Tiger i7520SD /// S5365

Version 1.2

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	1 x Ultra-DMA-133/100/66/33 IDE cable
	2 x Serial ATA Cable
	1 x S5365 user's manual
	1 x S5365 Quick Reference guide
	1 x TYAN driver CD
	1 x I/O shield

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

Chapter 1: Introduction

1.1 - Congratulations

You have purchased one of the most powerful server solutions. The Tiger i7520SD (S5365) is a flexible Intel® platform for multiple applications, based on Intel® "E7520 MCH" and "ICH 6300ESB" chipsets.

Designed to support Intel® Sossaman processor and DDRII 400 memory up to 16GB, the S5365 is featured with integrated Dual Gigabit Ethernet LAN, ATI ES1000 graphics buffer and two serial ATA ports. With the multiple features designed, the S5365 offers exceptional performance and versatile solution for your server platform.

Remember to visit TYAN's Website at http://www.TYAN.com. There you can find information on all of TYAN's products with FAQs, online manuals and BIOS upgrades.

1.2 - Hardware Specifications

Processor
- Two mPGA479 sockets support Intel CPU's as below: 667MHz FSB Sossaman (dual core) with 2M L2, up to 1.67GHz (LV) , 2.0GHz and 2.33GHz

Chipset
- Intel® E7520 Memory Controller Hub
- Intel® 6300ESB I/O Controller Hub

Memory
- Dual channel memory bus (must be populated in pairs)
- 8 DDRII 240-pin DIMM sockets up to 16GB memory size
- Supports registered DDRII 400 compliant with ECC memory
- Supports 256MB, 512MB, 1GB, 2GB DDRII DIMM

Integrated LAN Controllers
- Intel® 82551QM PCI bus single port FE controller
- Intel® 82571EB dual port Gigabit Ethernet controller

Graphics
- Integrated ATI ES1000 w/16MB frame buffer

Storage
- Two 1.5Gb SATA ports supported by south bridge
- IDE supported by south bridge

Expansion Slot
- Supports 2 PCI-E x8 slots
- Supports 2 PCI-X expansion slots
- Supports 2 PCI expansion slots

Integrated I/O

- One (1) 40-pin IDE connector
- One (1) 50-pin Compact Flash Type II connector
- Two (2) SATA connectors
- One (1) pin header for USB ports (supports two USB 2.0 devices)
- One (1) SO-DIMM connector (200pins for TARO)
- One (1) FDD connector
- One (1) shrouded header for serial port
- One (1) printed port header
- One (1) TYAN FPIO2
- One (1) TYFP FPIO header

Form Factor

- ATX 12" x 9.6", 305x248mm

Optional Modules

- TYAN: M9000-10, M8110, M7902, M7901

BIOS

- Phoenix BIOS® on 8Mbit Flash ROM
- Supports boot from USB device
- Supports ACPI 2.0
- WOL and PXE supported (by Intel 82551QM only)
- Power-on mode control for AC power loss recovery

Back Panel I/O Ports

- One (1) serial port with D-Sub connector
- One (1) VGA connector
- Two (2) USB 2.0 ports with a double-stacked USB connector + RJ45
- Two LAN ports with RJ45 connector include Transformer & LED's (stacked)
- One dual PS2 connector

System Management

- Total five (5) 3-pin fan headers with control and tachometer monitoring
- Monitors voltage for CPU, memory & power supply
- Monitoring temperatures for CPU & environment
- Pin headers for Fault LED, Power/Suspend LED & HDD activity LED
- Chassis intrusion detection
- Watchdog timer supported

Chapter 2: Board Installation

You are now ready to install your motherboard. The mounting hole pattern of the Tiger i7520SD S5365 matches the ATX specification. Before continuing with installation, confirm that your chassis supports an ATX motherboard.

How to install our products right… the first time

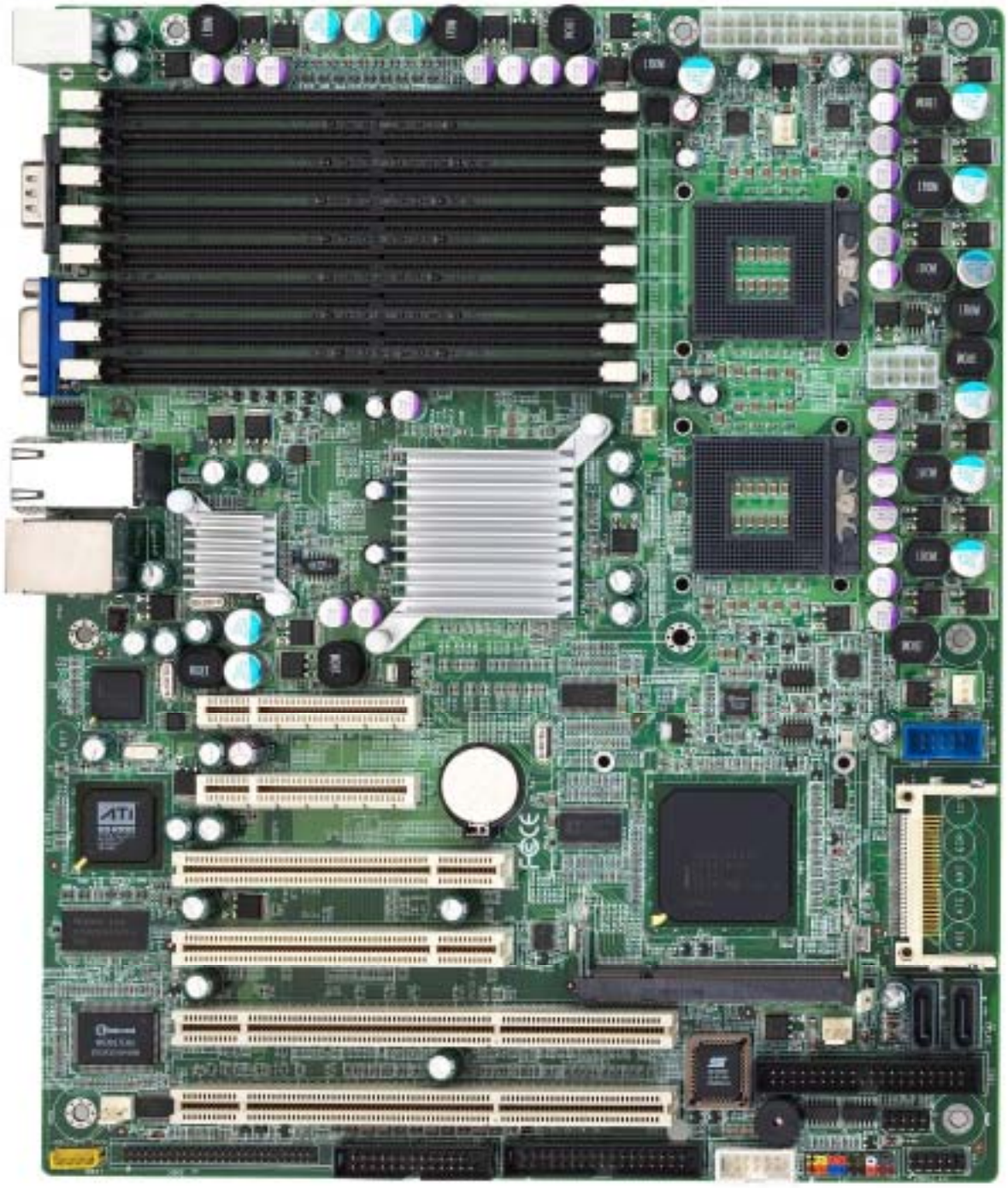
The first thing you should do is reading this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

(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.

