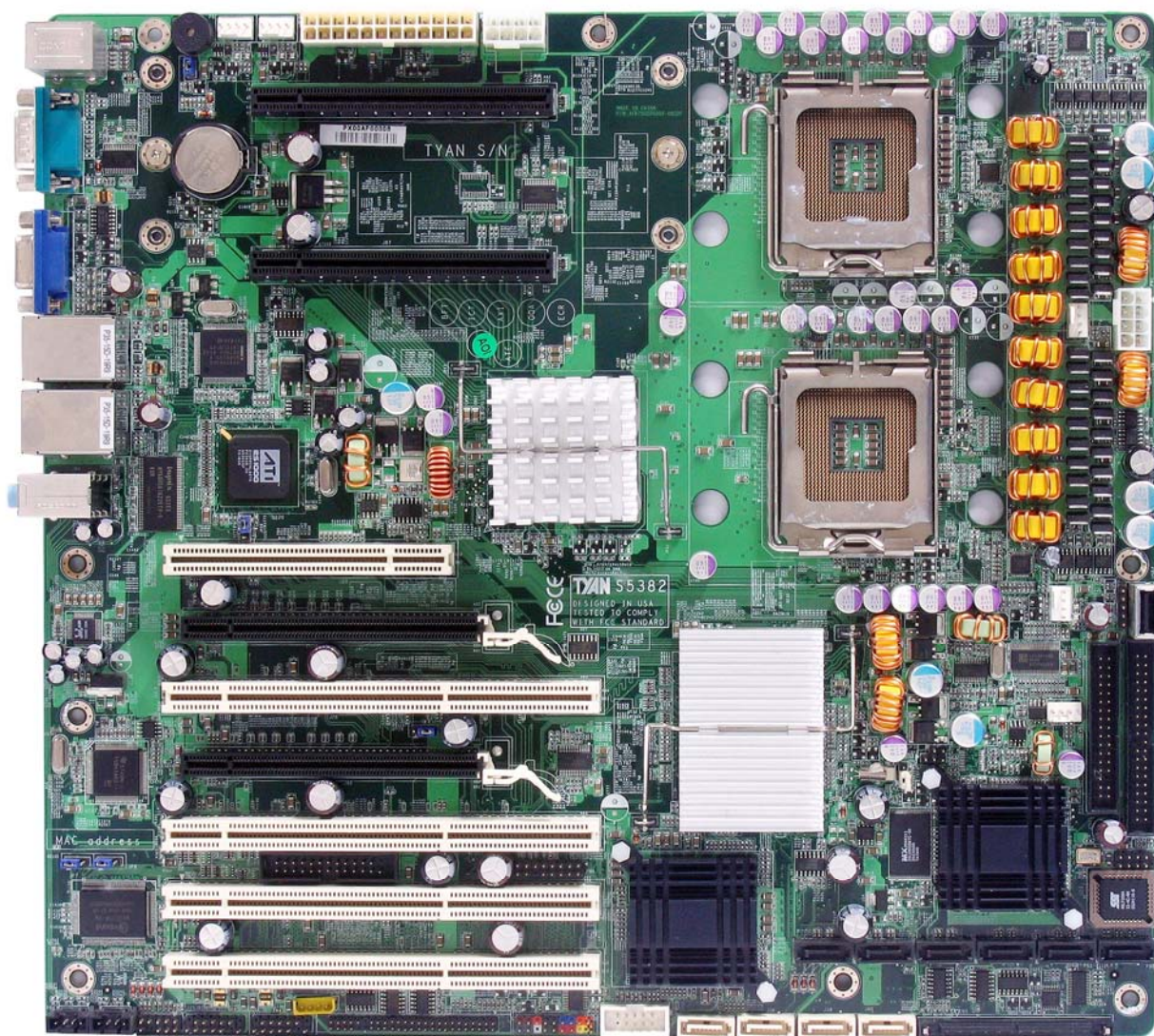
The first thing you should do is to read this user's manual because the important information contained will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

- (1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, Tyan recommends wearing a static safety wrist strap.
- (2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
- (3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
- (4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
- (5) Inspect the board for damage.

The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.

<b>NOTE</b>	<b>DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED</b>
-------------	---

## 2.00 – Board Image

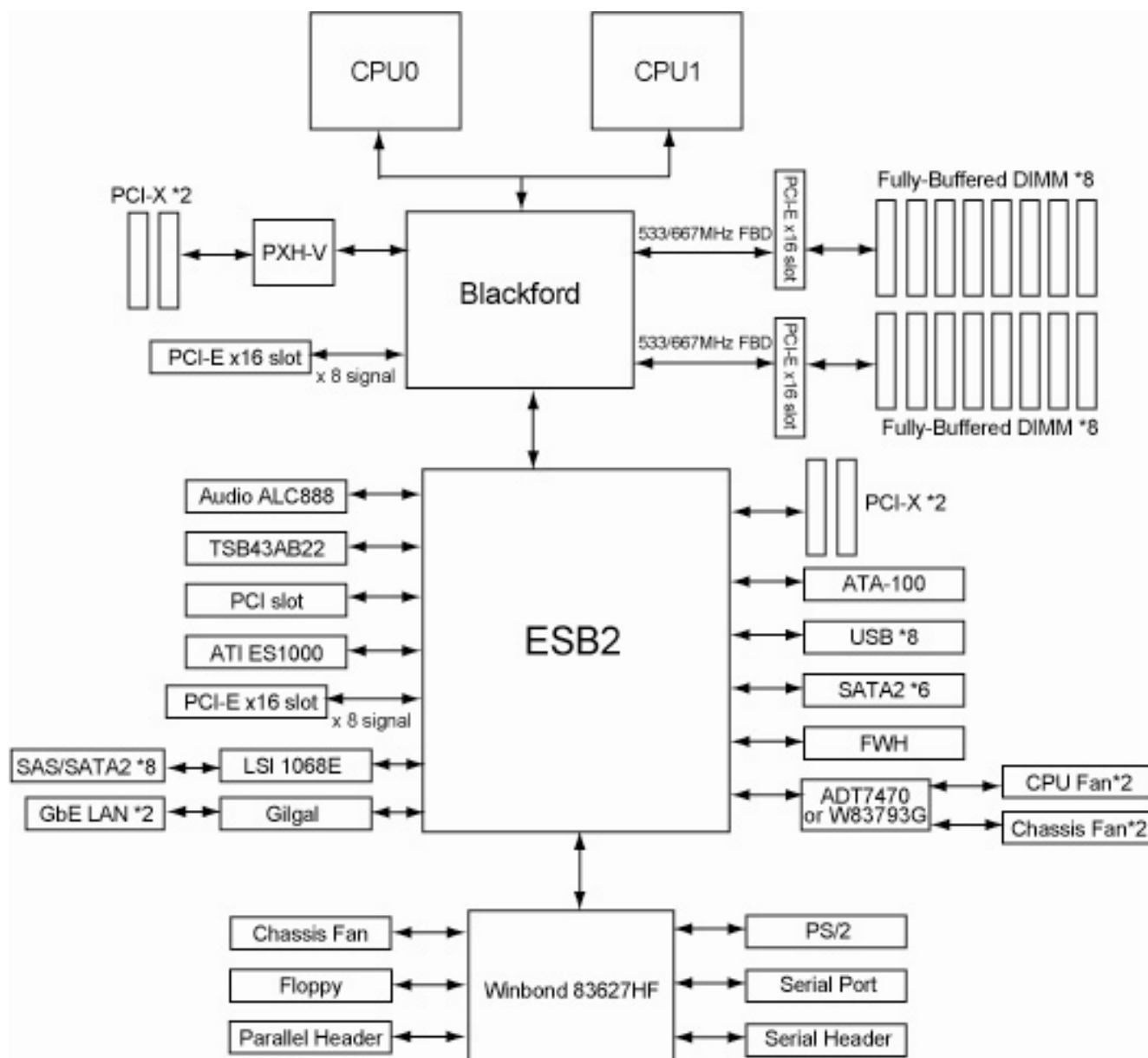


This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the picture above.

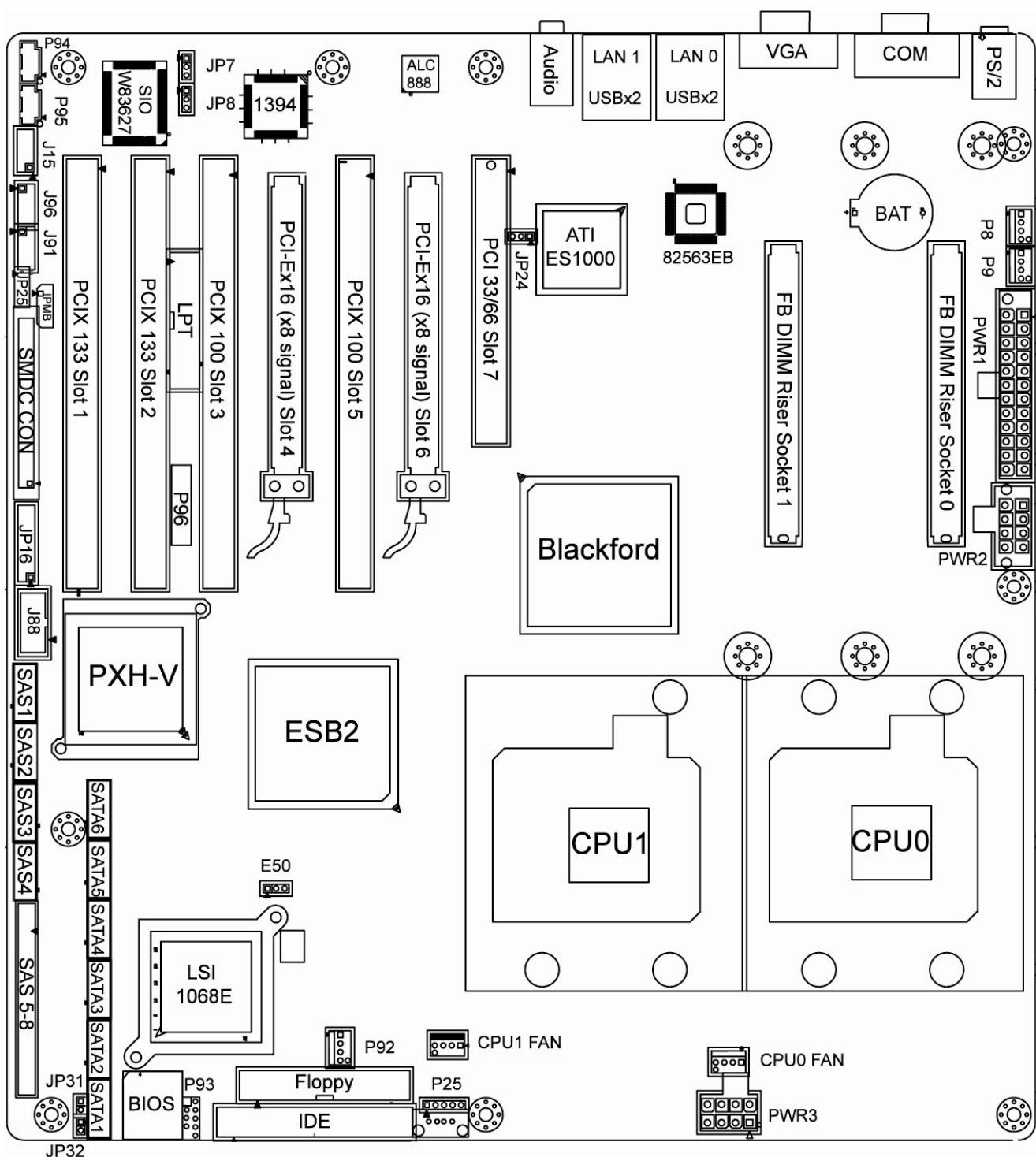
The following page includes details on the vital components of this motherboard.

## 2.01 – Block Diagram

Tempest i5000PW S5382 Block Diagram



## 2.02 – Board Parts, Jumpers and Connectors



This jumper diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the diagram above.

## 2.03 – Jumper Settings

Jumper	Function	Settings
<b>J15</b>	Audio Front Panel Header	See Section 2.04
<b>J79</b>	SMDC CON25 x 2_M3291	See Section 2.05
<b>J80</b>	IPMB Pin Header	See Section 2.06
<b>J88</b>	COM PORT Pin Header	See Section 2.07
<b>J91,J96</b>	IEEE 1394a Pin Header	See Section 2.08
<b>JP16</b>	Front Panel Header	See Section 2.09
<b>P25</b>	USB Header (5-Pin x 1)	See Section 2.10
<b>P93</b>	USB Header (5-Pin x 2)	See Section 2.11
<b>P12,P13,P92, P8,P9</b>	FAN Connectors (4-Pin x 1)	See Section 2.12
<b>P94</b>	CD-IN (4-Pin x 1)	See Section 2.13
<b>P95</b>	AUX-IN (4-Pin x 1)	See Section 2.14
<b>P96</b>	Intel High Definition Audio Digital Header	See Section 2.15
<b>E50</b>	Clear CMOS Jumper	See Section 2.16
<b>JP7,JP8</b>	LAN0 & LAN1 Enable/Disable Jumper	See Section 2.17
<b>JP24</b>	Integrated VGA Enable/Disable Jumper	See Section 2.18
<b>JP25</b>	Onboard Buzzer Enable/Disable Jumper	See Section 2.19
<b>JP31,JP32</b>	LAN0 & LAN1 LED Header	See Section 2.20
<b>LPT1</b>	LPT PIN Header (13-Pin x 2)	See Section 2.21

## Jumper Legend

	<b>OPEN - Jumper OFF</b>	<b>Without jumper cover</b>
	<b>CLOSED - Jumper ON</b>	<b>With jumper cover</b>

	<b>To indicate the location of pin-1</b>
	<b>To indicate the location of pin-1</b>

## 2.04 – Audio Front Panel Header (J15)

PIN_9						PIN_1
PIN_10						PIN_2

Signal Description	Pin #	Pin #	Signal Description
MIC2-L	1	2	GND
MIC2-R	3	4	PRESENT#
LINE2-R	5	6	MIC2-JD
SENSE	7	8	KEY
LINE2-L	9	10	LINE2-JD



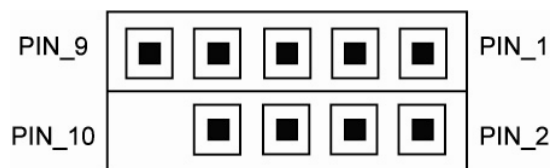
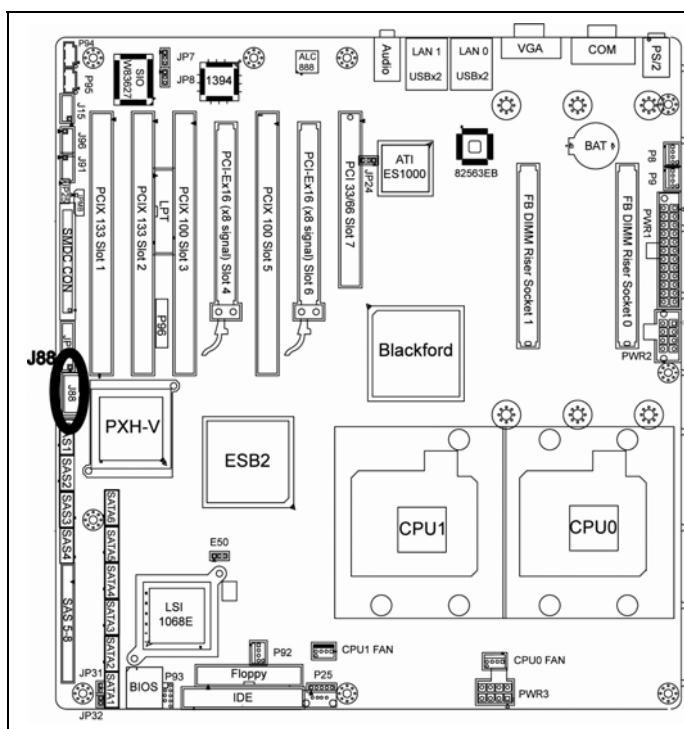
## 2.05 – SMDC CON25X2\_M3291 (J79)

<p>Pinout for J29 (CON25X2_M3291):</p> <ul style="list-style-type: none"> <li>Pin 1: LAD0</li> <li>Pin 2: LAD1</li> <li>Pin 3: LAD2</li> <li>Pin 4: LAD3</li> <li>Pin 5: GND1</li> <li>Pin 6: LFRAME#</li> <li>Pin 7: GND2</li> <li>Pin 8: PCI_CLK</li> <li>Pin 9: GND3</li> <li>Pin 10: PCI_RST#</li> <li>Pin 11: GND4</li> <li>Pin 12: I2C1CLK</li> <li>Pin 13: I2C1DA</li> <li>Pin 14: GND5</li> <li>Pin 15: I2C4CLK</li> <li>Pin 16: I2C4DA</li> <li>Pin 17: GND6</li> <li>Pin 18: I2C3CLK</li> <li>Pin 19: I2C3DA</li> <li>Pin 20: 5VSB1</li> <li>Pin 21: I2C2CLK</li> <li>Pin 22: I2C2DA</li> <li>Pin 23: 5VSB2</li> <li>Pin 24: GND7</li> <li>Pin 25: PWRBTN#</li> <li>Pin 26: PCIPME#</li> <li>Pin 27: RSTBTN#</li> <li>Pin 28: COM_TXD</li> <li>Pin 29: OEMBTN#</li> <li>Pin 30: COM_RXD</li> <li>Pin 31: EXTSMI#</li> <li>Pin 32: SOL_CTRL</li> <li>Pin 33: CPUNMI#</li> <li>Pin 34: GND8</li> <li>Pin 35: SIO_RXD</li> <li>Pin 36: COM_RTS#</li> <li>Pin 37: SIO_TXD</li> <li>Pin 38: COM_CTS#</li> <li>Pin 39: SYSPWRGD</li> <li>Pin 40: (blank)</li> <li>Pin 41: SIO_RTS#</li> <li>Pin 42: (blank)</li> <li>Pin 43: SIO_CTS#</li> <li>Pin 44: OEMGPIO</li> <li>Pin 45: (blank)</li> <li>Pin 46: SERIRQ</li> <li>Pin 47: BMC_RST#</li> <li>Pin 48: GND12</li> <li>Pin 49: SMALERTA#</li> <li>Pin 50: BMC_DET#</li> </ul>	<p>For connection with the Tyan Server Management Daughter Card (SMDC). The SMDC connector is only compatible with the Tyan M3291 (SMDC).</p>
--	---

## 2.06 – IPMB Pin Header (J80) (Optional)

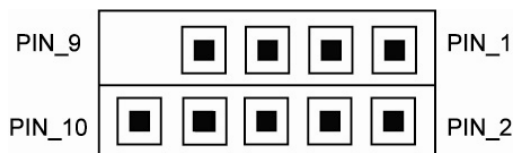
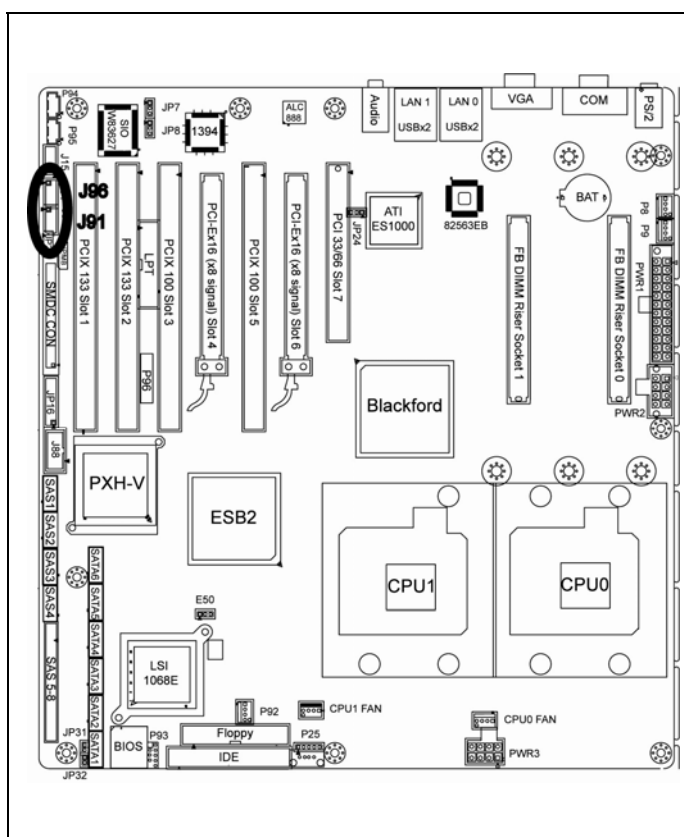
		<p><b>Pin_4</b> : NC</p> <p><b>Pin_3</b> : IPMB CLK</p> <p><b>Pin_2</b> : GND</p> <p><b>Pin_1</b> : IPMB DATA</p>
--	--	---