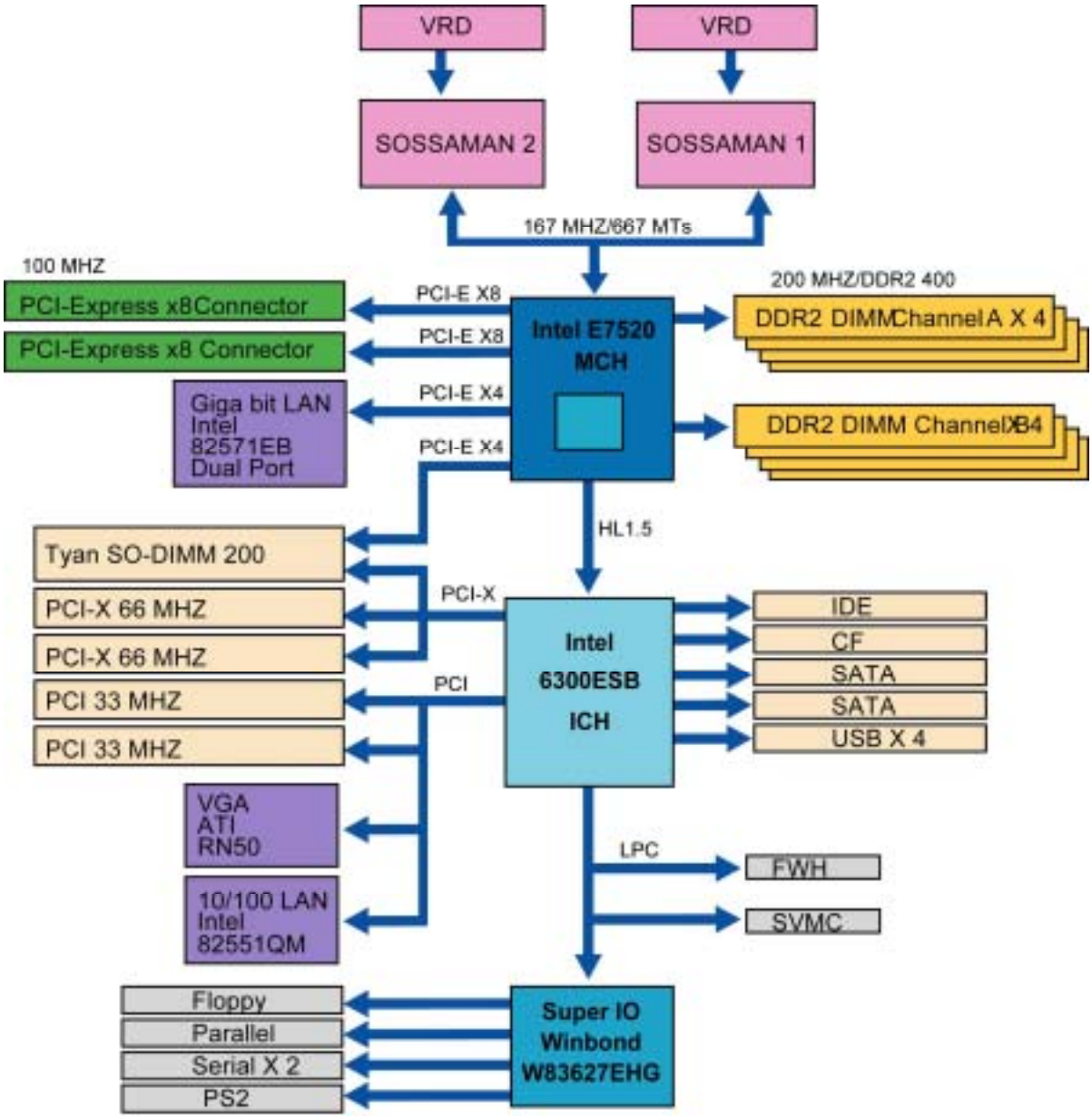
NOTE	DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED

2.1- Board Image



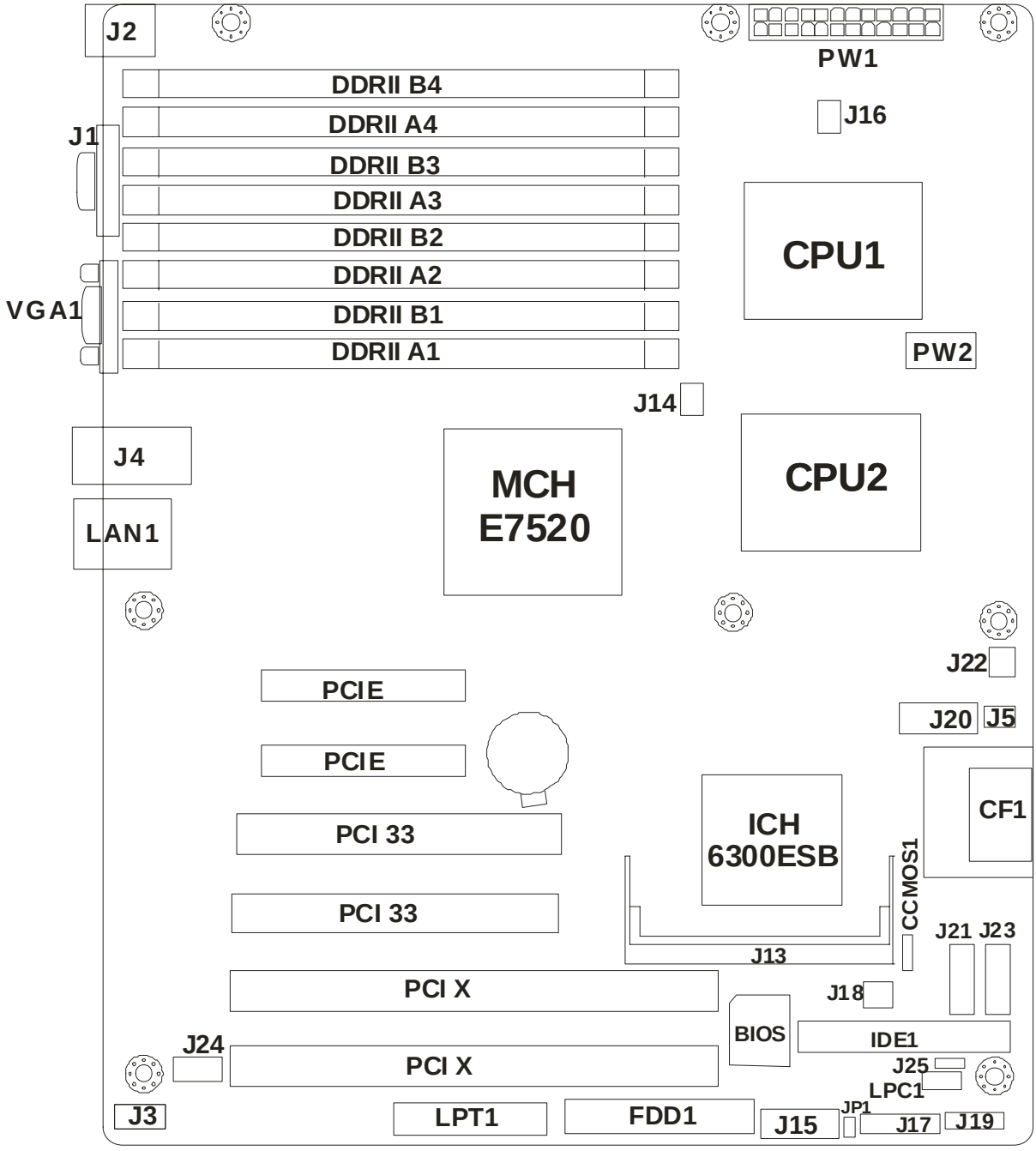
This picture is representative of the latest board revision available at the time of publishing. The board you receive may or may not look exactly like the above picture.

2.2 - Block Diagram



Tiger i7520SD S5365G3NR Block Diagram

2.3 - Board Parts, Jumpers and Connectors

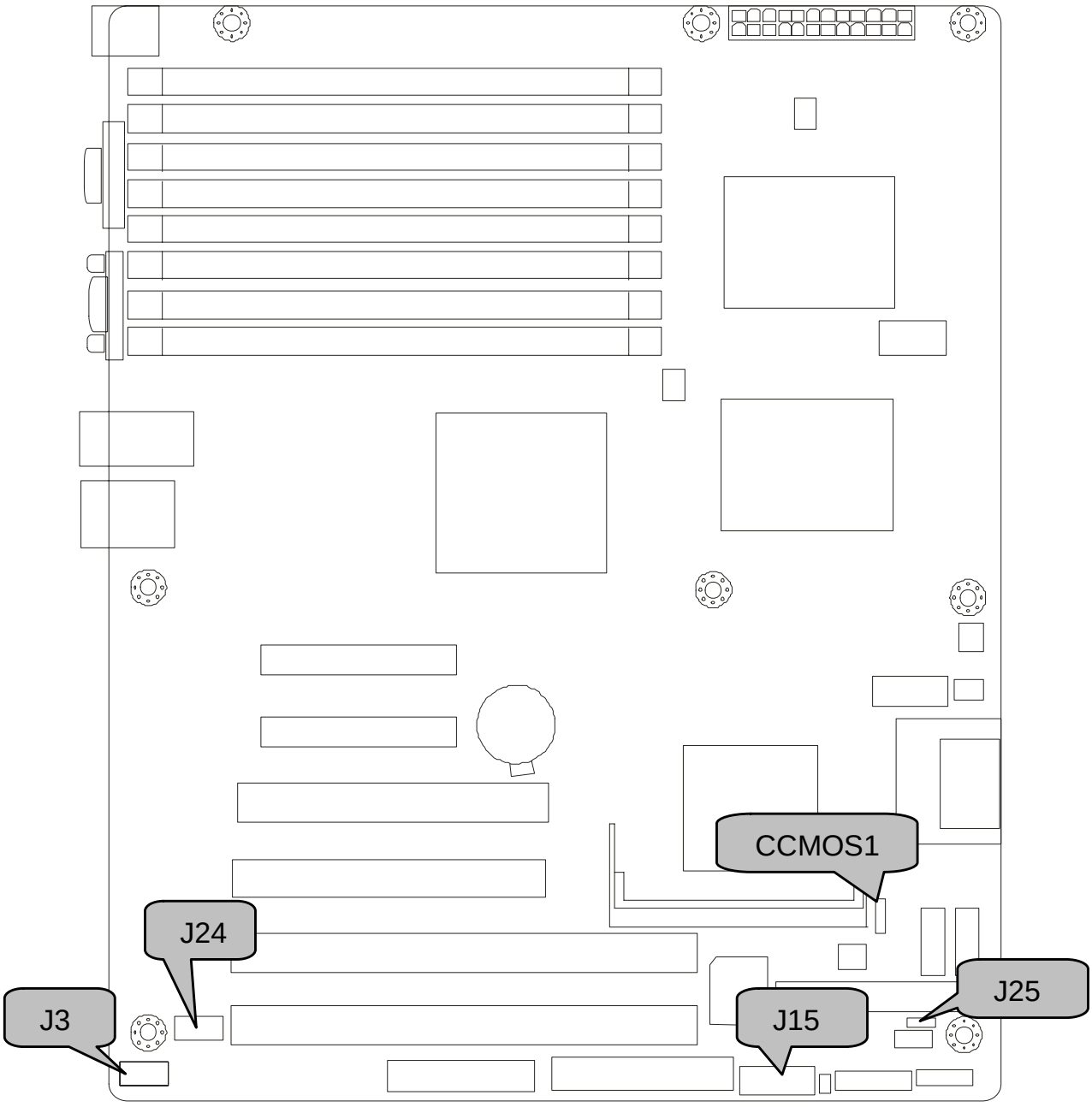


This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram.

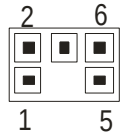
Jumper Legend

▣▣	**OPEN** - Jumper OFF, without jumper cover
▣▣	**CLOSED** – Jumper ON, with jumper cover

Jumper/Connector	Function
J1	COM1 Connector
J2	Keyboard & Mouse Connectors
J3	IPMB Connector
J4	LAN Connectors
J5/J14/J18	Chassis Fan Connector
J13	Tyan TARO Connector
J15	COM2 Connector
J16/J22	CPU Fan Connector
J17	Front Panel 1 Header
J19	Front Panel 2 Header
J20	USB 2.0 Connector
J21	SATA1 Connector
J23	SATA2 Connector
J24	LCM Pin Header
J25	IDE1 20th Pin 5V Enable/Disable Jumper (for DOM)
JP1	Enable/Disable ACPI LED Jumer
CCMOS1	Clear CMOS Jumper
CF1	CF Card Connector



J24: LCM Module Header



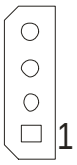
Signal	Pin	Pin	Signal
VCC	1	2	COM2_SIN
_	3	4	GND
5VDUAL	5	6	COM2_SOUT

Use this header to connect the LCM module with system monitoring function. This header is reserved for barebone use.

CCMOS1: Clear CMOS Jumper

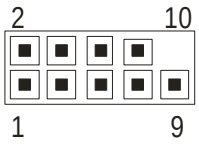
 **Normal (Default)**	Use this jumper when you forgot your system/setup password or need to clear system BIOS setting. How to clear the CMOS data - Power off system and **disconnect power supply from AC source** - Use jumper cap to close Pin_2 and 3 for several seconds to Clear CMOS - Replace jumper cap to close Pin_1 and 2 Reconnect power supply to AC source Power on system
 **Clear**	

J3: IPMB Connector



Pin 1	IPMB DATA	Pin 2	GND
Pin 3	IPMB CLK	Pin 4	NC

J15: COM2 Connector



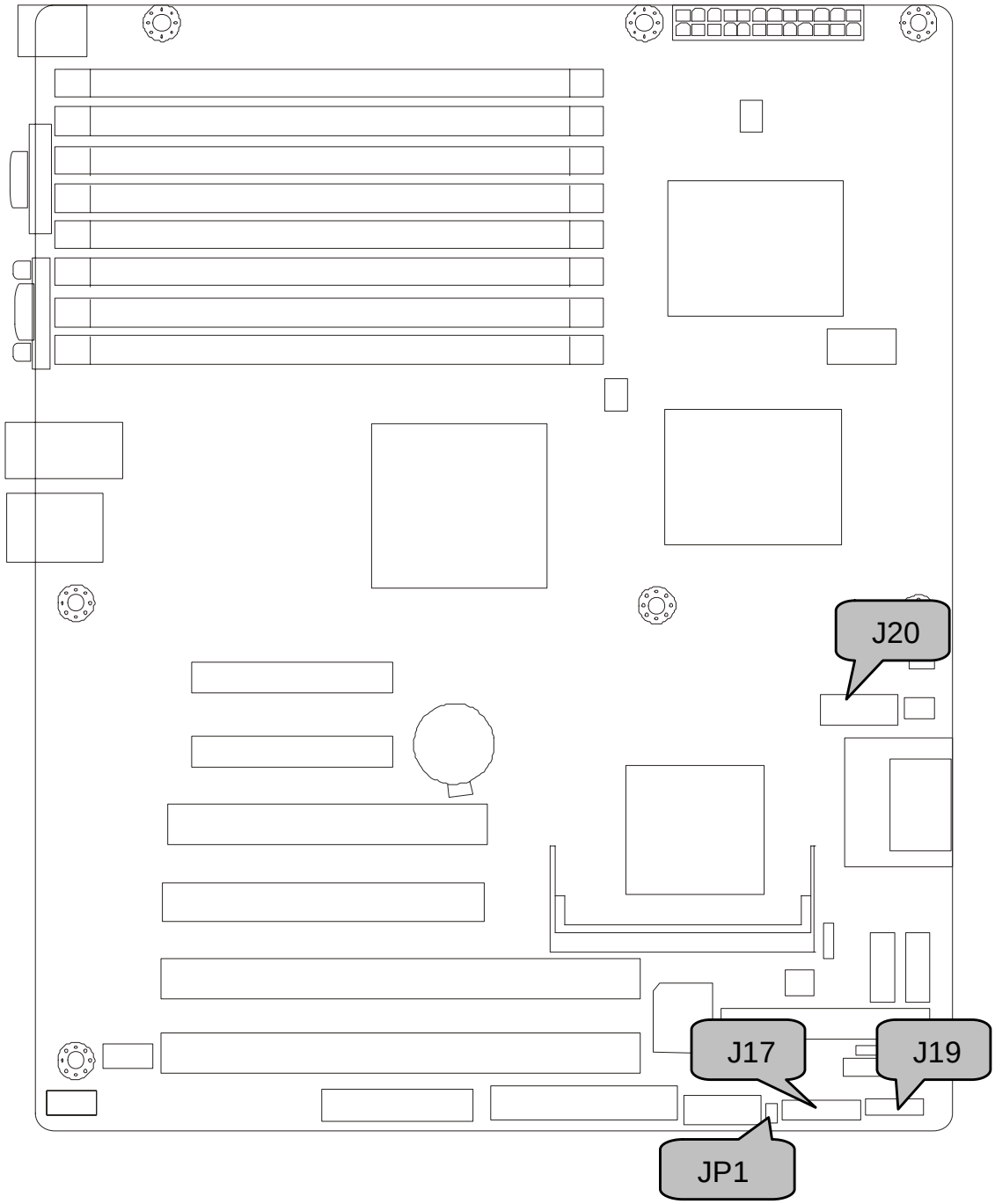
Signal	Pin	Pin	Signal
DCD	**1**	**2**	DSR
RXD	**3**	**4**	RTS
TXD	**5**	**6**	CTS
DTR	**7**	**8**	R1
GND	**9**	**10**	Key