## 2.07 – COM PORT Pin Header (J88)



Signal Description	Pin #	Pin #	Signal Description
DCD	1	2	DSR
RXD	3	4	RTS
TXD	5	6	CTS
DTR	7	8	RI
GND	9	10	KEY

## 2.08 – IEEE 1394a Pin Header (J91, J96)

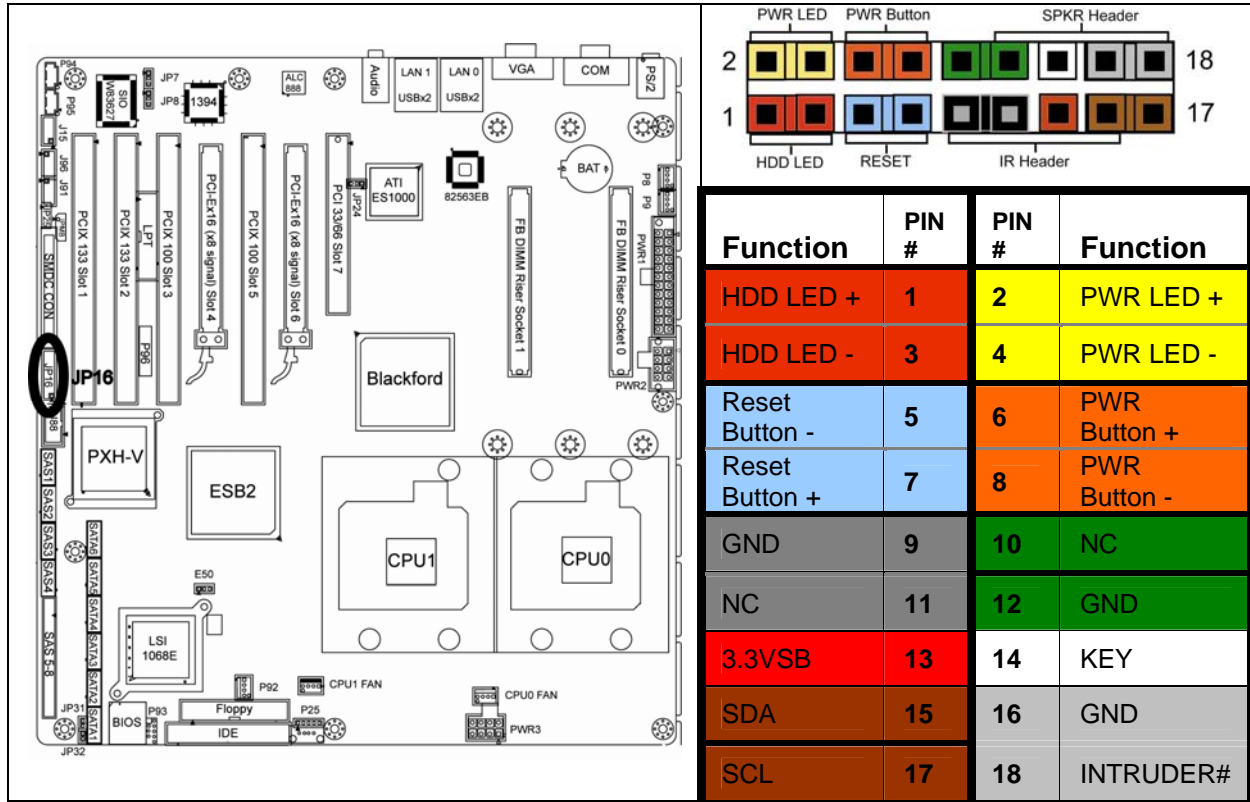


**Note: The IEEE 1394a Pin Header is colored black in order to distinguish from the USB Header (5-Pin x 2)**

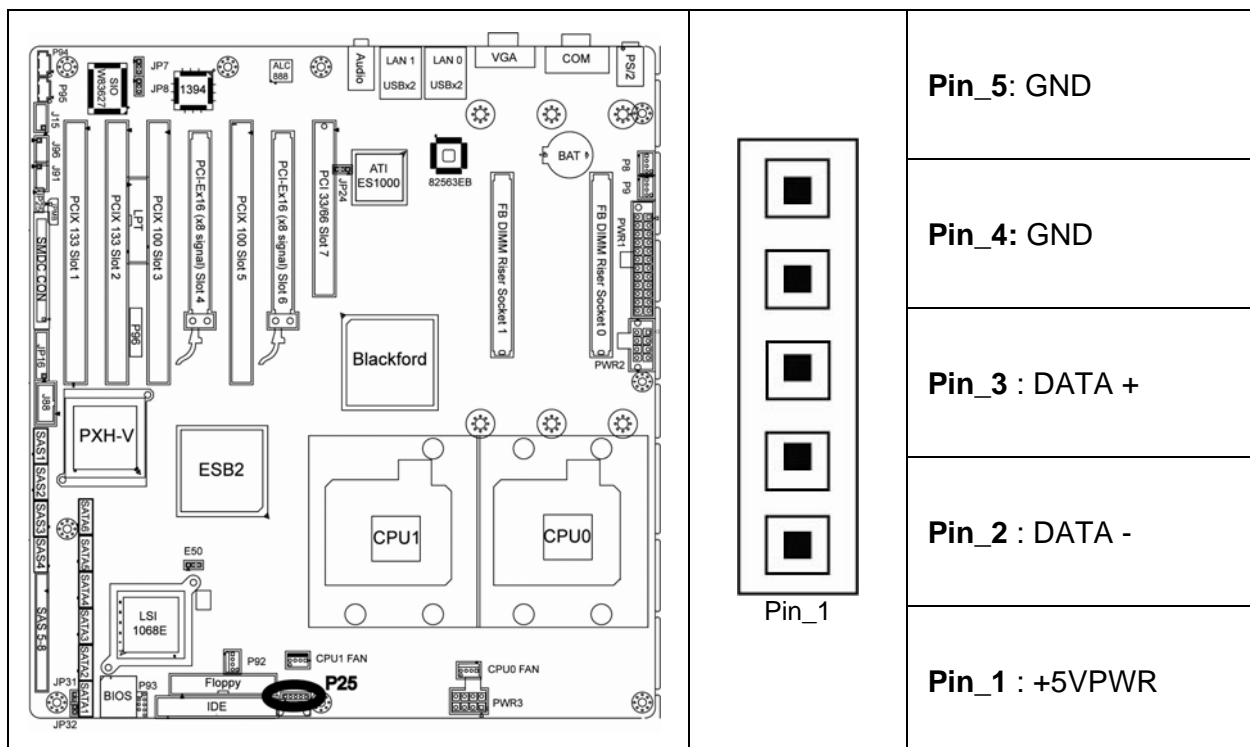
Signal Description	Pin #	Pin #	Signal Description
TPA -	1	2	TPA +
GND	3	4	GND
TPB +	5	6	TPB -
+12V	7	8	+12V
KEY	9	10	GND



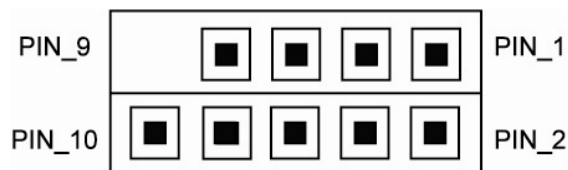
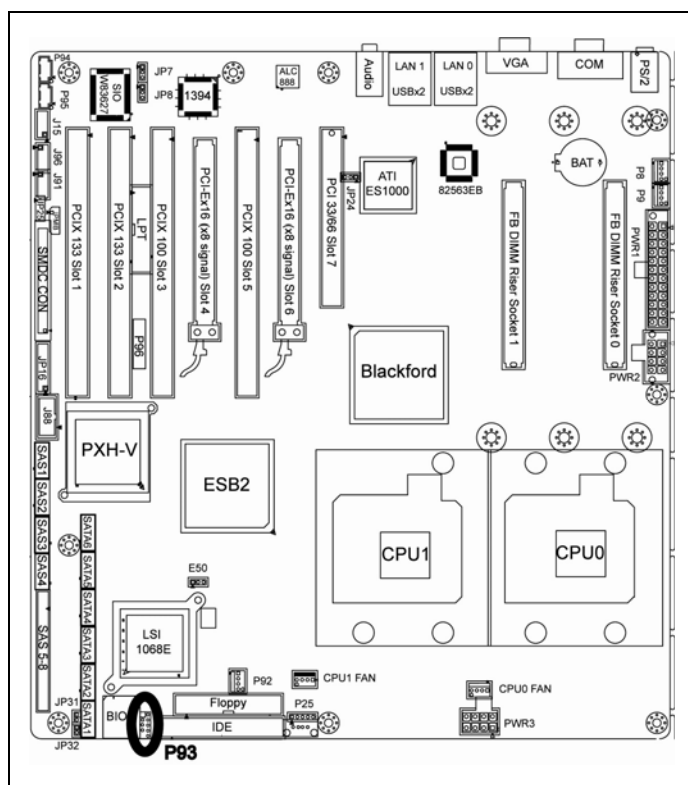
## 2.09 – Front Panel Header (JP16)



## 2.10 – USB Header (5-Pin x 1) (P25)



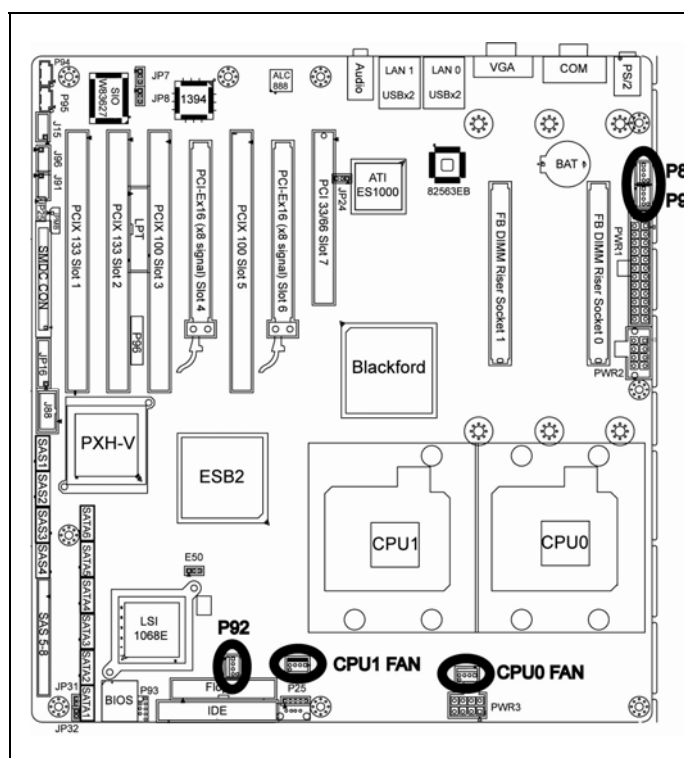
## 2.11 – USB Header (5-Pin x 2) (P93)



**Note:** The USB Header is colored blue to distinguish from the IEEE1394a Pin Header.

Signal Description	Pin #	Pin #	Signal Description
+5V PWR	1	2	+5V PWR
DATA1 -	3	4	DATA2 -
DATA1+	5	6	DATA2 +
GND	7	8	GND
KEY	9	10	GND

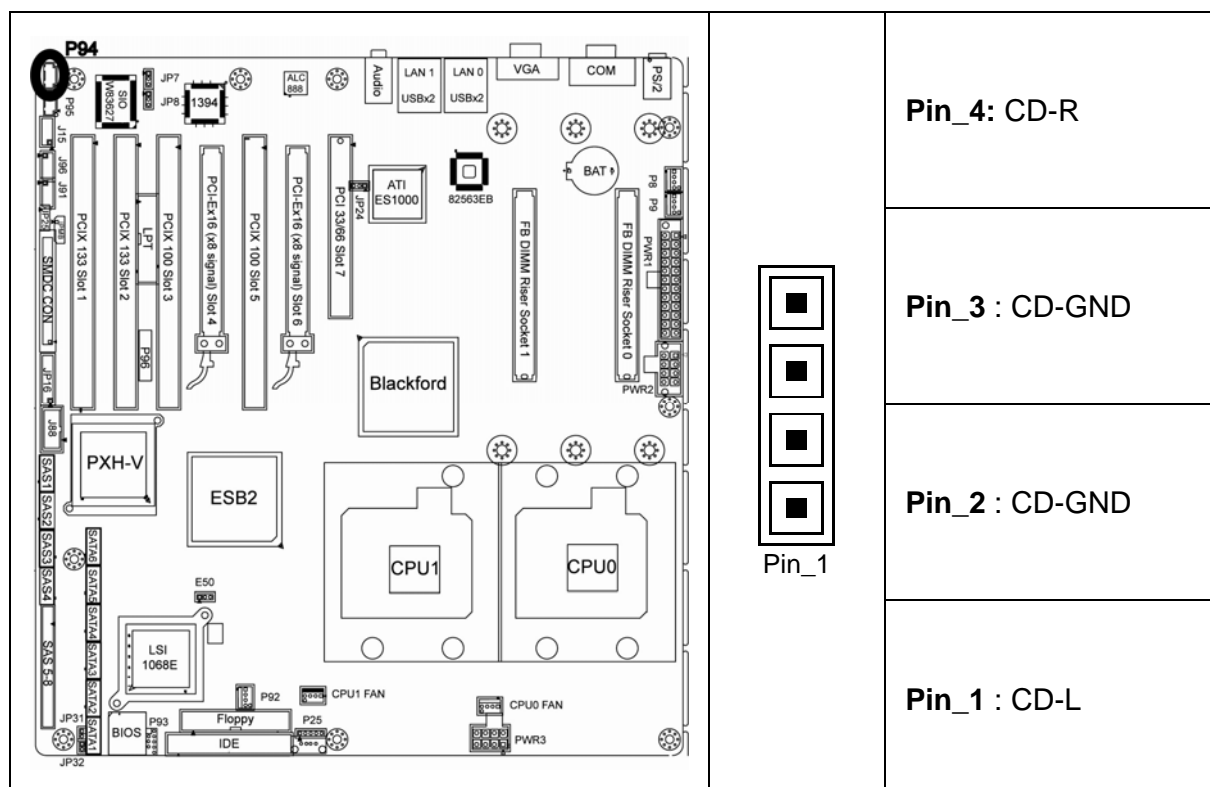
## 2. 12 – FAN Connectors (4-Pin x 1) (P12, P13, P92, P8, P9)



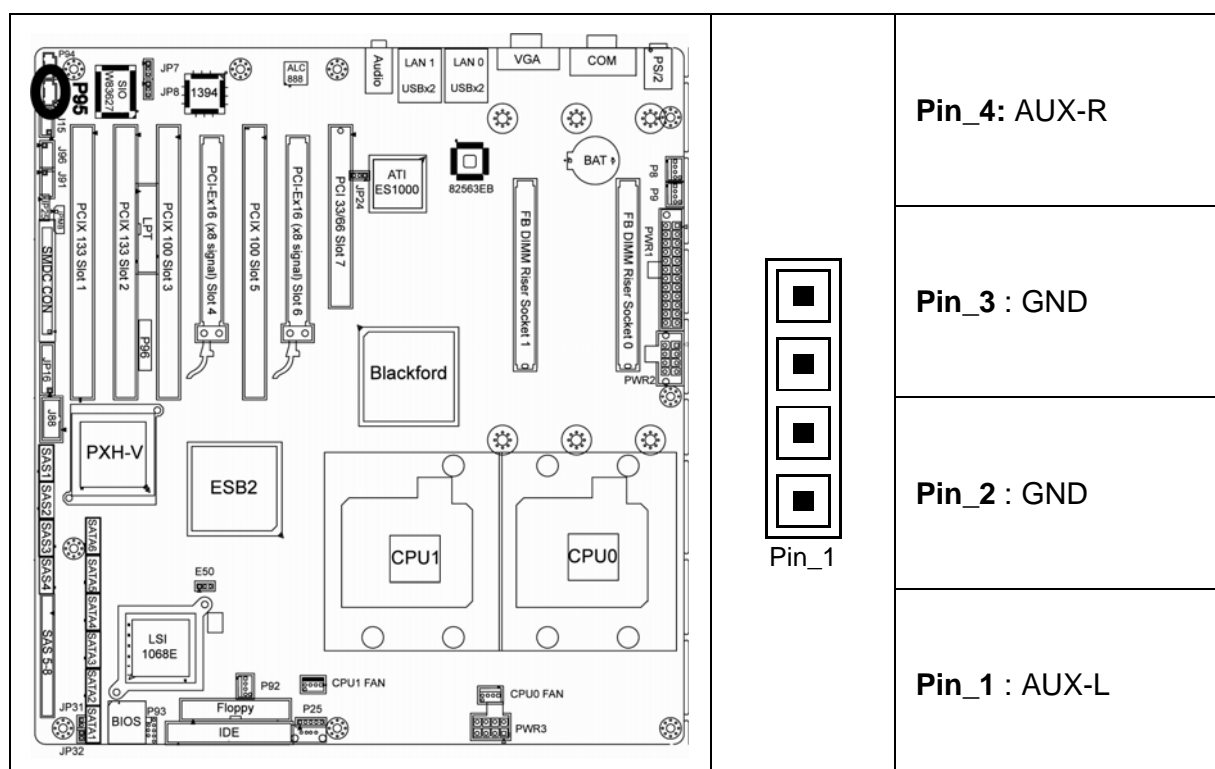
Pin_1:	Pin_2:	Pin_3:	Pin_4:
GND	+ 12V	TACH	PWM

**Note:** P8, P9 can only support 3-PIN Fan PWM

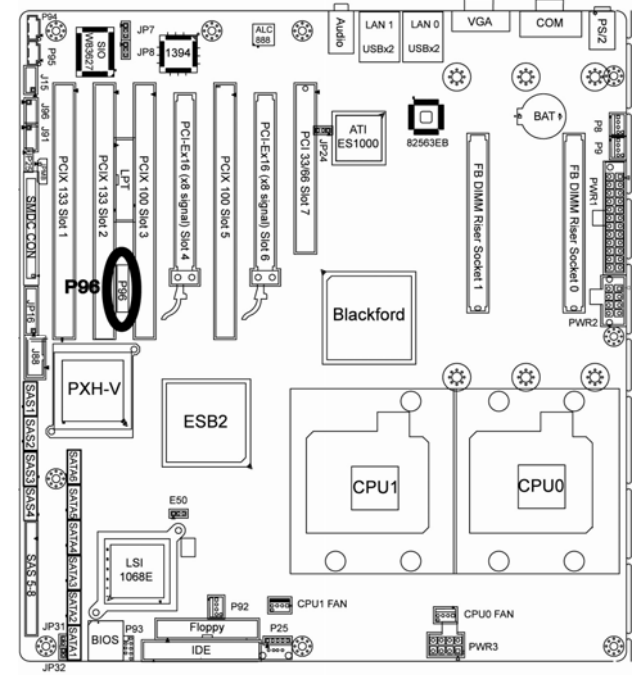
## 2.13 – CD-IN (4-Pin x 1) (P94)

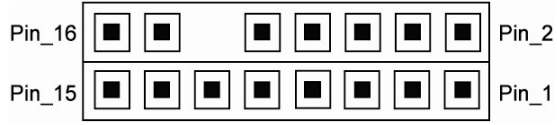


## 2.14 – AUX-IN (4-Pin x 1) (P95)



## 2.15– Intel High Definition Audio Digital Header (P96)

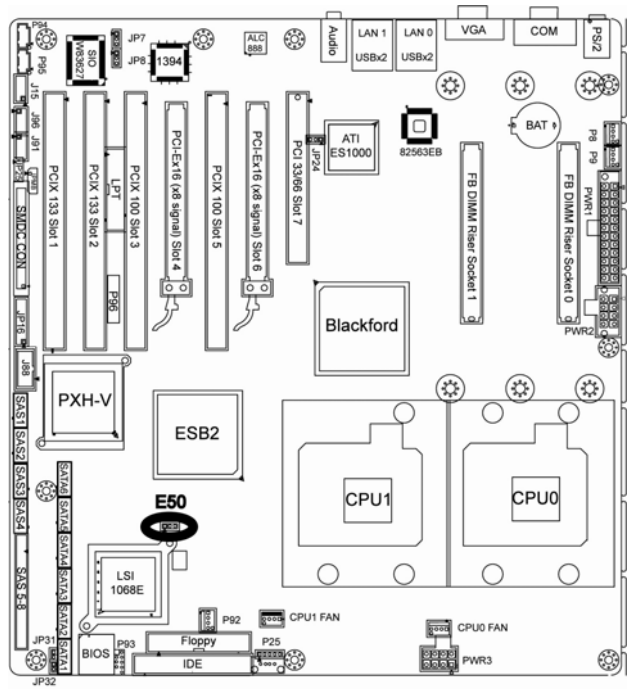


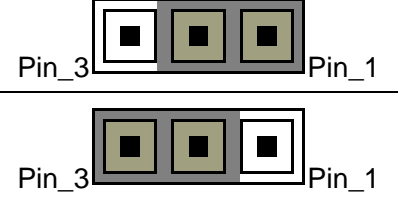


Pin\_16      Pin\_2  
Pin\_15      Pin\_1

Signal	PIN #	PIN #	Signal
BIT_CLK	1	2	GND
RST#	3	4	+3.3V
SYNC	5	6	GND
SDOUT	7	8	+3.3V
SDIN1	9	10	+12V
PRESEN#	11	12	KEY
SDIN0	13	14	3.3VSB
SDIN2	15	16	GND

## 2.16– Clear CMOS Jumper (E50)





Pin\_3      Pin\_1

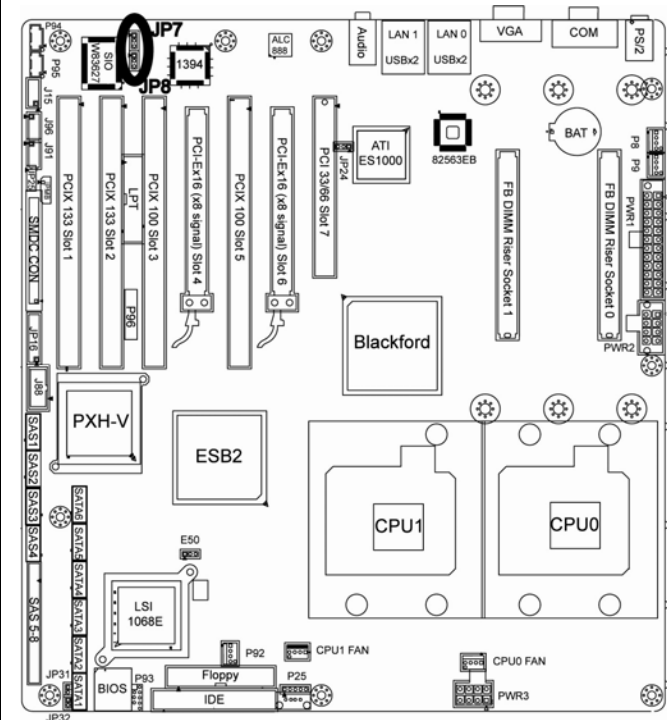
Pin_3      Pin_1	Normal
Pin_3      Pin_1	Clear

You can reset the CMOS settings by using this jumper if you have forgotten your system/setup password or need to clear system BIOS setting.

- Power off system and **disconnect both power connectors from the motherboard**
- Use jumper cap to close Pin\_2 and Pin\_3 for several seconds to Clear CMOS
- Put jumper cap back to Pin\_1 and Pin\_2 (default setting)


Reconnect power & power on system

## 2.17 – LAN0 & LAN1 Enable / Disable Jumper (JP7, JP8)



PIN1	PIN2	PIN3
NC	LAN1_DISABLE# LAN1_DISABLE#	GND


Pin\_3



Pin\_1

Close  
Pin1 and Pin2:  
**Normal**

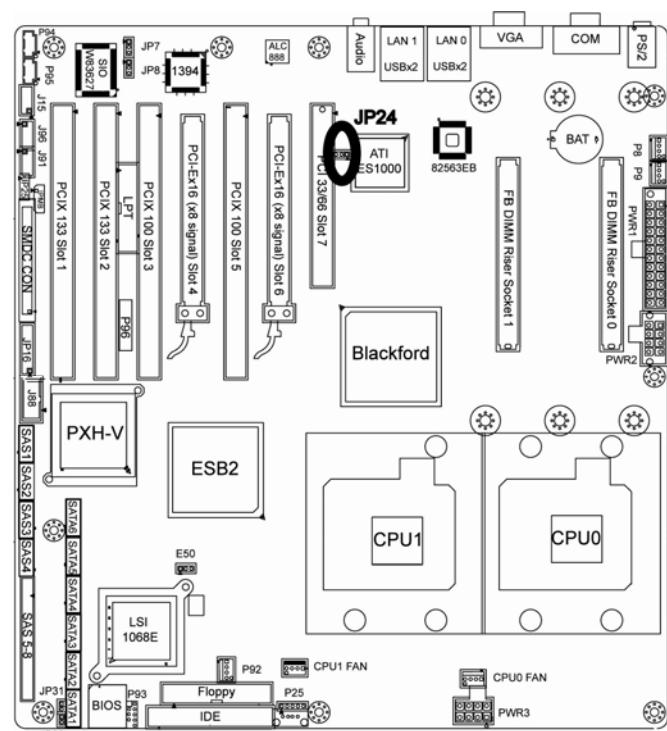
Pin\_3




Pin\_1

Close  
Pin2 and Pin3:  
**LAN0 Disable;  
LAN1 Disable;**

## 2.18 – Integrated VGA Enable / Disable Jumper (JP24)




Pin\_3



Pin\_1

Close  
Pin1 and Pin2:  
**Normal**

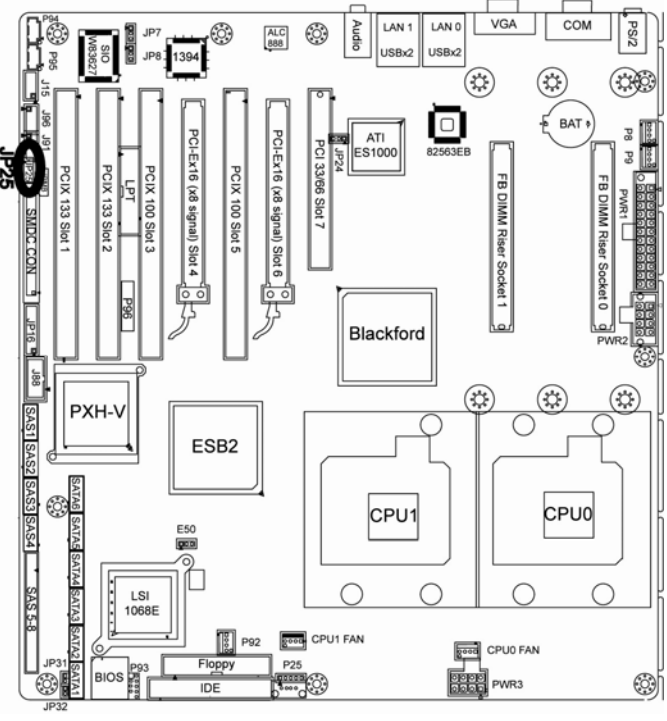
Pin\_3

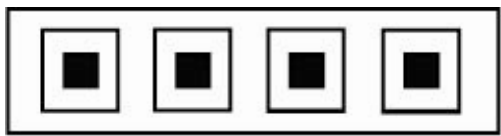


Pin\_1

Close  
Pin2 and Pin3:  
**Disable**

## 2.19 – Onboard Buzzer Enable / Disable Jumper (JP25)

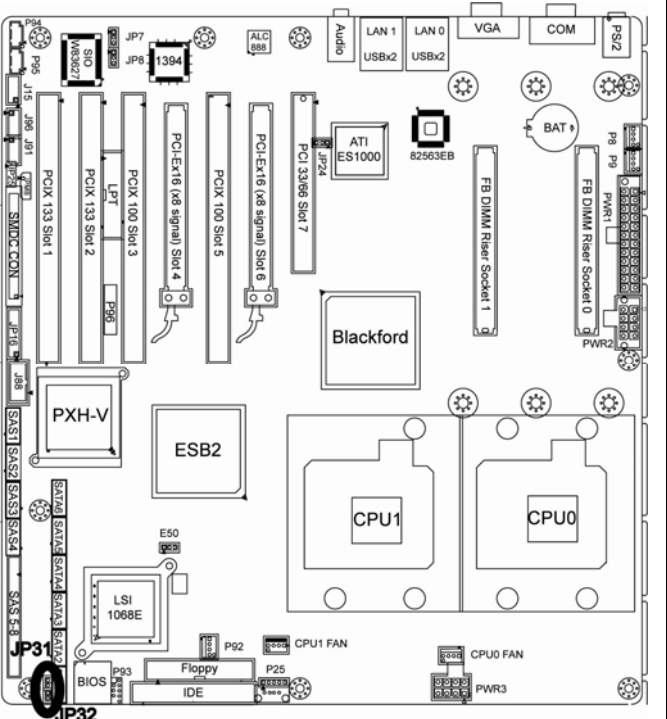


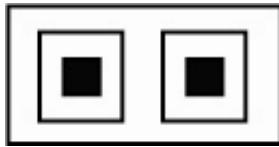


**PIN3-PIN4: Normal**

PIN1	PIN2	PIN3	PIN4
VCC5	NC	Buzzer IN	SPKR

## 2.20 – LAN0 & LAN1 LED Header (JP31, JP32)

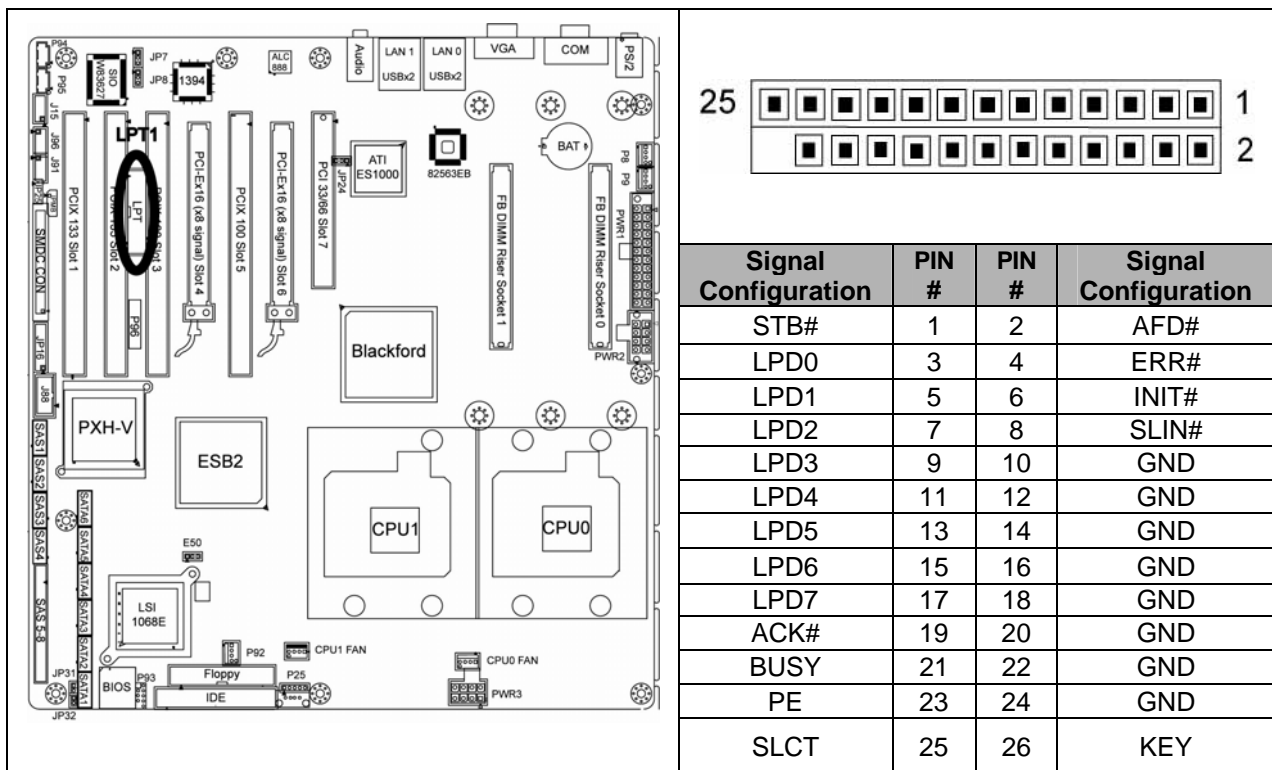




**PIN\_1**

PIN1	PIN2
LAN LED +	LAN LED -

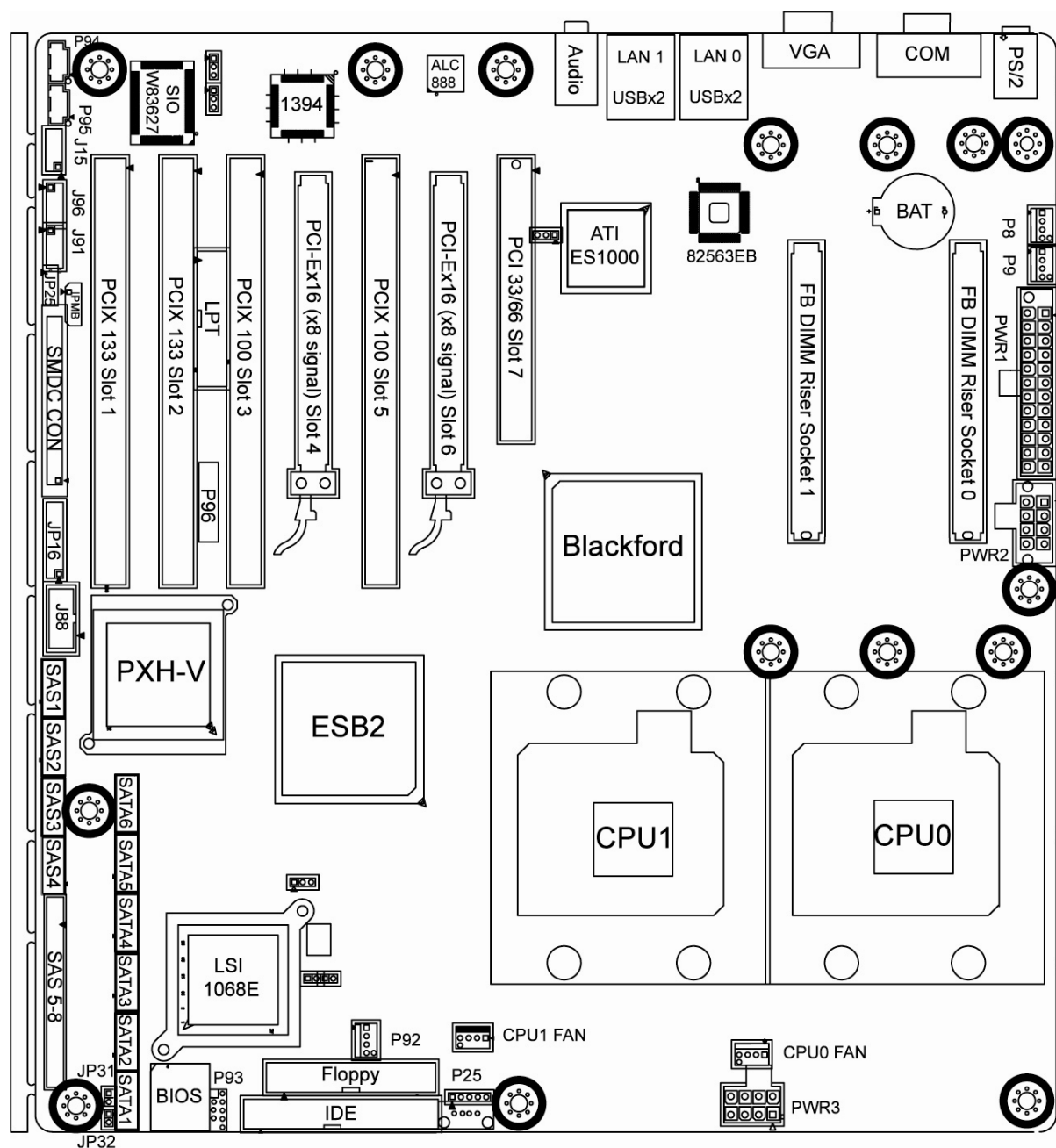
## 2.21 – LPT Pin Header (13-Pin x 2) (LTP1)



## 2.22 – Tips on Installing the Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you're unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed.

### Tempest i5000PW (S5382) Mounting Hole Placement

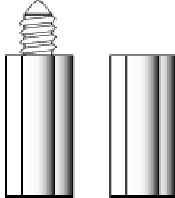

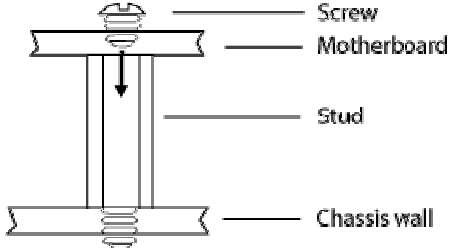
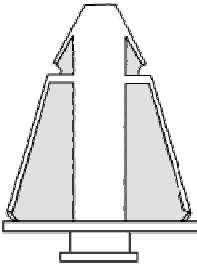
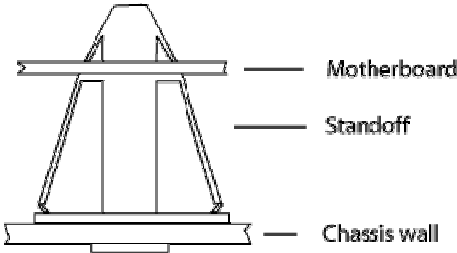
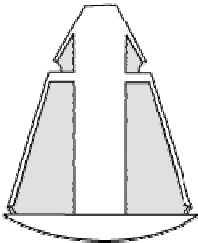
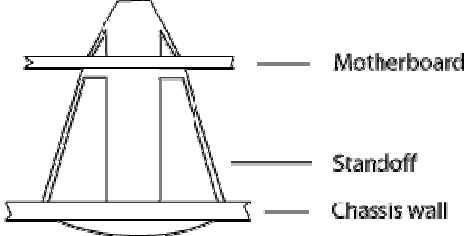
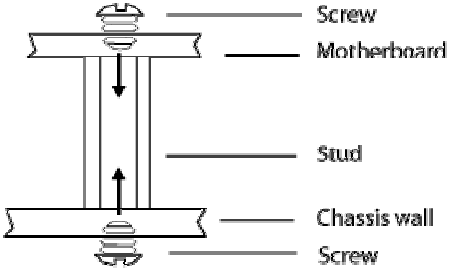




Some chassis include plastic studs instead of metal. Although the plastic studs are usable, Tyan recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

#### Mounting the Motherboard

Type	Solutions for installing	
		
		
		

**TIP:** Use metal studs if possible, as they hold the motherboard into place more securely than plastic standoffs.

## 2.23 – Installing the Processor

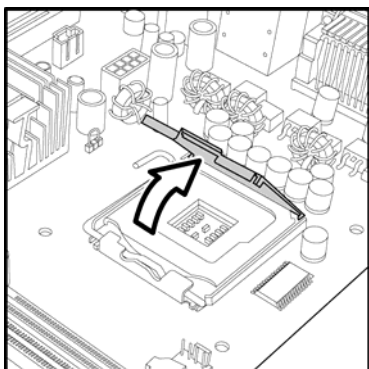
Your Tempest i5000PW (S5382) supports Dempsey / Woodcrest / Clovertown dual core processors from Intel. **Only Intel processors are certified and supported with this motherboard.** Refer to the Tyan website for further details: [www.tyan.com](http://www.tyan.com)

### Processor Installation

The processor should be installed carefully. Make sure you are wearing an antistatic strap and handle the processor as little as possible.