Use these headers to connect to the COM devices via the enclosed COM cable.

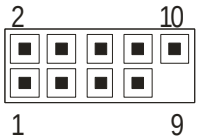
J25: IDE1 20th Pin 5V Enable/Disable Jumper (for DOM)

 Disable	Use this jumper to enable/disable the internal DOM power for IDE1 20th pin.
 Enable	

Pin 1	NC	Pin 2	DOM_PWR_SEL
Pin 3	VCC5		



J20: USB2.0 Connector



Signal	Pin	Pin	Signal
VCC	1	2	VCC
P0-	3	4	P1-
P0+	5	6	P1+
GND	7	8	GND
Key	9	10	NC

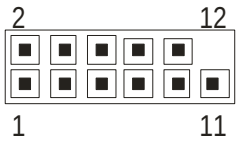
Use these headers to connect to the USB devices via the enclosed USB cable.

J17: Front Panel 1 Header

The Front Panel Header is used to connect some control or signal wires from motherboard to chassis, such as HDD LED, power LED, power button, and reset button.

HDDLED+	1	■	■	2	PWR LED+
HDDLED-	3	■	■	4	PWR LED-
GND	5	■	■	6	PWR SW+
Reset SW+	7	■	■	8	PANSWIN
VCC3	9	■	■	10	WLED+
NMI	11	■	■	12	WLED-
Standby +5V	13	■	□	14	key
SMBus Data	15	■	■	16	GND
SMBus Clock	17	■	■	18	Chassis Intr# (Active Low)

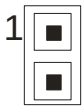
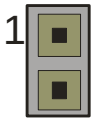
J19: Front Panel 2 Header

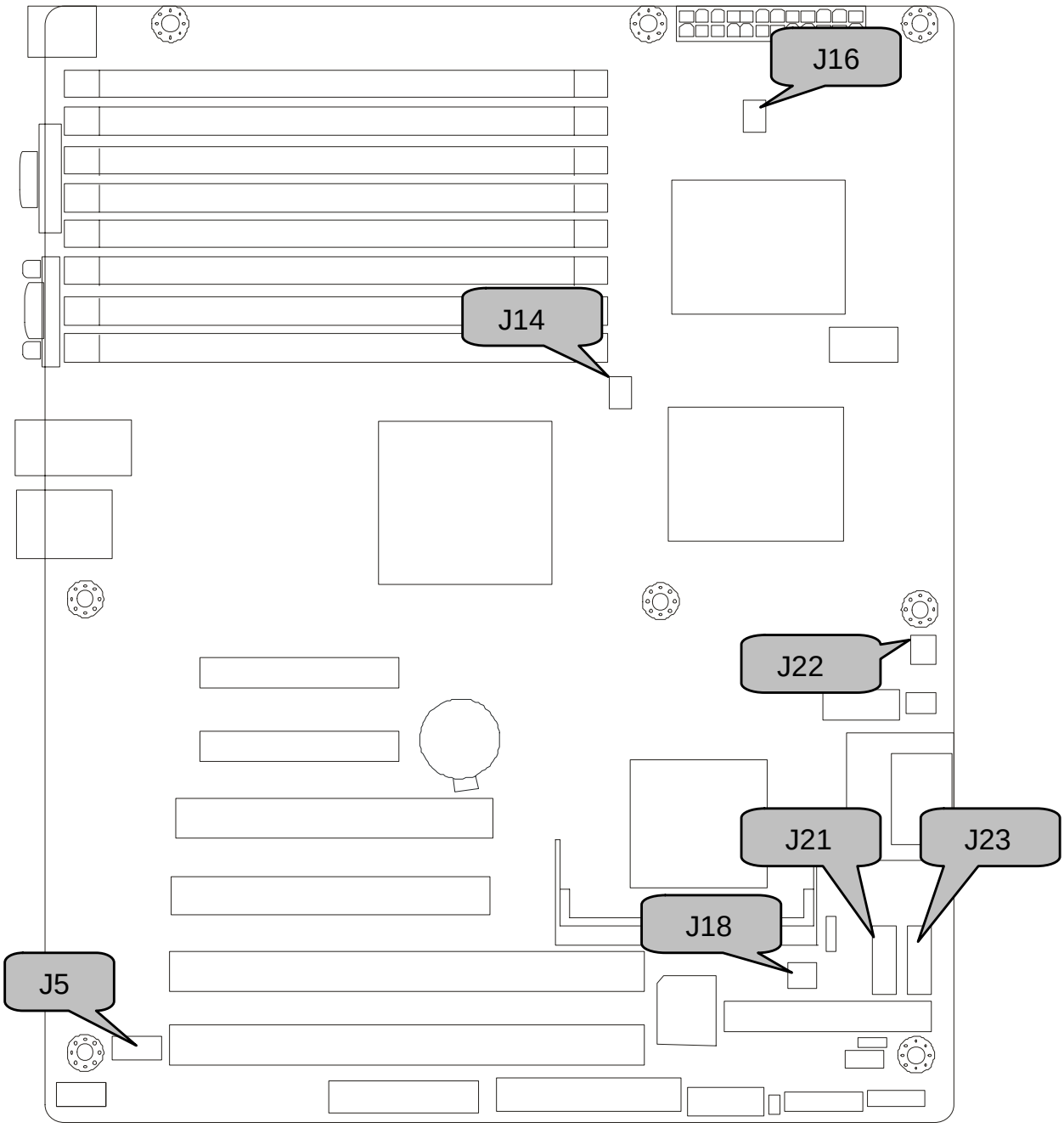


Signal	Pin	Pin	Signal
LAN1_LED+	1	2	LAN1_LED-
LAN2_LED+	3	4	LAN2_LED-
LAN3_LED+	5	6	LAN3_LED-
ID_LED_PW	7	8	GND
ID_SWITCH	9	10	GND
NC	11	12	Key

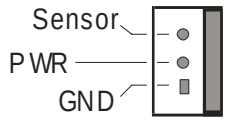
The front panel 2 header is used to connect LAN1/2/3 and ID LEDs.