Follow these instructions to install your processor

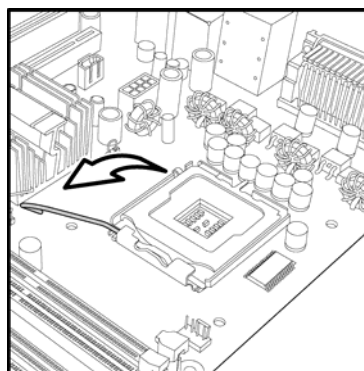
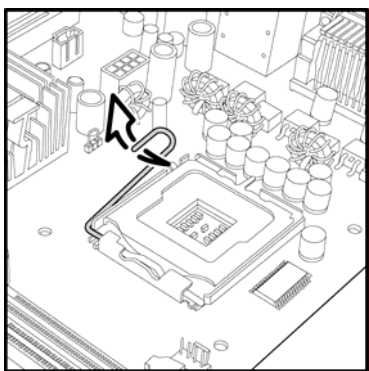
1. Locate the processor socket on the motherboard and lift the protective cover off as shown.



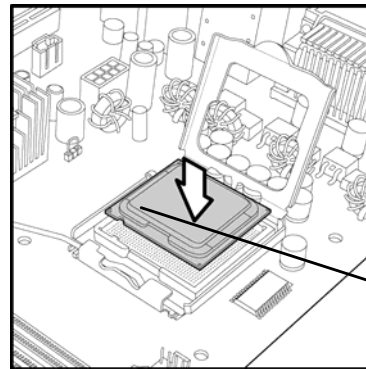
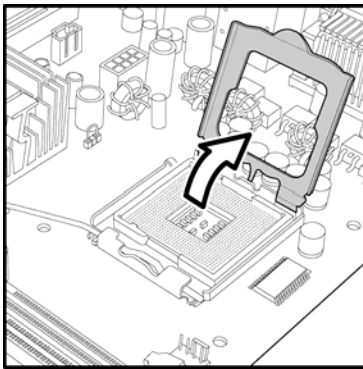
### **WARNING:**

This new processor socket designed by Intel is easily damaged. The processor has to be installed very carefully to prevent the contact pins of the socket from breaking. It is strongly recommended the processor installation job be handled by an experienced technician.

2. Pull the locking lever out of it's locked position and let it spring into the open position.

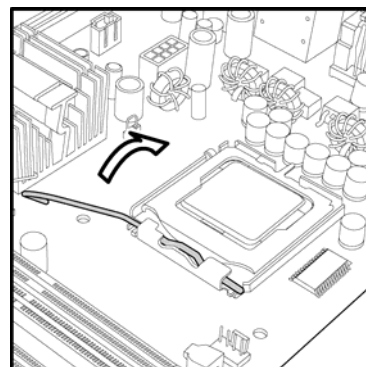
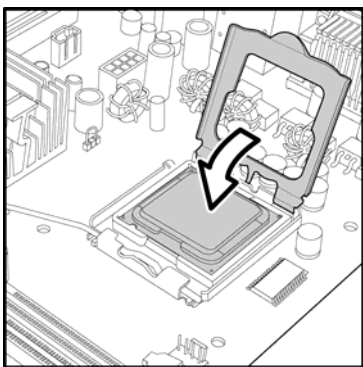


3. Lift the metal cover to expose the socket interior and place the socket in as shown.



Pin 1

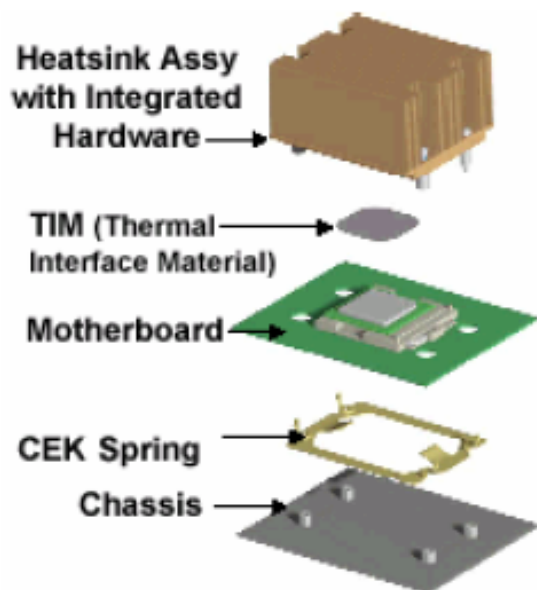
4. Close the cover and return the locking lever to its locked position.



5. Repeat this entire procedure for the second processor.

## 2.24 Heatsink Installation Procedures

The processor heat-sinks need to be Intel's CEK (Commonly Enabling Kit) compliant. The following diagrams will illustrate how to install the include heatsink retention modules:

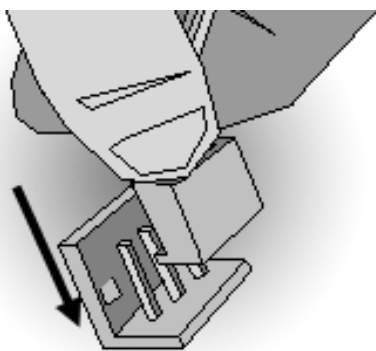


Follow these instructions to install the heatsink shown.

1. Apply some (a little will work, more doesn't equal better performance) thermal compound to the top of the processor. Try and apply a thin, even layer over the top of the processor.
2. Align the heatsink with the four holes around the processor socket.
3. Press the heatsink down until the four screws are securely seated in the holes.
4. Use screw drive to secure the four screws.

### Finishing Installing the Heatsink

After you finish installing the heatsink onto the processor and socket, attach the end wire of the fan (which should already be attached to the heatsink) to the motherboard. The following diagram illustrates how to connect fans onto the motherboard.



After you're finished installing all the fans you can connect your drives (hard drives, CD-ROM drives, etc.) to your motherboard.

## 2.25 – Installing the Memory

Before attempting to install any memory, make sure that the memory you have is compatible with the motherboard as well as the processor\*. A Critical aspect to any system build is whether you're using the recommended memory for your specific motherboard. For compatibility information, please check Tyan's web site at: [www.tyan.com](http://www.tyan.com)

- Not all stepping of Intel CPU's support the same type of memory speeds. Consult with Intel for clarification.

The following diagram shows the common type of FBDIMM modules you may encounter:



AMB Only Heatsink.



Full-DIMM Heatsink Spreader (Recommended Solution)

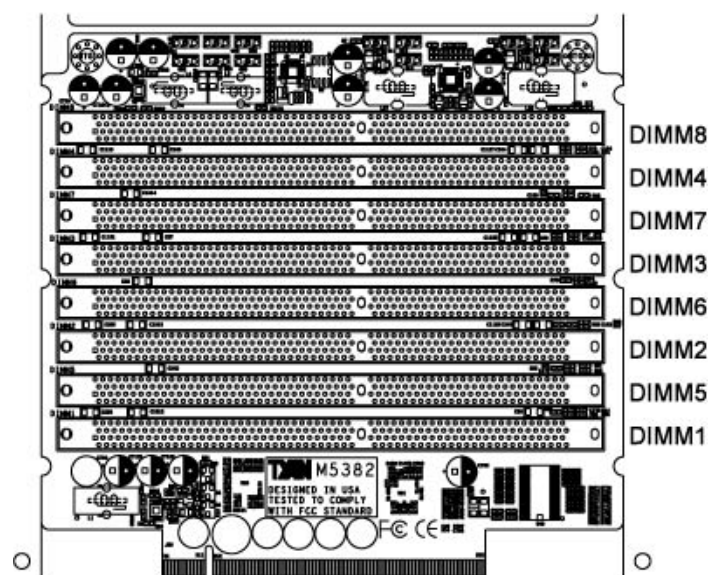
Here are a few key points to note before installing memory into your Tempest i5000PW;

- Intel processors support 64bit (non-interleaved) or 128bit (interleaved) memory configurations.
- 16 pieces of 240-Pin FBDIMMs Sockets via two memory riser cards (M5382) with 8 FBDIMMs on each memory riser card. (The FBDIMM Riser Socket is for memory riser cards use only.)
- Always install memory beginning with FBDIMM Riser Socket 0 (please refer to 2.02 Board Parts, Jumpers and Connectors) and follow the order from the bottom up.
- At least ONE 240-Pin FBDIMM module must be installed for the system to turn on and POST (power on self test).
- Only Fully-Buffered DIMM memory modules are supported.
- All installed memory will be automatically detected.
- The Tempest i5000PW supports up to 64GB\*.

\* Not validated at the time of print, subject to change.

## 2.26 –Memory Configuration

The diagram below illustrates the distribution of DIMMs:



The following chart outlines the rules for populating memory

NOTE: X here indicates a populated DIMM slot.

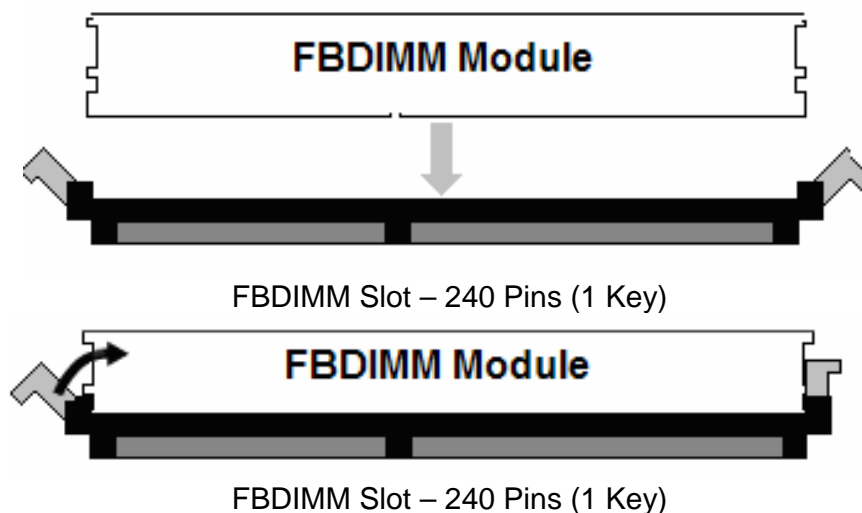
### Memory Configuration Chart

		Quantity of memory installed							
		1	2	4	6	8	16		
Fully Buffered DIMM Riser Socket 0	DIMM 1	X	X	X	X	X	X	X	X
	DIMM 2			X		X	X	X	X
	DIMM 3					X			X
	DIMM 4					X			X
	DIMM 5		X	X	X	X	X	X	X
	DIMM 6			X		X	X	X	X
	DIMM 7					X			X
	DIMM 8						X		X
Fully Buffered DIMM Riser Socket 1	DIMM 1				X		X		X
	DIMM 2							X	X
	DIMM 3								X
	DIMM 4								X
	DIMM 5				X		X		X
	DIMM 6							X	X
	DIMM 7								X
	DIMM 8								X

Not all possible combinations are listed in the table.

## 2.27 – Memory Installation Procedure

When installing memory modules, make sure the modules align properly with the memory socket. There should be keys (small indents) on your memory modules that fit according to the keys in the memory socket. FBDIMM modules and sockets have only one key, which is slightly near the center of the module/socket. The method of installing memory modules is detailed in the following diagrams.



To install DIMMs, follow these steps:

- (1). Observe the safety and precautions at the beginning of this chapter.
  - (2). Make sure the clips at either end of the DIMM socket are pushed outward to the open position.
  - (3). Hold the DIMM by the edges and remove it from its anti-static package.
  - (4). Position the DIMM above the socket. Align the small notch in the bottom edge of the DIMM with the keys in the socket.
  - (5). Insert the bottom edge of the DIMM into the socket.
  - (6). When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
- Once the memory modules are firmly seated in the socket, two clamps on either side will close and secure the module into the socket. Sometimes you may need to close the clamps manually.
  - To remove the memory module, simply push the clamps outwards until the memory module pops up. Then simply remove the module.

**TIP:** When installing memory, a module may require a considerable amount of force to seat properly, although this is very rare. To avoid bending and damaging your motherboard, place it on its anti-static bag and onto a flat surface, and then proceed with memory installation.

### NOTE

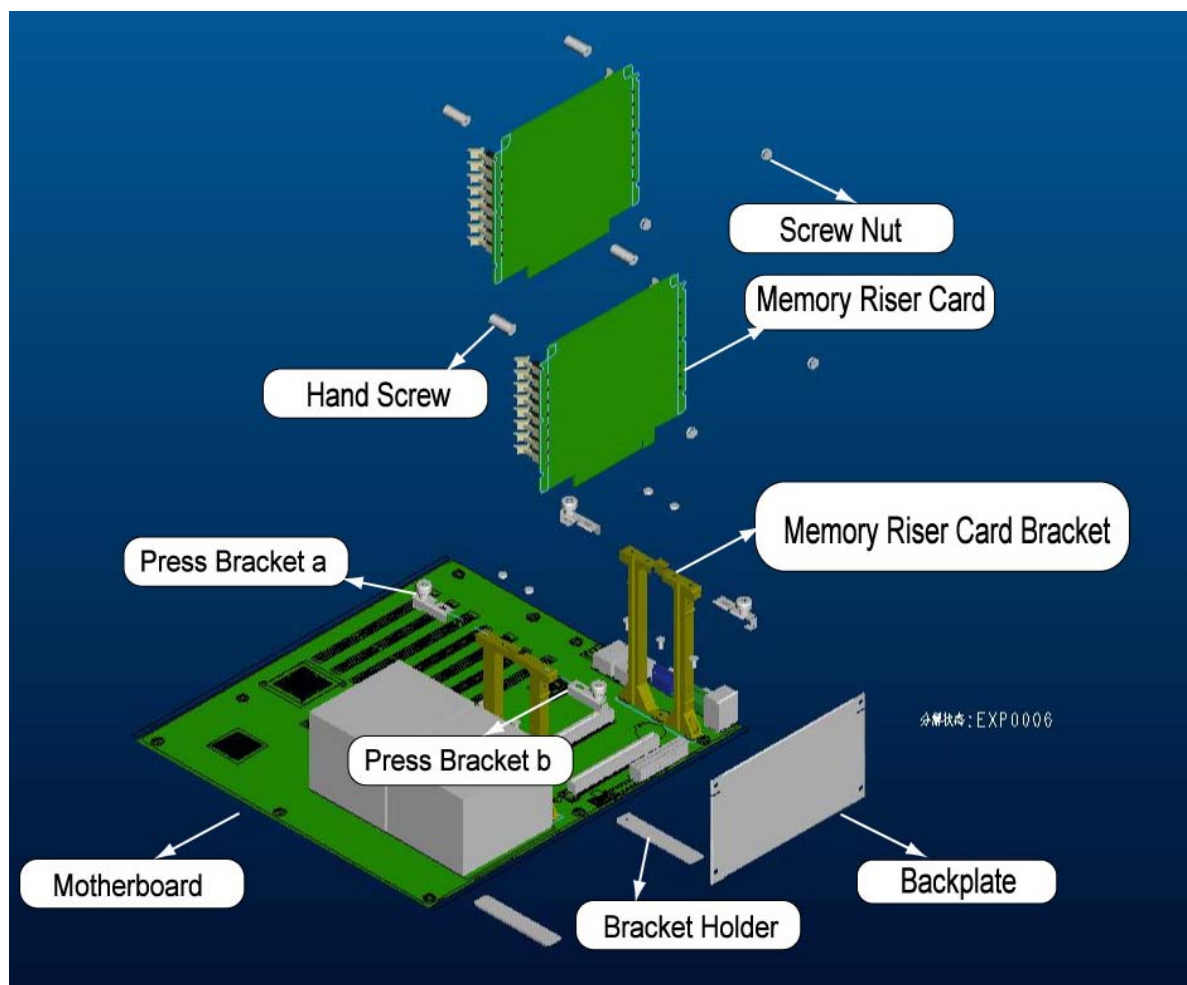
**YOU MUST ALWAYS** unplug the power connector to the motherboard before performing system hardware changes, to avoid damaging the board or expansion device.



## 2.28 Installing the Memory Riser Card

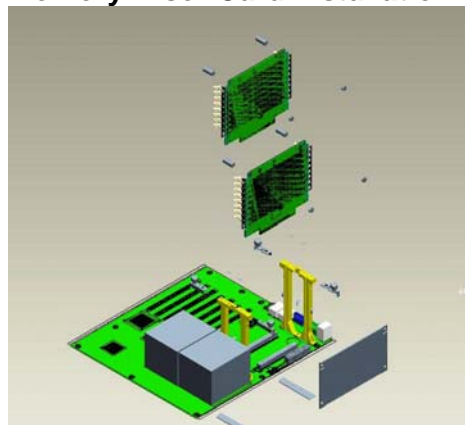
After installing memory modules, you can start the installation of Memory Riser Card.

The diagram below shows all the accessories for the installation of Memory Riser Cards



**Note:** If you just need one Memory Riser Card, insert it into FBDIMM Riser Socket 1 (please refer to the placement in 2.02).

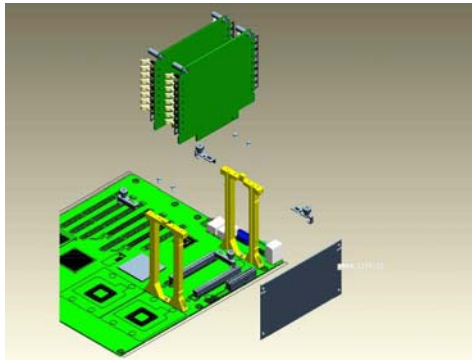
### Memory Riser Card Installation Procedure



#### Step 1:

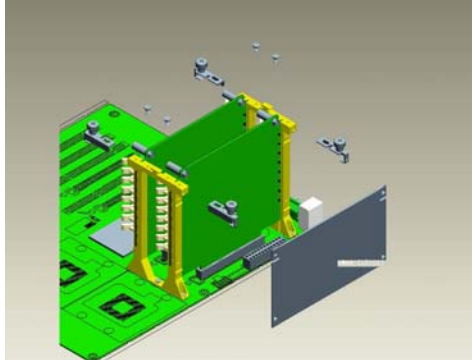
Fasten the hand screws and screw nuts to the memory riser card.





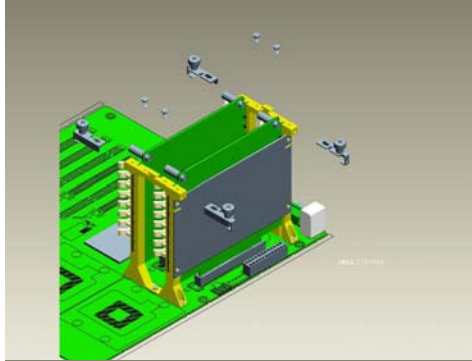
**Step 2:**

Fasten the Memory Riser Card bracket to the motherboard using the riser card Bracket holder with the six screws.



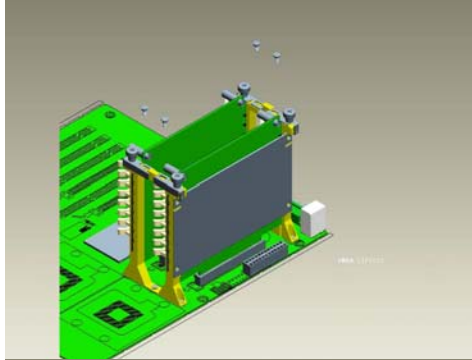
**Step 3:**

Insert the memory riser card into the Memory Riser Card Bracket.



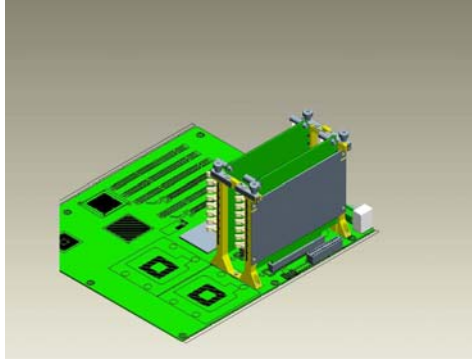
**Step 4:**

Fasten the Backplate to the Memory Riser Card Bracket with the four screws.



**Step 5:**

Fasten the press brackets a and b to the Memory Riser Card Bracket with the four screws.



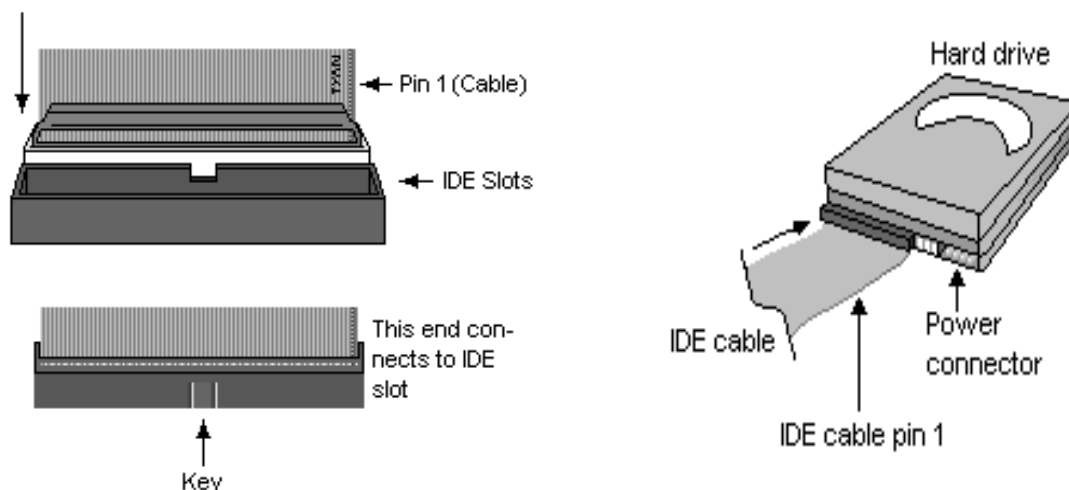
You have finished installing the memory riser card(s).

## 2.29 – Attaching Drive Cables

### IDE Drives

Attaching IDE drive cabling is simple. The cable is “keyed” to only allow it to be connected in the correct manner. Tyan motherboards have one on-board IDE channel, and it supporting two drives.

Attaching IDE cables to the IDE connectors is illustrated below:



Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard. The other two connectors are used to connect to drives.

Note: Always remember to properly set the drive jumpers. If only using one device on a channel, it must be set as Master for the BIOS to detect it.

**TIP: Pin 1 on the IDE cable (usually designated by a colored wire) faces the drive's power connector.**

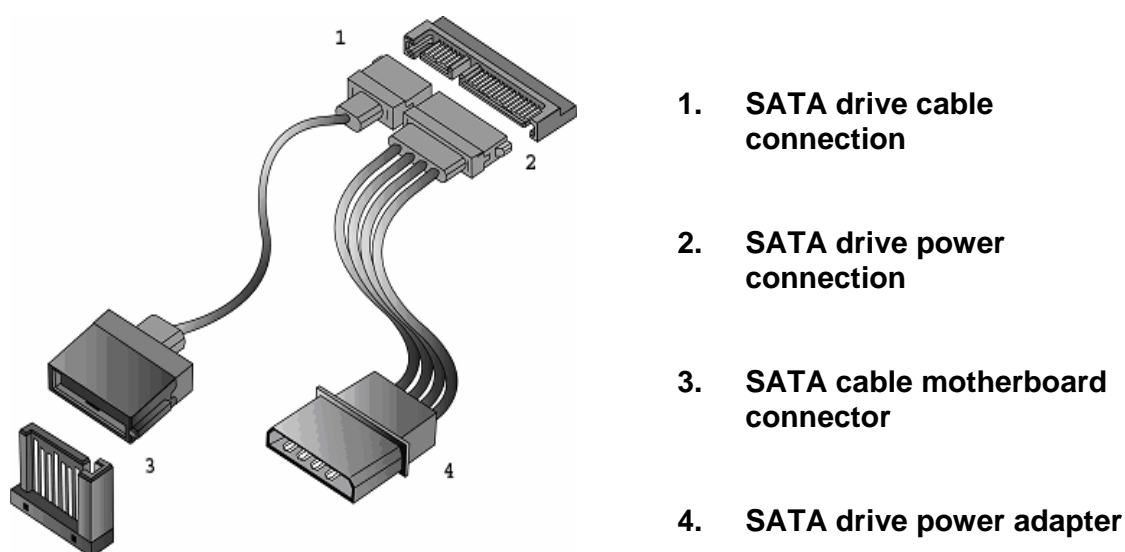
## SATA Drives and SAS Drives

The Tempest i5000PW is equipped with 6 Serial ATA (SATA) connectors and 8 SAS connectors.

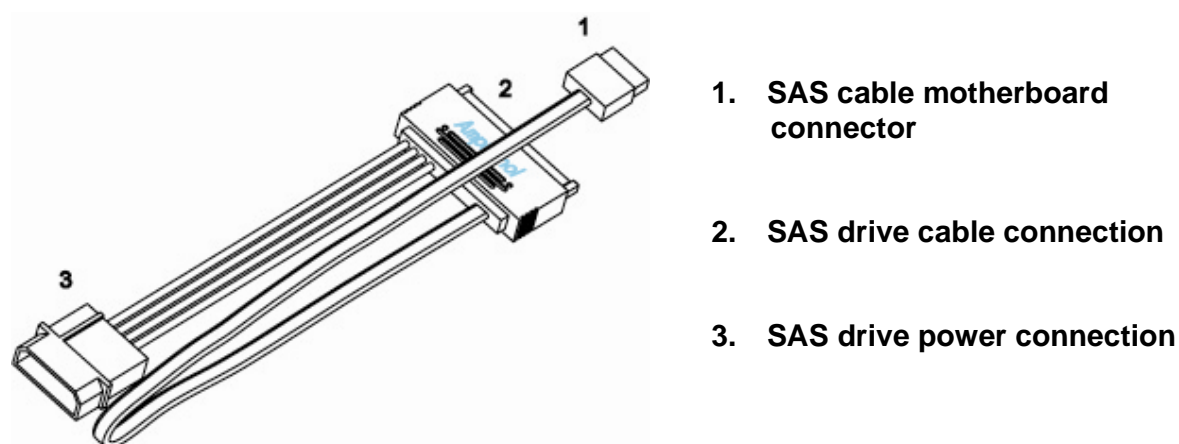
There is no need to set Master/Slave jumpers on SATA/SAS drives. Tyan has supplied four SATA cables, two SATA power adapters and two Standard SAS (actual cables vary dependant on versions purchased). If you did not receive the proper cables or power adapters for your particular product SKU, please contact your local vendor/distributor.

The following picture illustrates how to connect a SATA drive and a SAS drive respectively.

### SATA Drives

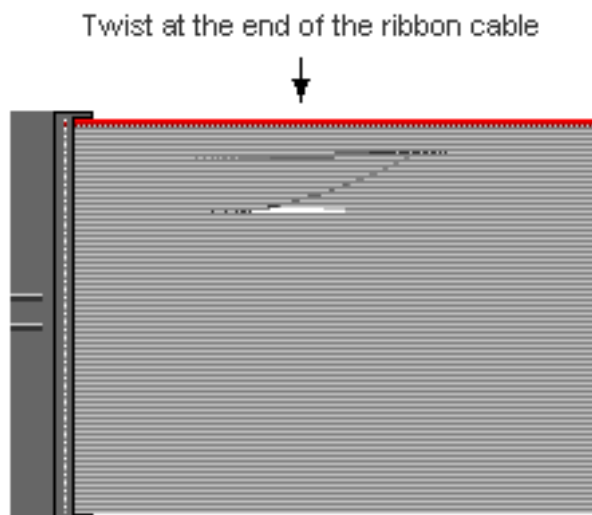


### SAS Drives



## Floppy Drives

Attaching a floppy drive can be done in a similar manner to an IDE drive. See the diagram below for an example of a floppy cable. Most of the current floppy drives on the market require that the cable be installed with the colored stripe positioned next to the power connector. In most cases, there will be a key pin on the cable, which will force proper connection of the cable.



The first floppy drive (commonly denoted as **A :**) is usually attached to the end of the cable with the twist in it. Drive B: is usually connected to the second or third connector in the cable (the second or third connector after you install Drive **A :**).

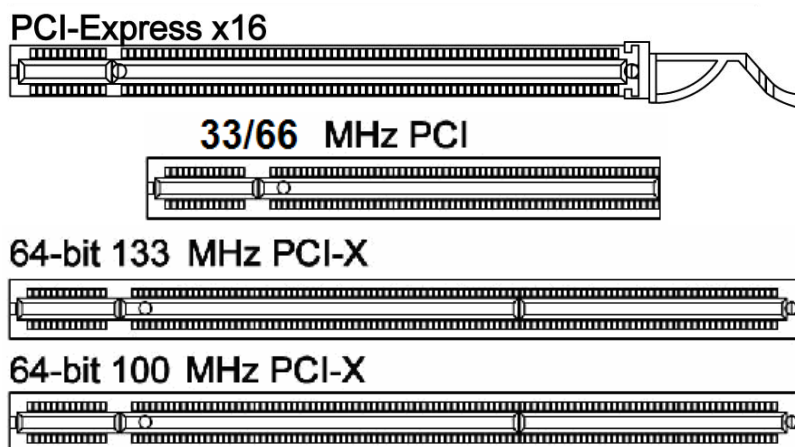
Refer to your floppy drive's installation instructions (if available), or contact your dealer if you are unsure about how to attach the floppy drive(s). Remember, you can only have 2 floppy drives connected at any given time.

Below are some symptoms of incorrectly installed floppy drives. While they are minor and installing them incorrectly doesn't cause severe problems, it may cause your system to freeze or crash when trying to read and/or write to diskettes.

Symptoms of incorrectly installed floppy drives	
<b>Drive is not automatically detected</b>	Usually caused by faulty cables, cables put in backwards or a bad floppy drive or motherboard. Try another floppy drive to verify the problem if the cable is properly installed or try replacing the actual cable. Also check to see if the onboard floppy controller is enabled in the BIOS setup.
<b>Drive Fail message at bootup</b>	The cable, floppy drive or motherboard may be faulty. Try another drive or cable to verify.
<b>Drive does not power on</b>	Check power cable and cabling. Maybe a bad power supply or drive cable problem.
<b>Drive activity light is constantly on</b>	Usually signifies that the cable on the drive is on backwards, which is a common issue. Reverse the cable at the floppy drive end and try again.

## 2.30 – Installing Add-In Cards

Before installing add-in cards, it's helpful to know if they are fully compatible with your motherboard. For this reason, we've provided the diagrams below, showing the compatible slots that may appear on your motherboard. Not all of the slots shown will necessarily appear on your motherboard, however, there will be combinations of what you see here.



Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards (or anything else) into any slots if they won't seat in place. It's better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

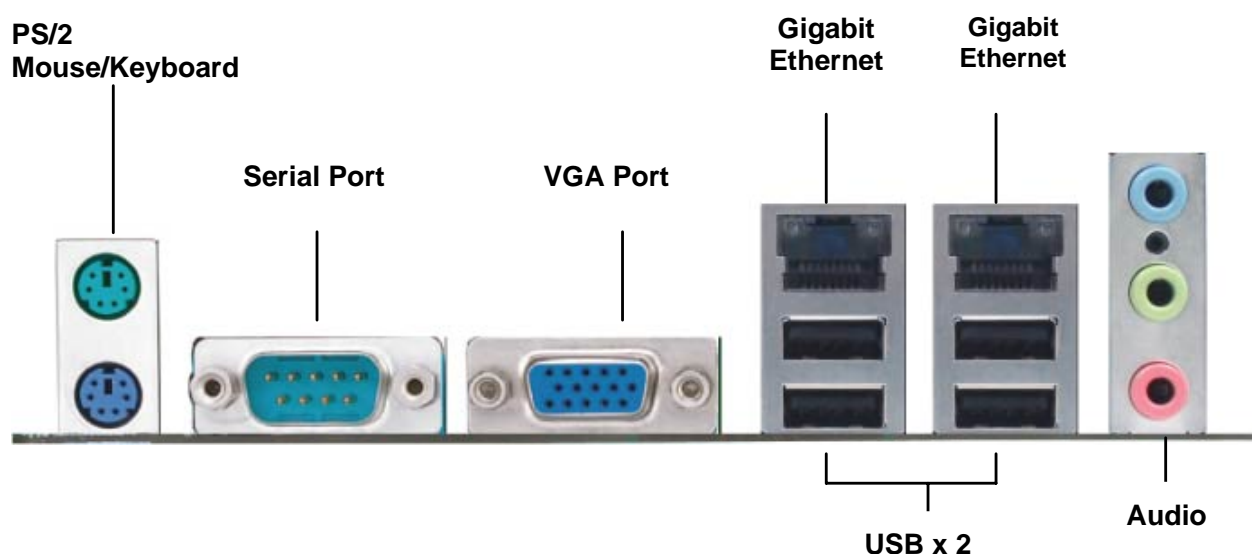
**TIP:** It's good practice to install add-in cards in a staggered manner, rather than directly adjacent to each other. This allows air to circulate within the chassis more easily, providing improved cooling for all installed devices.

### NOTE

**YOU MUST ALWAYS** unplug the power connector to the motherboard before performing system hardware changes, to avoid damaging the board or expansion device.

## 2.31 – Connecting External Devices

The following diagrams will detail the rear port stack for this S5382 motherboard:




This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.

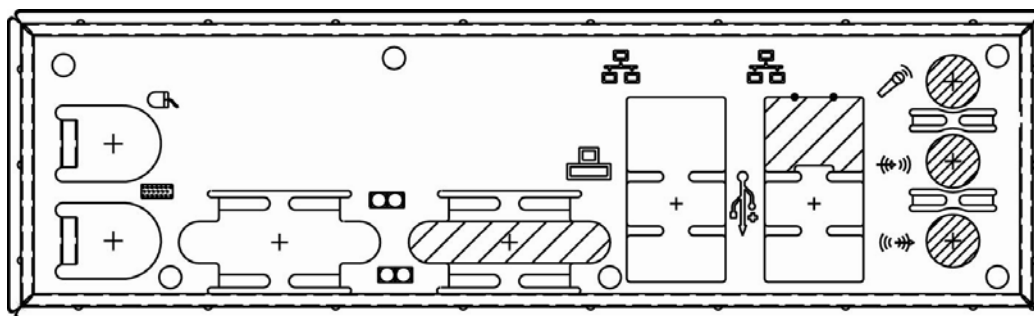
Peripheral devices can be plugged straight into any of these ports but software may be required to complete the installation.

### Onboard LAN LED Color Definition

The three onboard Ethernet ports have green and yellow LEDs to indicate LAN status. The chart below illustrates the different LED states.

10/100/1000 Mbps LAN Link/Activity LED Scheme			
<div>LEFT    RIGHT</div> 		Left LED	Right LED
10 Mbps	Link	Green	Off
	Active	Blinking Green	Off
100 Mbps	Link	Green	Green
	Active	Blinking Green	Green
1000 Mbps	Link	Green	Yellow
	Active	Blinking Green	Yellow
No Link		Off	Off

We have enclosed below I/O shielding, which is compatible with your board.



The VGA port, GbE LAN (Gilgal) port and Audio ports are covered with soft metal which can be disassembled easily by hand.