JP1: Enable/Disable ACPI LED Jumper

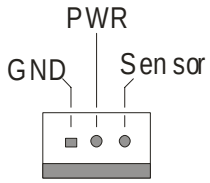
	Disable the ACPI LED function. (**Default**) Pin 1: 5V-Dual, Pin 2: LED+
	Enable the ACPI LED function. Pin 1: 5V-Dual, Pin 2: LED+


J16
J14
J22
J21
J23
J18
J5

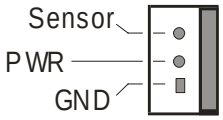
J14 (FAN1): Chassis Fan Connector

	Use this header to connect the chassis cooling fan to your motherboard to keep the system at optimum performance levels.

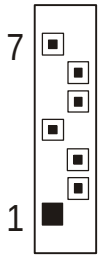
J5 (FAN2)/J18(FAN3): Chassis Fan Connectors

	Use this header to connect the chassis cooling fan to your motherboard to keep the system at optimum performance levels.

J16 (CPU_FAN1)/J22 (CPU_FAN2): CPU_FAN Connectors

	Use this header to connect the processor cooling fan to your motherboard to keep the system stable and reliable.

J21 (SATA1)/J23 (SATA2): Serial ATA RAID Connectors

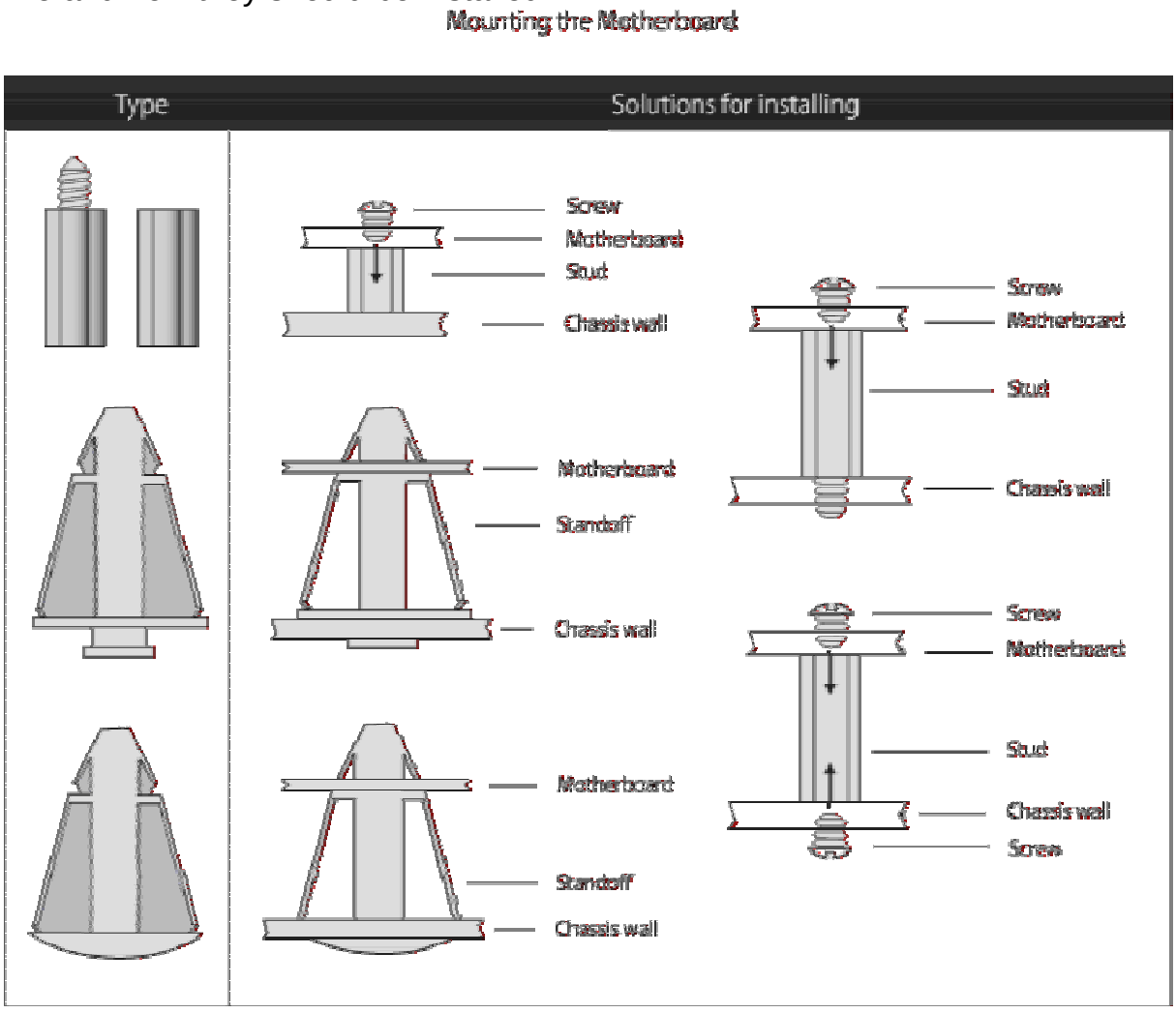
	7	GND	Connects to the Serial ATA ready drives via the Serial ATA cable **You may use these two Serial ATA ports to have the support of RAID 0 and 1 through the on board Intel 6300 ESB chipset.**
	6	RXP	
	5	RXN	
	4	GND	
	3	TXN	
	2	TXP	
	1	GND	

2.4 - Tips on Installing 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 are 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.

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.



2.5 - Installing the Processor, Heatsink & Fan

Your Tiger i7520SD S5365 supports the latest processor technologies from Intel. Check the TYAN website for latest processor support:

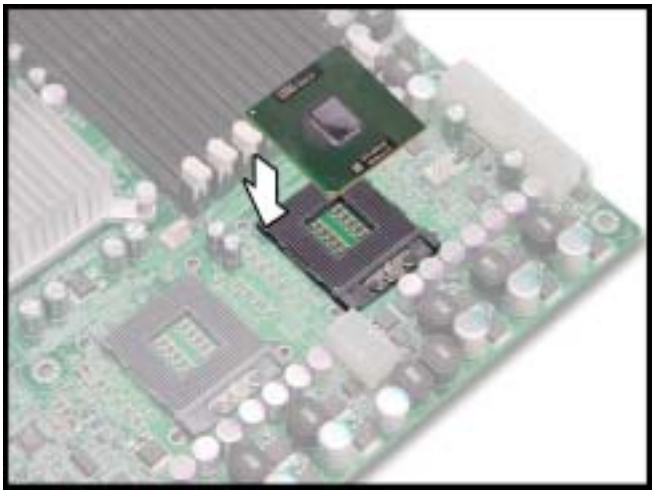
http://www.tyan.com

CPU & Heatsink 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

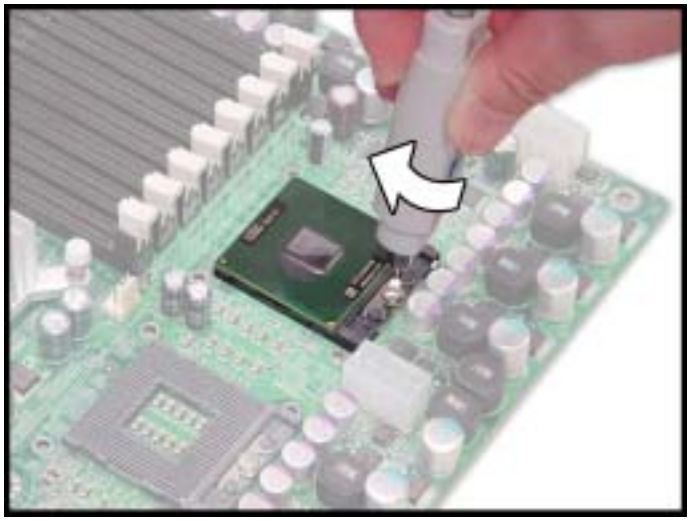
1. Place the CPU in the socket ensuring that the edge of golden arrow is aligned with the breach edge of CPU socket.

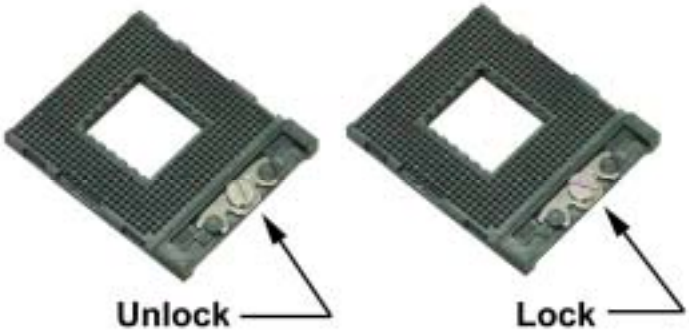


WARNING:

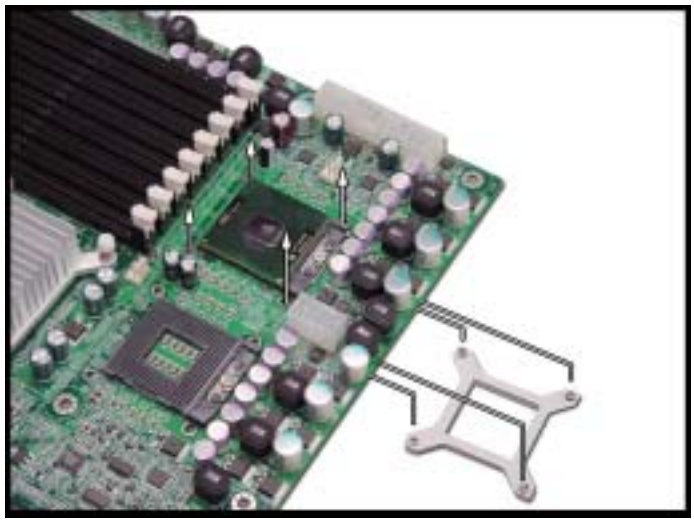
This new processor socket designed by Intel is easy to be damaged. The processor has to be installed very carefully to prevent the contact pins of the socket from breaking. It is strongly recommended the processor installation job to be handled by the experienced technician.

2. Use a flat screw driver to lock the CPU after installation. Refer to the picture below for the direction of locking and unlocking.

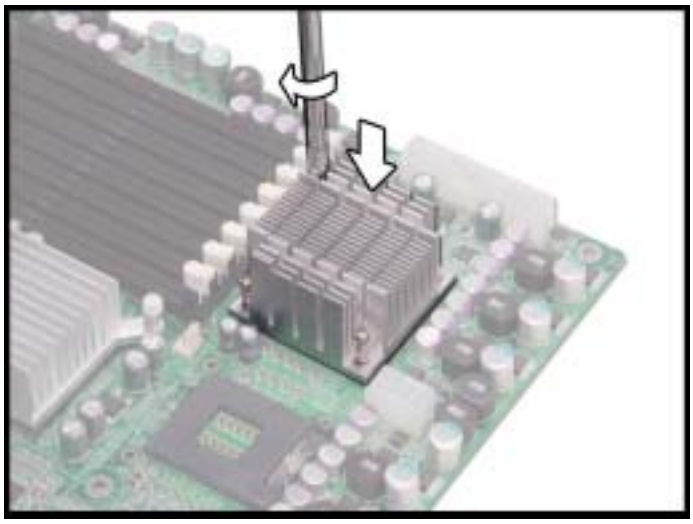




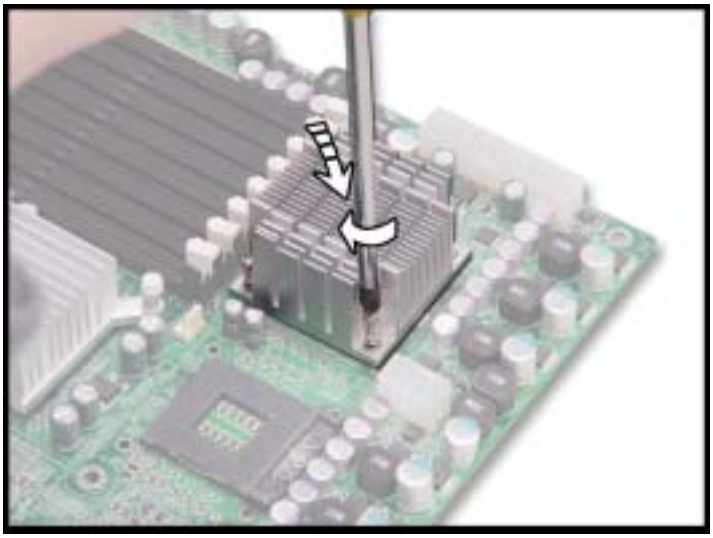
3. Install the retention module into the CPU socket from the reverse of motherboard. **Tear off the stick on the retention module before installing**.



4. Place the heatsink on the CPU. Use a screw driver to fix the installation of heatsink.



5. Follow the direction suggested as below to finish the installation.



Cooling Fan Installation

After you have installed the processor, the heatsink should be installed to ensure that the processor runs efficiently and does not overheat. Use the heatsink supplied for best results.

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.

2.6 - Installing the Memory

Before installing memory, ensure that the memory you have is compatible with the motherboard and processor. Only DDRII 400 modules are required. Check the TYAN Web site at: **www.tyan.com** for details of the type of memory recommended for your motherboard.

The following diagram shows common types of DDRII memory modules.

Key points to note before installing memory:

- Supports registered DDRII 400 compliant with ECC memory.
- All installed memory will automatically be detected and no jumpers or settings need changing.
- The S5365 supports up to 16GB of memory.

Memory Population Rule

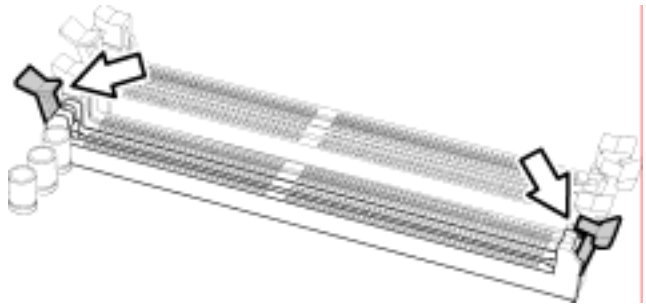
DIMM	Single Channel	Dual Channel			
DDR II B4		X	X	X	X
DDR II A4	X	X	X	X	X
DDR II B3			X	X	X
DDR II A3			X	X	X
DDR II B2				X	X
DDR II A2				X	X
DDR II B1					X
DDR II A1					X

NOTE:
Symmetrical DIMMS must be identical
- Same DRAM technology, eg 128-bit, 256-bit, etc
- Same DRAM bus width, eg x8 or x16
  Matched Sided DIMMs (single-sided or double-sided)

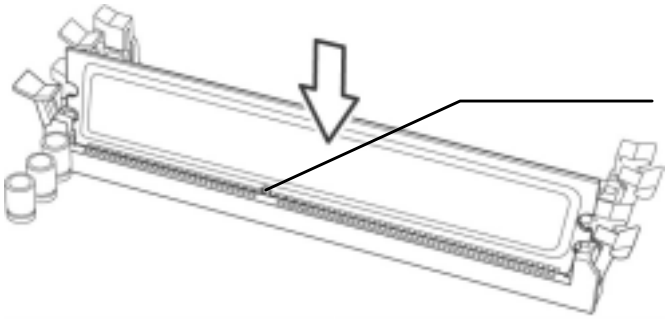
Memory Installation Procedure

Follow these instructions to install memory modules into the S5365.