## 2.32 – Installing the Power Supply

<p>The diagram shows a motherboard layout with various components labeled. Three power connectors are circled in black: PWR1 (24-pin EPS 12V power connector), PWR2 (8-pin EPS 12V power connector for Memory and MCH), and PWR3 (8-pin EPS 12V power connector for CPU). Other components labeled include CPU0, CPU1, Blackford, ESB2, PXH-V, LSI 1068E, BIOS, Floppy, IDE, CPU1 FAN, CPU0 FAN, P25, P92, P93, P94, P95, P96, P97, P98, P99, P100, P101, P102, P103, P104, P105, P106, P107, P108, P109, P110, P111, P112, P113, P114, P115, P116, P117, P118, P119, P120, P121, P122, P123, P124, P125, P126, P127, P128, P129, P130, P131, P132, P133, P134, P135, P136, P137, P138, P139, P140, P141, P142, P143, P144, P145, P146, P147, P148, P149, P150, P151, P152, P153, P154, P155, P156, P157, P158, P159, P160, P161, P162, P163, P164, P165, P166, P167, P168, P169, P170, P171, P172, P173, P174, P175, P176, P177, P178, P179, P180, P181, P182, P183, P184, P185, P186, P187, P188, P189, P190, P191, P192, P193, P194, P195, P196, P197, P198, P199, P200, P201, P202, P203, P204, P205, P206, P207, P208, P209, P210, P211, P212, P213, P214, P215, P216, P217, P218, P219, P220, P221, P222, P223, P224, P225, P226, P227, P228, P229, P230, P231, P232, P233, P234, P235, P236, P237, P238, P239, P240, P241, P242, P243, P244, P245, P246, P247, P248, P249, P250, P251, P252, P253, P254, P255, P256, P257, P258, P259, P260, P261, P262, P263, P264, P265, P266, P267, P268, P269, P270, P271, P272, P273, P274, P275, P276, P277, P278, P279, P280, P281, P282, P283, P284, P285, P286, P287, P288, P289, P290, P291, P292, P293, P294, P295, P296, P297, P298, P299, P300, P301, P302, P303, P304, P305, P306, P307, P308, P309, P310, P311, P312, P313, P314, P315, P316, P317, P318, P319, P320, P321, P322, P323, P324, P325, P326, P327, P328, P329, P330, P331, P332, P333, P334, P335, P336, P337, P338, P339, P340, P341, P342, P343, P344, P345, P346, P347, P348, P349, P350, P351, P352, P353, P354, P355, P356, P357, P358, P359, P360, P361, P362, P363, P364, P365, P366, P367, P368, P369, P370, P371, P372, P373, P374, P375, P376, P377, P378, P379, P380, P381, P382, P383, P384, P385, P386, P387, P388, P389, P390, P391, P392, P393, P394, P395, P396, P397, P398, P399, P400, P401, P402, P403, P404, P405, P406, P407, P408, P409, P410, P411, P412, P413, P414, P415, P416, P417, P418, P419, P420, P421, P422, P423, P424, P425, P426, P427, P428, P429, P430, P431, P432, P433, P434, P435, P436, P437, P438, P439, P440, P441, P442, P443, P444, P445, P446, P447, P448, P449, P450, P451, P452, P453, P454, P455, P456, P457, P458, P459, P460, P461, P462, P463, P464, P465, P466, P467, P468, P469, P470, P471, P472, P473, P474, P475, P476, P477, P478, P479, P480, P481, P482, P483, P484, P485, P486, P487, P488, P489, P490, P491, P492, P493, P494, P495, P496, P497, P498, P499, P500, P501, P502, P503, P504, P505, P506, P507, P508, P509, P510, P511, P512, P513, P514, P515, P516, P517, P518, P519, P520, P521, P522, P523, P524, P525, P526, P527, P528, P529, P530, P531, P532, P533, P534, P535, P536, P537, P538, P539, P540, P541, P542, P543, P544, P545, P546, P547, P548, P549, P550, P551, P552, P553, P554, P555, P556, P557, P558, P559, P560, P561, P562, P563, P564, P565, P566, P567, P568, P569, P570, P571, P572, P573, P574, P575, P576, P577, P578, P579, P580, P581, P582, P583, P584, P585, P586, P587, P588, P589, P590, P591, P592, P593, P594, P595, P596, P597, P598, P599, P600, P601, P602, P603, P604, P605, P606, P607, P608, P609, P610, P611, P612, P613, P614, P615, P616, P617, P618, P619, P620, P621, P622, P623, P624, P625, P626, P627, P628, P629, P630, P631, P632, P633, P634, P635, P636, P637, P638, P639, P640, P641, P642, P643, P644, P645, P646, P647, P648, P649, P650, P651, P652, P653, P654, P655, P656, P657, P658, P659, P660, P661, P662, P663, P664, P665, P666, P667, P668, P669, P670, P671, P672, P673, P674, P675, P676, P677, P678, P679, P680, P681, P682, P683, P684, P685, P686, P687, P688, P689, P690, P691, P692, P693, P694, P695, P696, P697, P698, P699, P700, P701, P702, P703, P704, P705, P706, P707, P708, P709, P710, P711, P712, P713, P714, P715, P716, P717, P718, P719, P720, P721, P722, P723, P724, P725, P726, P727, P728, P729, P730, P731, P732, P733, P734, P735, P736, P737, P738, P739, P740, P741, P742, P743, P744, P745, P746, P747, P748, P749, P750, P751, P752, P753, P754, P755, P756, P757, P758, P759, P760, P761, P762, P763, P764, P765, P766, P767, P768, P769, P770, P771, P772, P773, P774, P775, P776, P777, P778, P779, P780, P781, P782, P783, P784, P785, P786, P787, P788, P789, P790, P791, P792, P793, P794, P795, P796, P797, P798, P799, P800, P801, P802, P803, P804, P805, P806, P807, P808, P809, P810, P811, P812, P813, P814, P815, P816, P817, P818, P819, P820, P821, P822, P823, P824, P825, P826, P827, P828, P829, P830, P831, P832, P833, P834, P835, P836, P837, P838, P839, P840, P841, P842, P843, P844, P845, P846, P847, P848, P849, P850, P851, P852, P853, P854, P855, P856, P857, P858, P859, P860, P861, P862, P863, P864, P865, P866, P867, P868, P869, P870, P871, P872, P873, P874, P875, P876, P877, P878, P879, P880, P881, P882, P883, P884, P885, P886, P887, P888, P889, P890, P891, P892, P893, P894, P895, P896, P897, P898, P899, P900, P901, P902, P903, P904, P905, P906, P907, P908, P909, P910, P911, P912, P913, P914, P915, P916, P917, P918, P919, P920, P921, P922, P923, P924, P925, P926, P927, P928, P929, P930, P931, P932, P933, P934, P935, P936, P937, P938, P939, P940, P941, P942, P943, P944, P945, P946, P947, P948, P949, P950, P951, P952, P953, P954, P955, P956, P957, P958, P959, P960, P961, P962, P963, P964, P965, P966, P967, P968, P969, P970, P971, P972, P973, P974, P975, P976, P977, P978, P979, P980, P981, P982, P983, P984, P985, P986, P987, P988, P989, P990, P991, P992, P993, P994, P995, P996, P997, P998, P999, P1000, P1001, P1002, P1003, P1004, P1005, P1006, P1007, P1008, P1009, P1010, P1011, P1012, P1013, P1014, P1015, P1016, P1017, P1018, P1019, P1020, P1021, P1022, P1023, P1024, P1025, P1026, P1027, P1028, P1029, P1030, P1031, P1032, P1033, P1034, P1035, P1036, P1037, P1038, P1039, P1040, P1041, P1042, P1043, P1044, P1045, P1046, P1047, P1048, P1049, P1050, P1051, P1052, P1053, P1054, P1055, P1056, P1057, P1058, P1059, P1060, P1061, P1062, P1063, P1064, P1065, P1066, P1067, P1068, P1069, P1070, P1071, P1072, P1073, P1074, P1075, P1076, P1077, P1078, P1079, P1080, P1081, P1082, P1083, P1084, P1085, P1086, P1087, P1088, P1089, P1090, P1091, P1092, P1093, P1094, P1095, P1096, P1097, P1098, P1099, P1100, P1101, P1102, P1103, P1104, P1105, P1106, P1107, P1108, P1109, P1110, P1111, P1112, P1113, P1114, P1115, P1116, P1117, P1118, P1119, P1120, P1121, P1122, P1123, P1124, P1125, P1126, P1127, P1128, P1129, P1130, P1131, P1132, P1133, P1134, P1135, P1136, P1137, P1138, P1139, P1140, P1141, P1142, P1143, P1144, P1145, P1146, P1147, P1148, P1149, P1150, P1151, P1152, P1153, P1154, P1155, P1156, P1157, P1158, P1159, P1160, P1161, P1162, P1163, P1164, P1165, P1166, P1167, P1168, P1169, P1170, P1171, P1172, P1173, P1174, P1175, P1176, P1177, P1178, P1179, P1180, P1181, P1182, P1183, P1184, P1185, P1186, P1187, P1188, P1189, P1190, P1191, P1192, P1193, P1194, P1195, P1196, P1197, P1198, P1199, P1200, P1201, P1202, P1203, P1204, P1205, P1206, P1207, P1208, P1209, P1210, P1211, P1212, P1213, P1214, P1215, P1216, P1217, P1218, P1219, P1220, P1221, P1222, P1223, P1224, P1225, P1226, P1227, P1228, P1229, P1230, P1231, P1232, P1233, P1234, P1235, P1236, P1237, P1238, P1239, P1240, P1241, P1242, P1243, P1244, P1245, P1246, P1247, P1248, P1249, P1250, P1251, P1252, P1253, P1254, P1255, P1256, P1257, P1258, P1259, P1260, P1261, P1262, P1263, P1264, P1265, P1266, P1267, P1268, P1269, P1270, P1271, P1272, P1273, P1274, P1275, P1276, P1277, P1278, P1279, P1280, P1281, P1282, P1283, P1284, P1285, P1286, P1287, P1288, P1289, P1290, P1291, P1292, P1293, P1294, P1295, P1296, P1297, P1298, P1299, P1300, P1301, P1302, P1303, P1304, P1305, P1306, P1307, P1308, P1309, P1310, P1311, P1312, P1313, P1314, P1315, P1316, P1317, P1318, P1319, P1320, P1321, P1322, P1323, P1324, P1325, P1326, P1327, P1328, P1329, P1330, P1331, P1332, P1333, P1334, P1335, P1336, P1337, P1338, P1339, P1340, P1341, P1342, P1343, P1344, P1345, P1346, P1347, P1348, P1349, P1350, P1351, P1352, P1353, P1354, P1355, P1356, P1357, P1358, P1359, P1360, P1361, P1362, P1363, P1364, P1365, P1366, P1367, P1368, P1369, P1370, P1371, P1372, P1373, P1374, P1375, P1376, P1377, P1378, P1379, P1380, P1381, P1382, P1383, P1384, P1385, P1386, P1387, P1388, P1389, P1390, P1391, P1392, P1393, P1394, P1395, P1396, P1397, P1398, P1399, P1400, P1401, P1402, P1403, P1404, P1405, P1406, P1407, P1408, P1409, P1410, P1411, P1412, P1413, P1414, P1415, P1416, P1417, P1418, P1419, P1420, P1421, P1422, P1423, P1424, P1425, P1426, P1427, P1428, P1429, P1430, P1431, P1432, P1433, P1434, P1435, P1436, P1437, P1438, P1439, P1440, P1441, P1442, P1443, P1444, P1445, P1446, P1447, P1448, P1449, P1450, P1451, P1452, P1453, P1454, P1455, P1456, P1457, P1458, P1459, P1460, P1461, P1462, P1463, P1464, P1465, P1466, P1467, P1468, P1469, P1470, P1471, P1472, P1473, P1474, P1475, P1476, P1477, P1478, P1479, P1480, P1481, P1482, P1483, P1484, P1485, P1486, P1487, P1488, P1489, P1490, P1491, P1492, P1493, P1494, P1495, P1496, P1497, P1498, P1499, P1500, P1501, P1502, P1503, P1504, P1505, P1506, P1507, P1508, P1509, P1510, P1511, P1512, P1513, P1514, P1515, P1516, P1517, P1518, P1519, P1520, P1521, P1522, P1523, P1524, P1525, P1526, P1527, P1528, P1529, P1530, P1531, P1532, P1533, P1534, P1535, P1536, P1537, P1538, P1539, P1540, P1541, P1542, P1543, P1544, P1545, P1546, P1547, P1548, P1549, P1550, P1551, P1552, P1553, P1554, P1555, P1556, P1557, P1558, P1559, P1560, P1561, P1562, P1563, P1564, P1565, P1566, P1567, P1568, P1569, P1570, P1571, P1572, P1573, P1574, P1575, P1576, P1577, P1578, P1579, P1580, P1581, P1582, P1583, P1584, P1585, P1586, P1587, P1588, P1589, P1590, P1591, P1592, P1593, P1594, P1595, P1596, P1597, P1598, P1599, P1600, P1601, P1602, P1603, P1604, P1605, P1606, P1607, P1608, P1609, P1610, P1611, P1612, P1613, P1614, P1615, P1616, P1617, P1618, P1619, P1620, P1621, P1622, P1623, P1624, P1625, P1626, P1627, P1628, P1629, P1630, P1631, P1632, P1633, P1634, P1635, P1636, P1637, P1638, P1639, P1640, P1641, P1642, P1643, P1644, P1645, P1646, P1647, P1648, P1649, P1650, P1651, P1652, P1653, P1654, P1655, P1656, P1657, P1658, P1659, P1660, P1661, P1662, P1663, P1664, P1665, P1666, P1667, P1668, P1669, P1670, P1671, P1672, P1673, P1674, P1675, P1676, P1677, P1678, P1679, P1680, P1681, P1682, P1683, P1684, P1685, P1686, P1687, P1688, P1689, P1690, P1691, P1692, P1693, P1694, P1695, P1696, P1697, P1698, P1699, P1700, P1701, P1702, P1703, P1704, P1705, P1706, P1707, P1708, P1709, P1710, P1711, P1712, P1713, P1714, P1715, P1716, P1717, P1718, P1719, P1720, P1721, P1722, P1723, P1724, P1725, P1726, P1727, P1728, P1729, P1730, P1731, P1732, P1733, P1734, P1735, P1736, P1737, P1738, P1739, P1740, P1741, P1742, P1743, P1744, P1745, P1746, P1747, P1748, P1749, P1750, P1751, P1752, P1753, P1754, P1755, P1756, P1757, P1758, P1759, P1760, P1761, P1762, P1763, P1764, P1765, P1766, P1767, P1768, P1769, P1770, P1771, P1772, P1773, P1774, P1775, P1776, P1777, P1778, P1779, P1780, P1781, P1782, P1783, P1784, P1785, P1786, P1787, P1788, P1789, P1790, P1791, P1792, P1793, P1794, P1795, P1796, P1797, P1798, P1799, P1800, P1801, P1802, P1803, P1804, P1805, P1806, P1807, P1808, P1809, P1810, P1811, P1812, P1813, P1814, P1815, P1816, P1817, P1818, P1819, P1820, P1821, P1822, P1823, P1824, P1825, P1826, P1827, P1828, P1829, P1830, P1831, P1832, P1833, P1834, P1835, P1836, P1837, P1838, P1839, P1840, P1841, P1842, P1843, P1844, P1845, P1846, P1847, P1848, P1849, P1850, P1851, P1852, P1853, P1854, P1855, P1856, P1857, P1858, P1859, P1860, P1861, P1862, P1863, P1864, P1865, P1866, P1867, P1868, P1869, P1870, P1871, P1872, P1873, P1874, P1875, P1876, P1877, P1878, P1879, P1880, P1881, P1882, P1883, P1884, P1885, P1886, P1887, P1888, P1889, P1890, P1891, P1892, P1893, P1894, P1895, P1896, P1897, P1898, P1899, P1900, P1901, P1902, P1903, P1904, P1905, P1906, P1907, P1908, P1909, P1910, P1911, P1912, P1913, P1914, P1915, P1916, P1917, P1918, P1919, P1920, P1921, P1922, P1923, P1924, P1925, P1926, P1927, P1928, P1929, P1930, P1931, P1932, P1933, P1934, P1935, P1936, P1937, P1938, P1939, P1940, P1941, P1942, P1943, P1944, P1945, P1946, P1947, P1948, P1949, P1950, P1951, P1952, P1953, P1954, P1955, P1956, P1957, P1958, P1959, P1960, P1961, P1962, P1963, P1964, P1965, P1966, P1967, P1968, P1969, P1970, P1971, P1972, P1973, P1974, P1975, P1976, P1977, P1978, P1979, P1980, P1981, P1982, P1983, P1984, P1985, P1986, P1987, P1988, P1989, P1990, P1991, P1992, P1993, P1994, P1995, P1996, P1997, P1998, P1999, P2000, P2001, P2002, P2003, P2004, P2005, P2006, P2007, P2008, P2009, P2010, P2011, P2012, P2013, P2014, P2015, P2016, P2017, P2018, P2019, P2020, P2021, P2022, P2023, P2024, P2025, P2026, P2027, P2028, P2029, P2030, P2031, P2032, P2033, P2034, P2035, P2036, P2037, P2038, P2039, P2040, P2041, P2042, P2043, P2044, P2045, P2046, P2047, P2048, P2049, P2050, P2051, P2052, P2053, P2054, P2055, P2056, P2057, P2058, P2059, P2060, P2061, P2062, P2063, P2064, P2065, P2066, P2067, P2068, P2069, P2070, P2071, P2072, P2073, P2074, P2075, P2076, P2077, P2078, P2079, P2080, P2081, P2082, P2083, P2084, P2085, P2086, P2087, P2088, P2089, P2090, P2091, P2092, P2093, P2094, P2095, P2096, P2097, P2098, P2099, P2100, P2101, P2102, P2103, P2104, P2105, P2106, P2107, P2108, P2109, P2110, P2111, P2112, P2113, P2114, P2115, P2116, P2117, P2118, P2119, P2120, P2121, P2122, P2123, P2124, P2125, P2126, P2127, P2128, P2129, P2130, P2131, P2132, P2133, P2134, P2135, P2136, P2137, P2138, P2139, P2140, P2141, P2142, P2143, P2144, P2145, P2146, P2147, P2148, P2149, P2150, P2151, P2152, P2153, P2154, P2155, P2156, P2157, P2158, P2159, P2160, P2161, P2162, P2163, P2164, P2165, P2166, P2167, P2168, P2169, P2170, P2171, P2172, P2173, P2174, P2175, P2176, P2177, P2178, P2179, P2180, P2181, P2182, P2183, P2184, P2185, P2186, P2187, P2188, P2189, P2190, P2191, P2192, P2193, P2194, P2195, P2196, P2197, P2198, P2199, P2200, P2201, P2202, P2203, P2204, P2205, P2206, P2207, P2208, P2209, P2210, P2211, P2212, P2213, P2214, P2215, P2216, P2217, P2218, P2219, P2220, P2221, P2222, P2223, P2224, P2225, P2226, P2227, P2228, P2229, P2230, P22</p>
--

There are three power connectors on the Tempest i5000PW S5382.

**PWR1: 24-pin EPS 12V power connector**

+3.3V	1	13	+3.3V
+3.3V	2	14	-12V
GND	3	15	GND
+5V	4	16	PS_ON
GND	5	17	GND
+5V	6	18	GND
GND	7	19	GND
PWR GOOD	8	20	Reset
5VSB	9	21	+5V
+12V	10	22	+5V
+12V	11	23	+5V
+3.3V	12	24	GND

**PWR2: 8-pin EPS 12V power connector  
(for Memory and MCH)**

**PWR3: 8-pin EPS 12V power connector  
(for CPU)**

GND	1	5	+12V
GND	2	6	+12V
GND	3	7	+12V
GND	4	8	+12V

We suggest using a 750W or higher power supply; this is of course dependent on how many devices you attach. A 750W is sufficient for systems without many devices (i.e. 1 hard drive, 1 optical drive, and 1 or 2 expansion cards) however a higher wattage solution may be needed if the system is fully loaded. Look to the [www.tyan.com](http://www.tyan.com) website for further information.

**NOTE:** The Tempest i5000PW (S5382) peripheral drive power connector must be independent of any other devices. A device such as a DVD/CD-ROM drive, hard drive, or any other devices cannot be attached onto the same power line. If connected, system stability is compromised.

## 2.33 – Finishing Up

Congratulations on making it this far! You're finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially IDE cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.

In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by **calling your vendor's support line**.



## Chapter 3: BIOS Setup

### 3.1. About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:

1. Turn on or reboot your system.
2. Press <Del> during POST (F4 on remote console) to start the BIOS setup utility.

#### 3.1.1 Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
Tab	Moves from one selection to the next
Left/Right Arrow Keys	Changes from one menu to the next
Up/Down Arrow Keys	Moves between selections
Enter	Opens highlighted section
PgUp/PgDn Keys	Changes settings.

#### 3.1.2 Getting Help

Pressing **[F1]** will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press **[ESC]** or the **[F1]** key again.

### 3.1.3 In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.

The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by TYAN or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

### 3.1.4 Setup Variations

Not all systems have the same BIOS setup layout or options. While the basic look and function of the BIOS setup remains more or less the same for most systems, the appearance of your Setup screen may differ from the charts shown in this section. Each system design and chipset combination requires a custom configuration. In addition, the final appearance of the Setup program depends on the system designer. Your system designer may decide that certain items should not be available for user configuration, and remove them from the BIOS setup program.

**NOTE:** The following pages provide the details of BIOS menu. Please be noticed that the BIOS menu are continually changing due to the BIOS updating. The BIOS menu provided are the most updated ones when this manual is written. Please visit Tyan's website at <http://www.tyan.com> for the information of BIOS updating.

## 3.2 BIOS Main Menu

In this section, you can alter general features such as the date and time, as well as access to the IDE configuration options. Note that the options listed below are for options that can directly be changed within the Main Setup screen.

PhoenixBIOS Setup Utility			
Main	Advanced	Power	Boot
Exit			
<b>System Time:</b> [xx:xx:xx] System Date: [xxxx-xx-xx] BIOS Version: xx.xx BIOS Build Date: xx/xx/xxxx  Legacy Diskette A: [1.44/1.25 MB 3½"] ▶ IDE Primary/Master [None] ▶ IDE Primary/Slave [xxxxxxMB]  ▶ Memory Cache ▶ Boot Features  System Memory: [xxxxx KB] Extended Memory: [xxxxx KB]			Item Specific Help  [Tab], [Shift-Tab], or [Enter] selects field.
F1 Help    ↑ ↓ Select Item    -/+ Change Values    F9 Setup Defaults Esc Exit    ← → Select Menu    Enter Select    ▶ Sub-Menu    F10 Previous Values			

### System Time / Date setup

System Time: Adjusts the system clock.

HH Hours (24hr. format)

MM Minutes

SS Seconds

System Date: Adjusts the system date.

MM Months

DD Days

YYYY Years

### BIOS Version

This displays the version of BIOS.

### BIOS Build Date

This displays the date of BIOS build.

### Legacy Diskette A

Defines the floppy drive type

NONE / 360K, 5.25 in / 1.2 M, 5.25 in / 720 K, 3.5 in / **1.44 M, 3.5 in /**  
2.88 M, 3.5 in

### **System Memory**

This display allows you to change the amount of system memory present on the system.

### **Extended Memory**

This displays/allows you to change the amount of extended memory present on the system.

### 3.2.1 IDE Primary//Master/Slave Setup

Computer detects IDE drive type from drive C to drive D.

Press **Enter** on any of the Primary/Master, Primary/Slave, options to view advanced details of the corresponding drive. The system displays advanced details like the number of heads/cylinders/sectors on the detected disk and the maximum storage capacity of the disk.

PhoenixBIOS Setup Utility			
Main	Advanced	Power	Boot
Exit			
Type:	[Auto]	Item Specific Help	
LBA Format	xxxxxxxxxx	User = your enter parameters of hard-disk drive installed at this connection. Auto = autotypes hard-disk drive installed here. 1-39 = you select pre-determined type of hard-disk drive installed here. CD-ROM = a CD-ROM drive is installed here. ATAPI Removable = removable disk drive is installed here.	
Total Sectors	xxxxxxx		
Maximum Capacity			
Multi-Sector Transfers:	[16 Sectors]		
LBA Mode Control:	[Enabled]		
32 Bit I/O:	[Disabled]		
Transfer Mode:	[FPIO 4 / DMA 2]		
Ultra DMA Mode:	[Mode 5]		
F1 Help	↑ ↓ Select Item	-/+ Change Values	F9
Setup Defaults			
Esc Exit	← → Select Menu	Enter Select	▶ Sub-Menu F10
Previous Values			

The system displays advanced details like the number of heads/cylinders/sectors on the detected disk and the maximum storage capacity of the disk.

This option lets you set the following hard disk parameters:

#### Type

Selects the type of device connected to the system.

**Auto** / CD/DVD / Not Installed / ARMD

#### Multi-Sector Transfers

This option allows you to specify the number of sectors per block for multiple sector transfers.