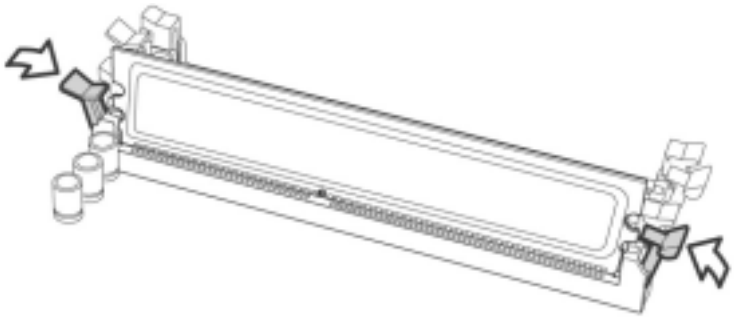
1. Press the locking levers in the direction shown in the following illustration.



2. Align the memory module with the socket. The memory module is keyed to fit only one way in the socket.



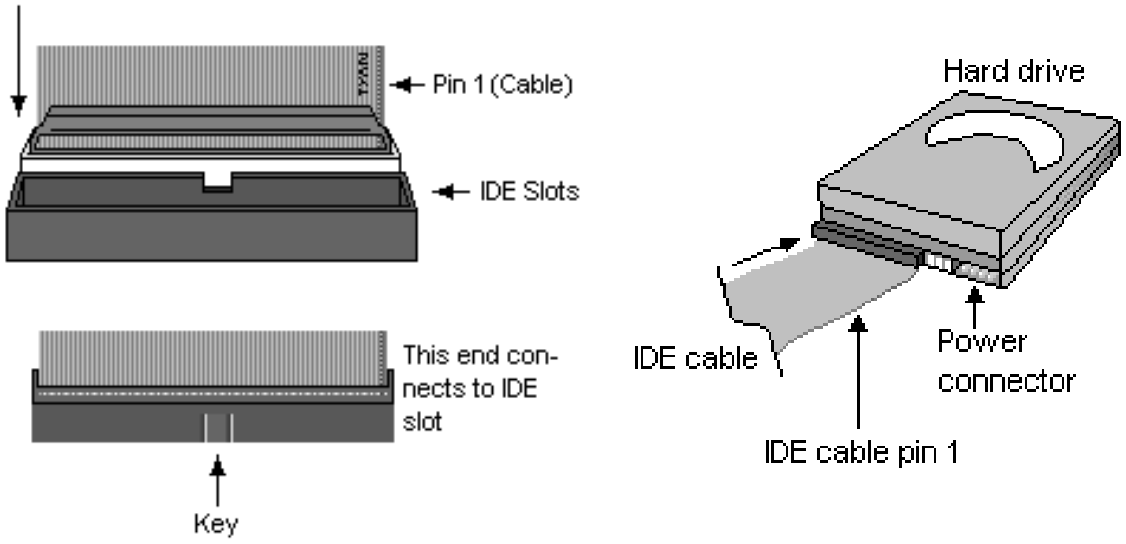
3. Seat the module firmly into the socket by gently pressing down until it sits flush with the socket. The locking levers pop up into place.



2.7 - Attaching Drive Cables

Attaching IDE Drive Cable
Attaching the IDE drive cable is simple. These cables are “keyed” to only allow them to be connected in the correct manner. TYAN motherboards have two on-board IDE channels, each supporting two drives. **The black connector designates the Primary channel, while the white connector designates the Secondary channel.**

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.

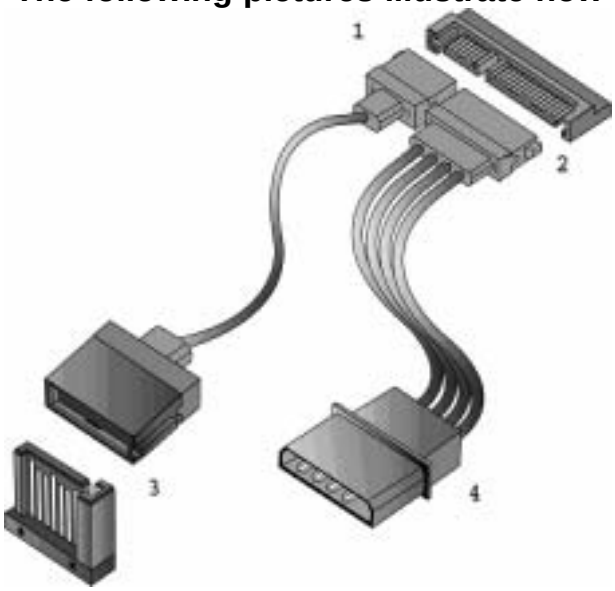
TIP: Pin 1 on the IDE cable (usually designated by a colored wire) faces the drive’s power connector.

Attaching Serial ATA Cables
The S5365 is also equipped with 2 Serial ATA (SATA) channels. Connections for these drives are also very simple.

There is no need to set Master/Slave jumpers on SATA drives.

Tyan has supplied two SATA cables and one SATA power adapter. If you are in need of other cables or power adapters please contact your place of purchase.

The following pictures illustrate how to connect an SATA drive



1.SATA drive cable connection

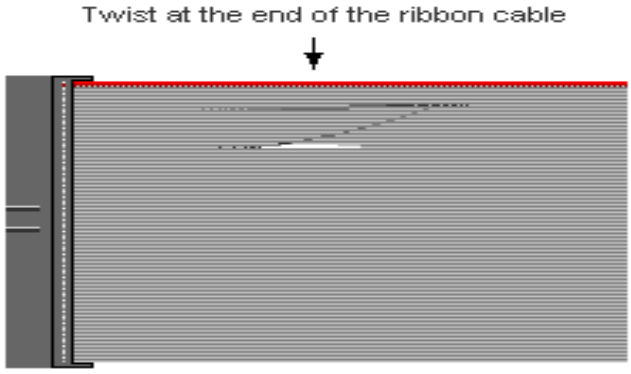
2. SATA drive power connection

3. SATA cable motherboard connector

4. SATA drive power adapter

Attaching Floppy Drive Cables

Attaching floppy diskette drives are done in a similar manner to hard drives. See the picture 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 a proper connection of the cable.

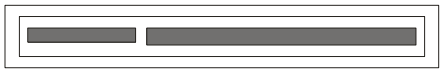


Attach first floppy drive (drive **A:**) to the end of the cable with the twist in it. Drive **B:** is usually connected to the next possible connector on the cable (the second or third connector after you install Drive **A:**).

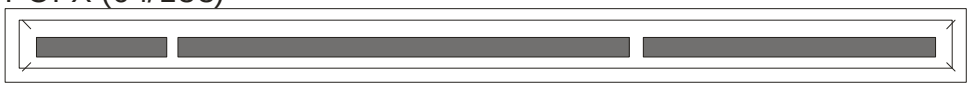
2.8 - Installing Add-In Cards

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 slots that appear on your motherboard.

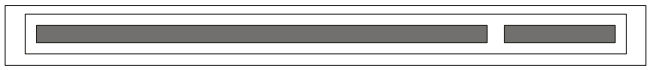
PCI Express x8 Slot



PCI-X (64/133)



PCI Slot



Simply find the appropriate slot for your add-in card and insert the card firmly. Do not force any add-in cards into any slots if they do not seat in place. It is better to try another slot or return the faulty card rather than damaging both the motherboard and the add-in card.