**16 Sectors** / 2 Sectors / 4 Sectors / 8 Sectors / Disabled

#### LBA Mode Control

Enables or disables LBA Mode.

When LBA is turned on, the BIOS will enable geometry translation. This translation may be done in the same way that it is done in Extended CHS or large mode, or it may be done using a different algorithm called LBA-assist translation. The translated geometry is still what is presented to the operating system for use in Int 13h calls. The difference between LBA and ECHS is that when using ECHS the BIOS translates the parameters used by these calls from the translated geometry to the drive's logical geometry. With LBA, it translates from the translated geometry directly into a logical block (sector) number.

**Disabled** / Enabled

### 32 Bit I/O

Enables or disables 32 bit data transfer mode.

Enabling this option causes the PCI hard disk interface controller to bundle together two 16-bit chunks of data from the drive into a 32-bit group, which is then transmitted to the processor or memory. This results in a small performance increase.

Enabled / **Disabled**

### Transfer Mode

These modes determine the speed at which data is transferred to and from the drive. The Auto option automatically determines the correct transfer rates.

Auto / **Standard** / Fast PIO 1 / Fast PIO 2 / Fast PIO 3 / Fast PIO 4 /  
FPIO 3 / DMA 1 / FPIO 4 / DMA 2

### Ultra DMA Mode

Enables or disables Ultra DMA Mode.

Ultra DMA (UDMA, or, more accurately, Ultra DMA/33) is a protocol for transferring data between a hard disk drive through the computer's data paths (or bus) to the computer's random access memory (RAM). The Ultra DMA/33 protocol transfers data in burst mode at a rate of 33.3 MBps (megabytes per second), twice as fast as the previous Direct Memory Access (DMA) interface. Ultra DMA support in your computer means that it will boot (start) and open new applications more quickly. It will also help users of graphics-intensive and other applications that require large amounts of access to data on the hard drive. Ultra DMA uses Cyclical Redundancy Checking (CRC), offering a new level of data protection.

**Disabled** / Mode 0 / Mode 1 / Mode 2 / Mode 3 / Mode 4 / Mode 5

### 3.2.2 Memory Cache

This setting allows you to tweak the various cache settings for optimal performance of your system. Press Enter to display the various cache settings.

PhoenixBIOS Setup Utility			
Main	Advanced	Power	Boot
Exit			
Memory Cache			Item Specific Help
Cache System BIOS area: [Write Protect] Cache Video BIOS area: [Write Protect] Cache Base 0-512K: [Write Back] Cache Base 512K-640K: [Write Back] Cache Extended Memory Area: [Write Back] Cache A000 – AFFF: [Disabled] Cache B000 – BFFF: [Disabled] Cache C800 – CBFF: [Write Protect] Cache CC00 – CFFF: [Write Protect] Cache D000 – D3FF: [Disabled] Cache D400 – D7FF: [Disabled] Cache D800 – DBFF: [Disabled] Cache DC00 – DFFF: [Disabled] Cache E000 – E3FF: [Write Protect] Cache E400 – E7FF: [Write Protect] Cache E800 – EBFF: [Write Protect] Cache EC00 – EFFF: [Write Protect]			Controls caching of system BIOS area.
F1	Help	↑ ↓	Select Item
Setup Defaults			-/+ Change Values
Esc	Exit	← →	Select Menu
Previous Values			Enter Select ► Sub-Menu
			F9 F10

#### Cache System BIOS Area

This feature is only available when the system BIOS is shadowed. It enables or disables the caching of the system BIOS ROM at F0000h-FFFFFh via the L2 cache. This greatly speeds up accesses to the system BIOS. However, this does not necessarily make the system perform better because the OS does not need to access the system BIOS often.

As such, it would be a waste of L2 cache bandwidth to cache the system BIOS instead of data that are more critical to the system's performance. In addition, if any program writes into this memory area, it will result in a system crash. So, it is recommended that you write protect this area for optimal system performance.

Uncached / **Write Protect**

#### Cache Video BIOS Area

This feature is only valid when the video BIOS is shadowed. It enables or disables the caching of the video BIOS ROM at C0000h-C7FFFh via the L2 cache. This greatly speeds up accesses to the video BIOS. However, this does

not necessarily make the system perform better because the OS bypasses the BIOS and uses the graphics driver to access the video card's hardware directly. As such, it would be a waste of L2 cache bandwidth to cache the video BIOS instead of data that are more critical to the system's performance. In addition, if any program writes into this memory area, it will result in a system crash. So, it is recommended that you write protect this area for optimal system performance.

Uncached / **Write Protect**

### **Cache Base 0-512K**

This feature allows you to control caching of 512K base memory.

Uncached / **Write Back** / Write Through / Write Protect

### **Cache Base 512K-640K**

This feature allows you to control caching of 512K 640K base memory.

Uncached / **Write Back** / Write Through / Write Protect

### **Cache Extended Memory Area**

This feature allows you to control caching of system memory above one megabyte.

Uncached / **Write Back** / Write Through / Write Protect

### **Cache A000-AFFF/B000-BFFF**

These features allow you to control caching of A000-AFFF/B000-BFFF memory.

USMC Caching / **Disabled** / Write Through / Write Protect / Write Back

### **Cahe C8000-CBFF/Cache CC00-CFFF**

These feature allows you to control caching of C8000-CBFF/CC00-CFFF memory.

**Disabled** / Write Through / Write Protect / Write Back

### **Cahe D000-D3FF/Cahe D400-D7FF/Cache D800-DBFF/Cahe DC00-DFFF**

These feature allows you to control caching of

D000-D3FF/D400-D7FF/D800-D8FF/DC00-DFFF memory.

**Disabled** / Write Through / Write Protect / Write Back

### **Cache E000-E3FF/Cache E400-E7FF**

These feature allows you to control caching of C8000-CBFF/CC00-CFFF memory.

Disabled / Write Through / **Write Protect** / Write Back



### 3.2.3 Boot Features

This option allows setting boot parameters. Press Enter to view the Boot Features screen.

PhoenixBIOS Setup Utility			
Main	Advanced	Power	Boot
Exit			
Boot Features			Item Specific Help
Floppy check: [Disabled] Summery screen: [Enabled] Boot-time Diagnostic Screen: [Enabled] QuickBoot Mode: [Enabled] Extended Memory Testing [Just zero it]			Enabled verifies floppy type on boot; disabled speeds boot.
F1 Help	↑ ↓ Select Item	-/+ Change Values	F9
Setup Defaults	← → Select Menu	Enter Select	► Sub-Menu F10
Esc Exit	Previous Values		

#### Floppy Check

This feature is used to verify floppy type on boot. Selecting “Disabled” will speed the boot process.

**Disabled** / Enabled

#### Summary Screen

Enables or disables the display of the summary screen during boot up.

When Summary Screen is Enabled (the default), a Phoenix BIOS Setup Utility summary screen appears during system boot after the power-on self-test (POST). The summary screen lists many of the system setup settings. When this option is set to Disabled, the summary screen does not appear.

**Enabled** / Disabled

#### Boot-time Diagnostic Screen

This feature is used to display the diagnostic screen during the boot process.

**Enabled** / Disabled

#### Quick Boot Mode

This BIOS feature allows you to decrease the time it takes to boot up the computer by shortening or skipping certain standard booting procedures.

If enabled, the BIOS will shorten the booting process by skipping some tests and shortening others. In addition, it will also perform the following to further speed up the booting process:

- Spin up the hard disks as soon as power is supplied (or as soon as possible)

- Initialize only critical parts of the chipset

Read memory size from the SPD (Serial Presence Detect) chip on the memory modules

Eliminate logo delays

If disabled, the BIOS will run the whole gamut of boot-up tests.

It is recommended that you disable this feature when you boot up a new computer for the first time or whenever you install a new piece of hardware. This allows the BIOS to run full diagnostic tests to detect any problems that may slip past Quick Boot's abbreviated testing scheme.

After a few error-free test runs, you should enable this feature for much faster booting.

**Enabled** / Disabled

### **Extended Memory Testing**

Determines the tests that will be run on extended memory (memory above 1MB) during boot up.

Normal / **Just zero it** / None

## 3.3 BIOS Advanced Menu

This section facilitates configuring advanced BIOS options for your system.

PhoenixBIOS Setup Utility			
Main	Advanced	Power	Boot
Exit			
<b>ACPI Sleep Mode</b> [S1/S3] Installed O/S: [Win2K/KP] Reset Configuration Data: [No] Large Disk Access Mode: [DOS]  Integrated IEEE 1394 [Enabled]  ► Advanced Chipset Control ► Advanced Processor Options ► I/O Device Configuration ► Hardware Monitor ► DMI Event Logging  Legacy USB Support: [Enabled] Option ROM Placement [Disabled] ► IPMI ► Console Redirection		Item Specific Help Select one of the ACPI power states: S1 or S3. If selected, the corresponding power state will support.	
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		►	Sub-Menu
			F10
F9			

### ACPI Sleep Mode

Select the sleep mode when system went to standby in OS.

**S1/S3** / S1 /S3

### Installed OS

Select the operating system installed on the PC.

Note: An incorrect setting can cause the operating system to behave unpredictably.

**Win2K/KP** / Other

### Reset Configuration Data

If you install a new piece of hardware or modify your computer's hardware configuration, the BIOS will automatically detect the changes and reconfigure the ESCD (Extended System Configuration Data). Therefore, there is usually no need to manually force the BIOS to reconfigure the ESCD.

However, sometimes, the BIOS may not be able to detect the hardware changes. A serious resource conflict may occur and the operating system may not even boot as a result. This is where the Reset Configuration Data BIOS feature comes in.

This BIOS feature allows you to manually force the BIOS to clear the previously saved ESCD data and reconfigure the settings. All you need to do is enable this BIOS feature and then reboot your computer. The new ESCD should resolve the conflict and allow the operating system to load normally.

Please note that the BIOS will automatically reset it to the default setting of No after reconfiguring the new ESCD. So, there is no need for you to manually disable this feature after rebooting.

Yes / **No**

### **Large Disk Access Mode**

This option determines whether a hard drive with more than 1024 cylinders, more than 16 heads and or more than 64 tracks per sector is present on the system. Set this option to **DOS** if such a hard drive is present. Else, set this option to **Other**. Virtually, all modern hard disks have these characters so leave this option at **DOS**, unless you know otherwise.

**DOS** / Other

### **Integrated IEEE 1394**

This feature allows you to enable / disable IEEE 1394 port.

**Enable** / Disable

### **Legacy USB Support**

When enabled, the BIOS takes control of the USB ports. Enable this only if you run an OS that does not support USB (e.g. DOS) or when you have USB hardware like USB mice that you want to use even before the operating system loads.

**Enabled** / Disabled

### **Option ROM Placement**

When enabled, the BIOS takes control of the ROM Placement. Enable this if your system hangs during boot. Please restart the system and come here to change the setting.

**Disabled** / E000 Extension by PFA / Temporary Relocation by PFA /

E000 Extension by Size / Temporary Relocation by

Size

### 3.3.1 Advanced Chipset Control

This section allows you to fine tune the chipset configuration.

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
Advanced Chipset Control		Item Specific Help	
▶ ICH USB Control Sub-Menu ▶ LAN Control Sub-Menu Crystal Beach Configure Enable [Enabled] SERR signal condition [Single bit]  4GB PCI Hole Granularity [256 MB ] Memory Branch Mode [Interleave] Branch 0 Rank Sparing [Disabled] Branch 1 Rank Sparing [Disabled]  Enhanced x8 Detection [Enabled] Force ITK Config Clocking [Disabled]  WatchDog Timer [Disabled] Enable Multimedia Timer [No] Parallel ATA: [Enabled] Serial ATA: [Enabled] Native Mode Operation: [Auto] SATA Controller Mode Option [Compatible]		These items control various ICH USB device	
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		▶	Sub-Menu
		F9	
		F10	

#### Crystal Beach Configure Enable

This feature is used to enable/disable the Crystal Beach.

Disabled / **Enabled**

#### SERR signal condition

Select ECC error conditions that SERR# be asserted.

None / **Single bit** / Multiple bit/ Both

#### 4GB PCI Hole Granularity

This feature is used to select the granularity of PCI hole for PCI resource. If MTRRs are not enough, we may use this option to reduce the MTRR occupation.

**256MB** / 512MB / 1.0GB / 2.0GB

#### Memory Branch Mode

This option is used to select the type of memory operation mode.

**Interleave** / Sequential / Mirror

### **Branch 0 Rank Sparing**

This option is used to enable/disable Branch 0 rank/DIMM sparing feature.

Enabled / **Disabled**

### **Branch 1 Rank Sparing**

This option is used to enable/disable Branch 1 rank/DIMM sparing feature.

Enabled / **Disabled**

### **Enhanced x8 Detection**

This feature is used to enable/disable enhanced x8 DRAM UC error detection.

**Enabled** / Disabled

### **Force ITK Config Clocking**

This feature is used to enable/disable FBD configuration for ITK test suite.

Enabled / **Disabled**

### **WatchDog Timer**

This feature is used to enable/disable Watchdog timer.

Enabled / **Disabled**

### **Enable Multimedia Timer**

This feature is used to enable/disable Multimedia Timer support.

Yes / **No**

### **Parallel ATA**

This feature is used to enable the PATA function.

Enabled / **Disabled**

### **Serial ATA**

This feature is used to enable the SATA function.

Enabled / **Disabled**

### **Native Mode Operation**

This feature is used to choose Native Mode for ATA. However, certain OS is not supported under Native Mode.

**Auto** / Serial ATA

### **SATA Controller Mode Option**

This feature is used to select SATA controller mode. In “compatible mode”, SATA and PATA drives are auto-detected and placed in Legacy mode. In “Enhanced (non-AHCI) mode”, SATA and PATA drives are auto-detected and placed in Native IDE mode.

**Compatible** / Enhanced (non-AHCI)

### 3.3.1.1 ICH USB Control Sub-Menu

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
ICH USB Control			Item Specific Help
USB – Device 29, All Function: [Enabled] USB – Device 29, F1, F2 and F3: [Enabled] USB – Device 29, F2 and F3: [Enabled] USB – Device 29, F3 Only [Enabled]  USB – Device 29, Function 7: [Enabled]			
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
			► Sub-Menu
			F9
			F10

#### USB Device 29, All Function

Enable or Disable all USB devices by setting item to the desired value.

**Enabled** / Disabled

#### USB Device 29, F1, F2 and F3

Enable or Disable these 3 USB functions by setting item to the desired value.

**Enabled** / Disabled

#### USB Device 29, F2 and F3

Enable or Disable these 2 USB functions by setting item to the desired value.

**Enabled** / Disabled

#### USB Device 29, F3 only

Enable or Disable the USB function by setting item to the desired value.

**Enabled** / Disabled

#### USB Device 29, Function 7:

Control USB 2.0 functionality through this Setup Item.

**Enabled** / Disabled

### 3.3.1.2 LAN Control Sub-Menu

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
LAN Control Sub-Menu			Item Specific Help
LAN1 (Gilgal) [Enabled] Option ROM Scan: [Disabled]  LAN2 (Gilgal) [Enabled] Option ROM Scan: [Disabled]			
F1 Help    ↑ ↓ Select Item    -/+ Change Values    F9 Setup Defaults Esc Exit    ← → Select Menu    Enter Select    ► Sub-Menu    F10 Previous Values			

#### LAN1 (Gilgal)

This feature is used to enable/disable the function of integrated LAN1 interface.

Disabled / **Enabled**

#### Option ROM Scan

This feature is used to enable/disable the Option ROM of integrated LAN1 interface.

**Disabled** / Enabled

#### LAN2 (Gilgal)

This feature is used to enable/disable the function of integrated LAN2 interface.

Disabled / **Enabled**

#### Option ROM Scan

This feature is used to enable/disable the Option ROM of integrated LAN2 interface.

**Disabled** / Enabled



### 3.3.2 Advanced Processor Options

This section allows you to fine-tune the processor options.

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
Advanced Processor Options		Item Specific Help	
Hyperthreading:		[Enabled]	
Intel® Virtualization Technology		[Disabled]	
C1 Enhanced Mode		[Enabled]	
No Execute Mode Mem Protection		[Enabled]	
Set Max Ext CPUID = 3		[Disabled]	
Discrete MTRR Allocation		[Disabled]	
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		►	Sub-Menu
		F9	
		F10	

#### Hyperthreading

Enable this only if you have an Intel Hyper Threading processor.

Hyper-Threading Technology enables multi-threaded software applications to execute threads in parallel. Hyper-Threading Technology provides thread-level-parallelism (TLP) on each processor resulting in increased utilization of processor execution resources. As a result, resource utilization yields higher processing throughput. Hyper-Threading Technology is a form of simultaneous multi-threading technology (SMT) where multiple threads of software applications can be run simultaneously on one processor. This is achieved by duplicating the architectural state on each processor, while sharing one set of processor execution resources. Hyper-Threading Technology also delivers faster response times for multi-tasking workload environments. By allowing the processor to use on-die resources that would otherwise have been idle, Hyper-Threading Technology provides a performance boost on multi-threading and multi-tasking operations for the Intel NetBurst® microarchitecture.

**Enabled** / Disabled

#### Intel® Virtualization Technology

This feature is used to enable Virtualization Technology.

Enabled / **Disabled**

#### C1 Enhanced Mode

This feature is used to enable the C1 Enhanced mode.

**Enabled** / Disabled

#### No Execute Mode Mem Protection

Execution protection prevents code execution from data pages such as the default heap, various stacks, and memory pools. Protection can be applied in both user and kernel-mode. Windows XP SP2 supports this technology.

**Enabled** / Disabled

### **Set Max Ext CUID=3**

This feature is used to set Max CUID extended function value to 3.

**Disabled** / Enabled

### **Discrete MTRR Allocation**

This feature is used to configure the MTRR method. Disabling the feature will set the MTRR method in continuous status.

**Disabled** / Enabled

### 3.3.3 I/O Device Configuration

This setting allows you to configure I/O devices.

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
<b>I/O Device Configuration</b>		Item Specific Help	
<b>Floppy disk controller</b> [Enabled] Serial port A: [Enabled] Base I/O address: [3F8] Interrupt: [IRQ 4] Serial port B: [Enabled] Base I/O address: [2F8] Interrupt: [IRQ 3] Parallel port: [Disabled]			
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		►	Sub-Menu
		F9	
		F10	

#### Floppy Disk Controller

This defines how the floppy disk controller is detected and configured.

**Enabled/** Disabled

#### Serial Port A:

This defines how the first serial port is detected and configured.

**Auto/** Enabled / Disabled

#### Base I/O address:

This defines the base I/O address for serial port A.

**3F8/** 2F8 / 3E8 / 2E8

#### Interrupt:

This defines set the interrupt for serial port A.

IRQ3/ **IRQ4**

#### Serial Port B:

This defines how the first serial port is detected and configured.

**Auto/** Enabled / Disabled

#### Base I/O address:

This defines the base I/O address for serial port B.

3F8/ **2F8** / 3E8 / 2E8

#### Interrupt:

This defines the interrupt for serial port B.

**IRQ3**/ IRQ4

**Parallel port:**

This defines how the parallel port is detected and configured.

**Disabled** / Enabled

### 3.3.4 DMI Event Logging

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
DMI Event Logging		Item Specific Help	
Event log validity	Valid	View the contents of the DMI event log.	
Event log capacity	Space Available		
View DMI event log	[Enter]		
Event Logging	[Enabled]		
ECC Event Logging	[Enabled]		
Mark DMI events as read	[Enter]		
Clear all DMI event logs	[No]		
<div>F1    Help    ↑ ↓    Select Item    -/+    Change Values    F9</div> <div>Setup Defaults</div> <div>Esc    Exit    ← →    Select Menu    Enter    Select    ► Sub-Menu    F10</div> <div>Previous Values</div>			

#### View DMI event log

View the contents of the DMI event log.

#### Event Logging

Select Enabled to allow logging of DMI events

**Enabled/** Disabled

#### ECC Event Logging

Select Enabled to allow logging of ECC events

**Enabled/** Disabled

#### Mark DMI events as read

Press <Enter> to mark DMI events as read.

#### Clear all DMI event logs

Setting this to 'Yes' will clear the DMI event log after rebooting.

Options: **No** / Yes

### 3.3.5 Hardware Monitor

This displays critical system parameters like CPU speed, fan speeds, voltage levels and CPU temperature.

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
Hardware Monitor		Item Specific Help	
Fan Speed Control		[Full Speed]	
CPU Temp Reading		[Diode]	
►Realtime Sensors			
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		►	Sub-Menu
		F9	
		F10	

### 3.3.5.1 Realtime Sensors

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
Voltage Monitoring		Item Specific Help	
CPU0 Temperature CPU1 Temperature Rear Temperature PCI Slot Temperature Front Temperature  CPU0 Fan (Fan0) CPU0 Fan (Fan1) Rear Fan (Fan3) Front Fan (Fan2) PCI Area Fan (Fan4)  CPU0 VCore Voltage CPU1 VCore Voltage VCC5V VCC3.3V VSB WB-12V VCC12V Battery			
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		►	Sub-Menu
		F9	
		F10	

### 3.3.6 IPMI

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
IPMI		Item Specific Help	
IPMI Specification Version [xxxxx] BMC Hardware/Firmware Version [xxxxx] System Event Logging [Enabled] Existing Event Log number x Remaining Event Log number [xxxxx] Event Log Control SYS Firmware Progress [Disabled] BIOS POST Errors [Enabled] BIOS POST Watchdog [Disabled] OS boot Watchdog [Disabled] Timer for loading OS (min) [xx] Timer out action [No Action] Date Format to show [MM DD YYYY] Date Separator [ / ]  BMC Password			
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		▶	Sub-Menu
		F9	
		F10	

#### IPMI Specification Version

Displays the information of IPMI specification version.

#### BMC Hardware/Firmware Version

Displays the information of BMC hardware/firmware version.

#### System Event Logging

This feature is used to enable/disable IPMI event logging. Disabling will still log events received via the system interface.

Disabled / **Enabled**

#### SYS Firmware Progress

This feature is used to enable/disable the logging of POST progress.

**Disabled/** Enabled

#### BIOS POST Errors

This feature is used to enable/disable the logging of POST errors.

**Enabled/** Disabled



**BIOS POST Watchdog**

This feature is used to enable/disable the POST watchdog.

**Disabled/** Enabled

**OS Boot Watchdog**

This feature is used to enable/disable the OS boot watchdog.

**Disabled/** Enabled

**Timer for Loading OS (min)**

This feature is used to determine the timer value for watchdog timer.

**Time out Action**

This feature is used to determine what action to take if OS fails to boot.

**No Action/** Reset/ Power Off/ Power Cycle

**Date Format to Show**

This feature is used to choose the type of date field to be shown.

**MM DD YYYY/** DD MM YYYY/ YYYY MM DD

**Date Separator**

This feature is used to choose which character to use in date entries.

**/** / .

### 3.3.7 Console Redirection

PhoenixBIOS Setup Utility			
Main	<b>Advanced</b>	Power	Boot
Exit			
Console Redirection		Item Specific Help	
Com Port Address		[Disabled]	
Baud Rate		[19.2K]	
Console Type		[PC ANSI]	
Flow Control		[CTS/RTS]	
Console connection:		[Direct]	
Continue C. R. after POST:		[Off]	
# of video pages to support:		[1]	
IP Address		[xxx. Xxx. Xxx. xxx]	
F1	Help	↑ ↓	Select Item
Setup Defaults		-/+	Change Values
Esc	Exit	← →	Select Menu
Previous Values		Enter	Select
		►	Sub-Menu
		F10	
F9			

#### Com Port Address

If enabled it will use a port on the motherboard.

**Disabled** / On-board COM A / On-board COM B

#### Baud Rate

This feature is used to enable the specified baud rate.

**19.2K** / 300 / 1200 / 2400 / 9600 / 38.4K / 57.6K / 115.2K

#### Console Type

This feature is used to enable the specified console type.

VT100 / VT100.8bit / PC-ANSI, 7bit / **PC ANSI** / VT100+ / VT-UTF8 / ASCII

#### Flow Control

This feature is used to enable the flow control.

None / XON/XOFF / **CTS/RTS**

#### Console Connection

This feature is used to indicate whether the console is connected directly to the system or a modem is used to connect.

**Direct** / Via modem

#### Continue C.R. after POST

This feature is used to enable console redirection after OS has loaded.

**Off** / On

**#of video pages to support:**

This is the number of video pages to allocate for Console Redirection when video hardware is not available.

**IP Address**

Displays the IP address

## 3.5 Power Menu

These settings allow you to configure the power options for your system.

PhoenixBIOS Setup Utility			
Main	Advanced	<b>Power</b>	Boot
Exit			
<b>Resume On Time:</b> [Off] Resume Time: [xx:xx:xx]  Chassis Intrusion Detect: [No]  After Power Failure: [Stay Off]		Item Specific Help Enabled wakes the system up at a specific time.	
F1 Help    ↑ ↓ Select Item    -/+ Change Values    F9 Setup Defaults Esc Exit    ← → Select Menu    Enter Select    ► Sub-Menu    F10 Previous Values			

### Resume On Time

When enabled, this allows the system to be worked up at a specified time. This time is specified by the Resume Time parameter.

**Off** / On

### Resume Time

This option allows the user to specify the time when the system is to wake up.

### Chassis Intrusion Detect

This feature is used to enable/disable the function: when chassis open event is detected, BIOS will record the event.

**No** / Yes

### After Power Failure

Specifies the mode of operation after the system recovers from a power loss.

**Stay off** / Last State / Power on

## 3.6 Boot Menu

Use this screen to select options for the Boot Settings Configuration.

PhoenixBIOS Setup Utility			
Main	Advanced	Power	Boot
Exit			Item Specific Help
1: Legacy Floppy Drives 2: IDE 1: ST300011A-(CS) 3: 4: 5: 6: 7: 8: : Legacy Network Card ; Bootable Add-in Cards			Keys used to view or configure devices: <Enter> expands or collapses devices with a + or – <Ctrl + Enter> expands all <Shift + 1> enables or disables a device. <+> and <-> moves the device up or down. <n> May move removable device between Hard Disk or Removable Disk. <d> Remove a device that is not installed.
F1	Help	↑ ↓ Select Item	-/+ Change Values F9
Setup Defaults			
Esc	Exit	← → Select Menu	Enter Select ► Sub-Menu F10
Previous Values			

The boot menu will list all bootable devices. Use <Enter> to expand or collapse devices with a '+' or '-'. Use <+> or <-> to arrange the priorities of all bootable devices.

## 3.7 Exit Menu

These settings set the exit options on your system.

PhoenixBIOS Setup Utility				
Main	Advanced	Exit	Power	Boot
Exit Saving Changes Exit Discarding Changes Load Setup Defaults Discard Changes Save Changes				Item Specific Help Exit system Setup and save your changes to CMOS.
F1	Help	↑ ↓	Select Item	-/+ Change Values F9
Setup Defaults				
Esc	Exit	← →	Select Menu	Enter Select ► Sub-Menu F10
Previous Values				

### Exit Saving Changes

This exits BIOS setup after saving the changes made.

### Exit Discarding Changes

This exits BIOS setup after discarding the changes made.

### Load Setup Defaults

Loads the factory default values.

### Discard Changes

Discards all changes made without exiting BIOS setup.

### Save Changes

Saves all changes made without exiting BIOS

## Chapter 4: Diagnostics

Note: if you experience problems with setting up your system, always check the following things in the following order:

### CPU, Memory, Video

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the Tyan website at: <http://www.tyan.com>.

#### 4.0 Beep Codes

Fatal errors which halt the boot process are communicated through a series of audible beeps.

- (1) Memory module initialization failed
  - (a) memory modules might not be plugged in correct configuration
  - (b) wrong type of memory
  - (c) bad memory modules
- (2) Graphics initialization failed

Before contacting your vendor or Tyan Technical Support, be sure that you note as much as you can about the beep code length and order that you experience. Also, be ready with information regarding add-in cards, drives and O/S to speed the support process and come to a quicker solution.

#### 4.1 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the Tyan web site: <http://www.tyan.com>

#### NOTE

Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. Tyan does not have a policy for replacing BIOS chips directly with end users. In no event will Tyan be held responsible for damages done by the end user.

## Appendix: Glossary

**ACPI (Advanced Configuration and Power Interface):** a power management specification that allows the operating system to control the amount of power distributed to the computer's devices. Devices not in use can be turned off, reducing unnecessary power expenditure.

**AGP (Accelerated Graphics Port):** a PCI-based interface which was designed specifically for demands of 3D graphics applications. The 32-bit AGP channel directly links the graphics controller to the main memory. While the channel runs only at 66 MHz, it supports data transmission during both the rising and falling ends of the clock cycle, yielding an effective speed of 133 MHz.

**ATAPI (AT Attachment Packet Interface):** also known as IDE or ATA; a drive implementation that includes the disk controller on the device itself. It allows CD-ROMs and tape drives to be configured as master or slave devices, just like HDDs.

**ATX:** the form factor designed to replace the AT form factor. It improves on the AT design by rotating the board 90 degrees, so that the IDE connectors are closer to the drive bays, and the CPU is closer to the power supply and cooling fan. The keyboard, mouse, USB, serial, and parallel ports are built-in.

**Bandwidth:** refers to carrying capacity. The greater the bandwidth, the more data the bus, phone line, or other electrical path can carry. Greater bandwidth results in greater speed.

**BBS (BIOS Boot Specification):** a feature within the BIOS that creates, prioritizes, and maintains a list of all Initial Program Load (IPL) devices, and then stores that list in NVRAM. IPL devices have the ability to load and execute an OS, as well as provide the ability to return to the BIOS if the OS load process fails. At that point, the next IPL device is called upon to attempt loading of the OS.

**BIOS (Basic Input/Output System):** the program that resides in the ROM chip, which provides the basic instructions for controlling your computer's hardware. Both the operating system and application software use BIOS routines to ensure compatibility.

**Buffer:** a portion of RAM which is used to temporarily store data; usually from an application though it is also used when printing and in most keyboard drivers. The CPU can manipulate data in a buffer before copying it to a disk drive. While this improves system performance (reading to or writing from a disk drive a single time is much faster than doing so repeatedly) there is the possibility of losing your data should the system crash. Information in a buffer is temporarily stored, not permanently saved.

**Bus:** a data pathway. The term is used especially to refer to the connection between the processor and system memory, and between the processor and PCI or ISA local buses.

**Bus mastering:** allows peripheral devices and IDEs to access the system memory without going through the CPU (similar to DMA channels).

**Cache:** a temporary storage area for data that will be needed often by an application. Using a cache lowers data access times since the information is stored in SRAM instead of slower DRAM. Note that the cache is also much smaller than your regular memory: a typical cache size is 512KB, while you may have as much as 4GB of regular memory.

**Closed and open jumpers:** jumpers and jumper pins are active when they are "on" or "closed", and inactive when they are "off" or "open".

**CMOS (Complementary Metal-Oxide Semiconductors):** chips that hold the basic startup information for the BIOS.



**COM port:** another name for the serial port, which is called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another). Parallel ports transmit the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits at the same time).

**FBDIMM (Double Data Rate):** a technology designed to double the clock speed of the memory. It activates output on both the rising and falling edge of the system clock rather than on just the rising edge, potentially doubling output.

**DIMM (Dual In-line Memory Module):** faster and more capacious form of RAM than SIMMs, and do not need to be installed in pairs.

**DIMM bank:** sometimes called DIMM socket because the physical slot and the logical unit are the same. That is, one DIMM module fits into one DIMM socket, which is capable of acting as a memory bank.

**DMA (Direct Memory Access):** channels that are similar to IRQs. DMA channels allow hardware devices (like soundcards or keyboards) to access the main memory without involving the CPU. This frees up CPU resources for other tasks. As with IRQs, it is vital that you do not double up devices on a single line. Plug-n-Play devices will take care of this for you.

**DRAM (Dynamic RAM):** widely available, very affordable form of RAM which loses data if it is not recharged regularly (every few milliseconds). This refresh requirement makes DRAM three to ten times slower than non-recharged RAM such as SRAM.

**ECC (Error Correction Code or Error Checking and Correcting):** allows data to be checked for errors during run-time. Errors can subsequently be corrected at the same time that they're found.

**EEPROM (Electrically Erasable Programmable ROM):** also called Flash BIOS, it is a ROM chip which can, unlike normal ROM, be updated. This allows you to keep up with changes in the BIOS programs without having to buy a new chip. TYAN's BIOS updates can be found at <http://www.tyan.com>

**ESCD (Extended System Configuration Data):** a format for storing information about Plug-n-Play devices in the system BIOS. This information helps properly configure the system each time it boots.

**Firmware:** low-level software that controls the system hardware.

**Form factor:** an industry term for the size, shape, power supply type, and external connector type of the Personal Computer Board (PCB) or motherboard. The standard form factors are the AT and ATX.

**Global timer:** onboard hardware timer, such as the Real-Time Clock (RTC).

**HDD:** stands for Hard Disk Drive, a type of fixed drive.

**H-SYNC:** controls the horizontal synchronization/properties of the monitor.

**HyperThreading™:** a high speed, low latency, scalable point-to-point link for interconnecting ICs on boards. It can be significantly faster than a PCI bus for an equivalent number of pins. It provides the bandwidth and flexibility critical for today's networking and computing platforms while retaining the fundamental programming model of PCI.

**IC (Integrated Circuit):** the formal name for the computer chip.

**IDE (Integrated Device/Drive Electronics):** a simple, self-contained HDD interface. It can handle drives up to 8.4 GB in size. Almost all IDEs sold now are in fact Enhanced IDEs (EIDEs), with maximum capacity determined by the hardware controller.

**IDE INT (IDE Interrupt):** a hardware interrupt signal that goes to the IDE.

**I/O (Input/Output):** the connection between your computer and another piece of hardware (mouse, keyboard, etc.)

**IRQ (Interrupt Request):** an electronic request that runs from a hardware device to the CPU. The interrupt controller assigns priorities to incoming requests and delivers them to the CPU. It is important that there is only one device hooked up to each IRQ line; doubling up devices on IRQ lines can lock up your system. Plug-n-Play operating systems can take care of these details for you.

**Latency:** the amount of time that one part of a system spends waiting for another part to catch up. This occurs most commonly when the system sends data out to a peripheral device and has to wait for the peripheral to spread (peripherals tend to be slower than onboard system components).

**NVRAM:** ROM and EEPROM are both examples of Non-Volatile RAM, memory that holds its data without power. DRAM, in contrast, is volatile.

**Parallel port:** transmits the bits of a byte on eight different wires at the same time.

**PCI (Peripheral Component Interconnect):** a 32 or 64-bit local bus (data pathway) which is faster than the ISA bus. Local buses are those which operate within a single system (as opposed to a network bus, which connects multiple systems).

**PCI PIO (PCI Programmable Input/Output) modes:** the data transfer modes used by IDE drives. These modes use the CPU for data transfer (in contrast, DMA channels do not). PCI refers to the type of bus used by these modes to communicate with the CPU.

**PCI-to-PCI bridge:** allows you to connect multiple PCI devices onto one PCI slot.

**Pipeline burst SRAM:** a fast secondary cache. It is used as a secondary cache because SRAM is slower than SDRAM, but usually larger. Data is cached first to the faster primary cache, and then, when the primary cache is full, to the slower secondary cache.

**PnP (Plug-n-Play):** a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Devices and operating systems that are not Plug-n-Play require you to reconfigure your system each time you add or change any part of your hardware.

**PXE (Preboot Execution Environment):** one of four components that together make up the Wired for Management 2.0 baseline specification. PXE was designed to define a standard set of preboot protocol services within a client with the goal of allowing networked-based booting to boot using industry standard protocols.

**RAID (Redundant Array of Independent Disks):** a way for the same data to be stored in different places on many hard drives. By using this method, the data is stored redundantly and multiple hard drives will appear as a single drive to the operating system. RAID level 0 is known as striping, where data is striped (or overlapped) across multiple hard drives, but offers no fault-tolerance. RAID level 1 is known as mirroring, which stores the data within at least two hard drives, but does not stripe. RAID level 1 also allows for faster access time and fault-tolerance, since either hard drive can be read at the same time. RAID level 0+1 is both striping and mirroring, providing fault-tolerance, striping, and faster access all at the same time.

**RAIDIOS:** RAID I/O Steering (Intel)

**RAM (Random Access Memory):** technically refers to a type of memory where any byte can be accessed without touching the adjacent data and is often referred to the system's main memory. This memory is available to any program running on the computer.

**ROM (Read-Only Memory):** a storage chip which contains the BIOS; the basic instructions required to boot the computer and start up the operating system.

**SDRAM (Synchronous Dynamic RAM):** called as such because it can keep two sets of memory aFBDIMMesses open simultaneously. By transferring data alternately from one set of aFBDIMMesses and then the other, SDRAM cuts down on the delays associated with non-synchronous RAM, which must close one aFBDIMMess bank before opening the next.

**Serial port:** called as such because it transmits the eight bits of a byte of data along one wire, and receives data on another single wire (that is, the data is transmitted in serial form, one bit after another).

**SCSI Interrupt Steering Logic (SISL):** Architecture that allows a RAID controller, such as AcceleRAID 150, 200 or 250, to implement RAID on a system board-embedded SCSI bus or a set of SCSI busses. SISL: SCSI Interrupt Steering Logic ( LSI ) (only on LSI SCSI boards)

**Sleep/Suspend mode:** in this mode, all devices except the CPU shut down.

**SDRAM (Static RAM):** unlike DRAM, this type of RAM does not need to be refreshed in order to prevent data loss. Thus, it is faster and more expensive.

**Standby mode:** in this mode, the video and hard drives shut down; all other devices continue to operate normally.

**UltraDMA-33/66/100:** a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without a proper UltraDMA controller, your system cannot take advantage of higher data transfer rates of the new UltraDMA/UltraATA hard drives.

**USB (Universal Serial Bus):** a versatile port. This one port type can function as a serial, parallel, mouse, keyboard or joystick port. It is fast enough to support video transfer, and is capable of supporting up to 127 daisy-chained peripheral devices.

**VGA (Video Graphics Array):** the PC video display standard

**V-SYNC:** controls the vertical scanning properties of the monitor.

**ZCR (Zero Channel RAID):** PCI card that allows a RAID card to use the onboard SCSI chip, thus lowering cost of RAID solution

**ZIF Socket (Zero Insertion Force socket):** these sockets make it possible to insert CPUs without damaging the sensitive CPU pins. The CPU is lightly placed in an open ZIF socket, and a lever is pulled down. This shifts the processor over and down, guiding it into the board and locking it into place.

## Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequences).

If these options are not available for you then Tyan Computer Corporation can help. Besides designing innovative and quality products for over a decade, Tyan has continuously offered customers service beyond their expectations. Tyan's website ([www.tyan.com](http://www.tyan.com)) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find the latest software and operating system components to keep their systems running as powerful and productive as possible. Tyan also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, Tyan serves multiple market segments with the industry's most competitive services to support them.

**"Tyan's tech support is some of the most impressive we've seen, with great response time and exceptional organization in general" - Anandtech.com**

Please feel free to contact us directly for this service at [techsupport@tyan.com](mailto:techsupport@tyan.com)

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN website for FAQ's, bulletins, driver updates, and other information: <http://www.tyan.com>
3. Contact your dealer for help BEFORE calling TYAN.
4. Check the TYAN user group: [alt.comp.periphs.mainboard.TYAN](http://alt.comp.periphs.mainboard.TYAN)

## Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.

**NOTE:** A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid. TYAN will pay to have the board shipped back to you

**Notice for the USA**

Compliance Information Statement (Declaration of Conformity Procedure) DoC  
FCC Part 15: This device complies with part 15 of the FCC Rules

Operation is subject to the following conditions:

This device may not cause harmful interference, and

This device must accept any interference received including interference that may cause undesired operation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Plug the equipment into an outlet on a circuit different from that of the receiver.

Consult the dealer on an experienced radio/television technician for help.

**Notice for Canada**

This apparatus complies with the Class B limits for radio interference as specified in the Canadian Department of Communications Radio Interference Regulations. (Cet appareil est conforme aux normes de Classe B d'interférence radio tel que spécifié par le Ministère Canadien des Communications dans les règlements d'interférence radio.)

**Notice for Europe (CE Mark)**

This product is in conformity with the Council Directive 89/336/EEC, 92/31/EEC (EMC).

**CAUTION:** Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

**Document #: D1791-100**