PCI IDESELs and IRQ Assignments

PCI Slot	IDSEL	INTA	INTB	INTC	INTD
Slot 1	PCI_AD22	PIRQ G	PIRQ H	PIRQ E	PIRQ F
Slot 2	PCI_AD21	PIRQ F	PIRQ G	PIRQ H	PIRQ E
82551QM	PCI_AD16	PIRQ A	N/A	N/A	N/A
VGA RN50	PCI_AD28	PIRQ H	N/A	N/A	N/A

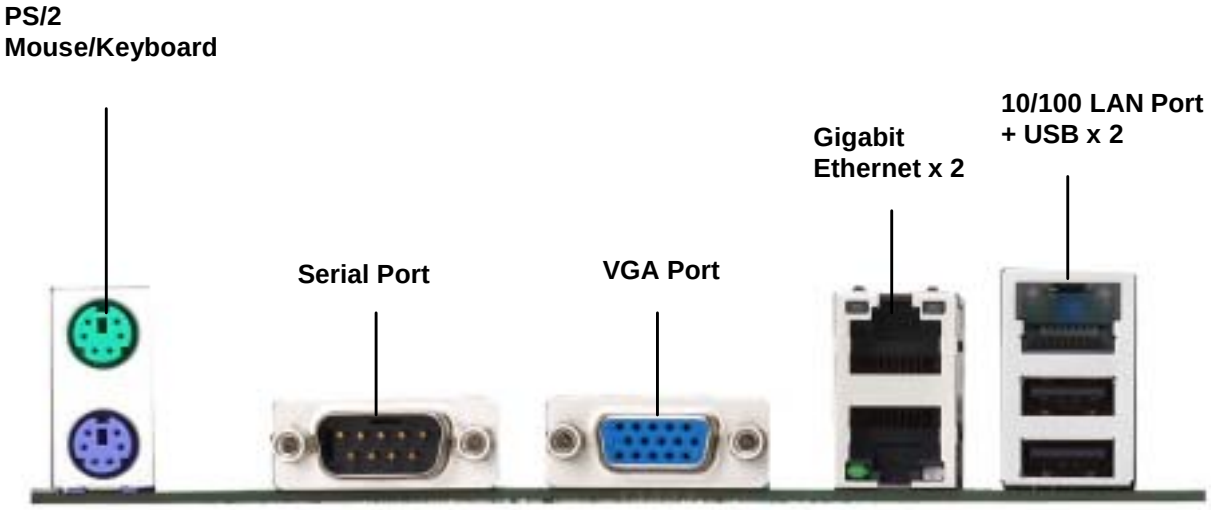
PCIX Slot	IDSEL	INTA	INTB	INTC	INTD
Slot 1	PCIX_AD17	PIRQ 0	PIRQ 1	PIRQ 2	PIRQ 3
Slot 2	PCIX_AD18	PIRQ 1	PIRQ 2	PIRQ 3	PIRQ 0
TARO	PCIX_AD19	PIRQ 2	PIRQ 3	N/A	N/A

NOTE

YOU MUST ALWAYS unplug the power connector from the motherboard before performing system hardware changes. Otherwise you may damage the board and/or expansion device.

2.9 - Connecting External Devices

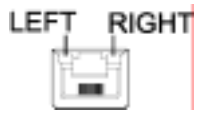
The following diagrams will detail the rear port stack for this S5365 motherboard:



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

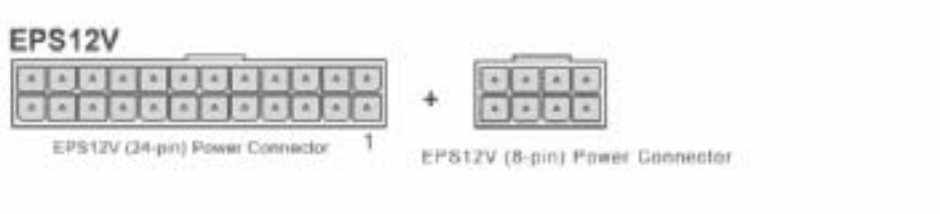
Onboard LAN LED Color Definition

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			
		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

2.10 - Installing the Power Supply

There are two power connectors on your Tiger i7520SD S5365. The Tiger i7520SD S5365 requires that you have an EPS12V power supply that has a 24-pin and an 8-pin power connector. Please be aware that ATX 2.x, ATX12V and ATXGES power supplies may **not** be compatible with the board and can damage the motherboard and/or CPU(s).



Applying power to the board

1. Connect the EPS 12V 8-pin power connector.
2. Connect the EPS 12V 24-pin power connector.
3. Connect power cable to power supply and power outlet

NOTE

YOU MUST unplug the power supply before plugging the power cables to motherboard connectors.

2.11 - 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 <F2> 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.

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

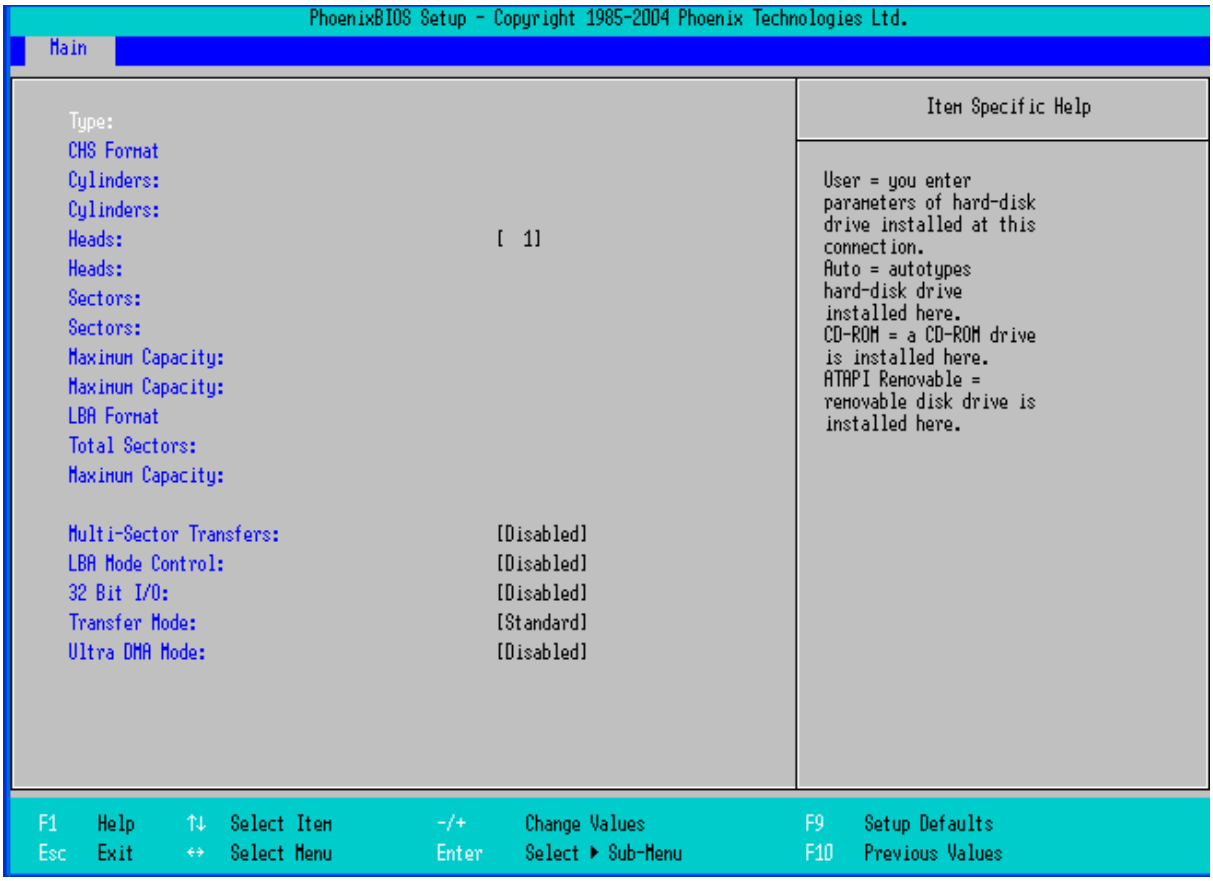
Legacy Diskette A
Defines the floppy drive type
NONE / 360K, 5.25 in / 1.2 M, 5.25 in / 720 K, 3.5 in / **1.44 M, 3.5 in /** 2.88 M, 3.5 in

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 Channel 0/1 Master/Slave Setup

Computer detects IDE drive type from drive C to drive F.
Press **Enter** on any of the Channel 0 Master/Slave or Channel 1 Master/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.



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:

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

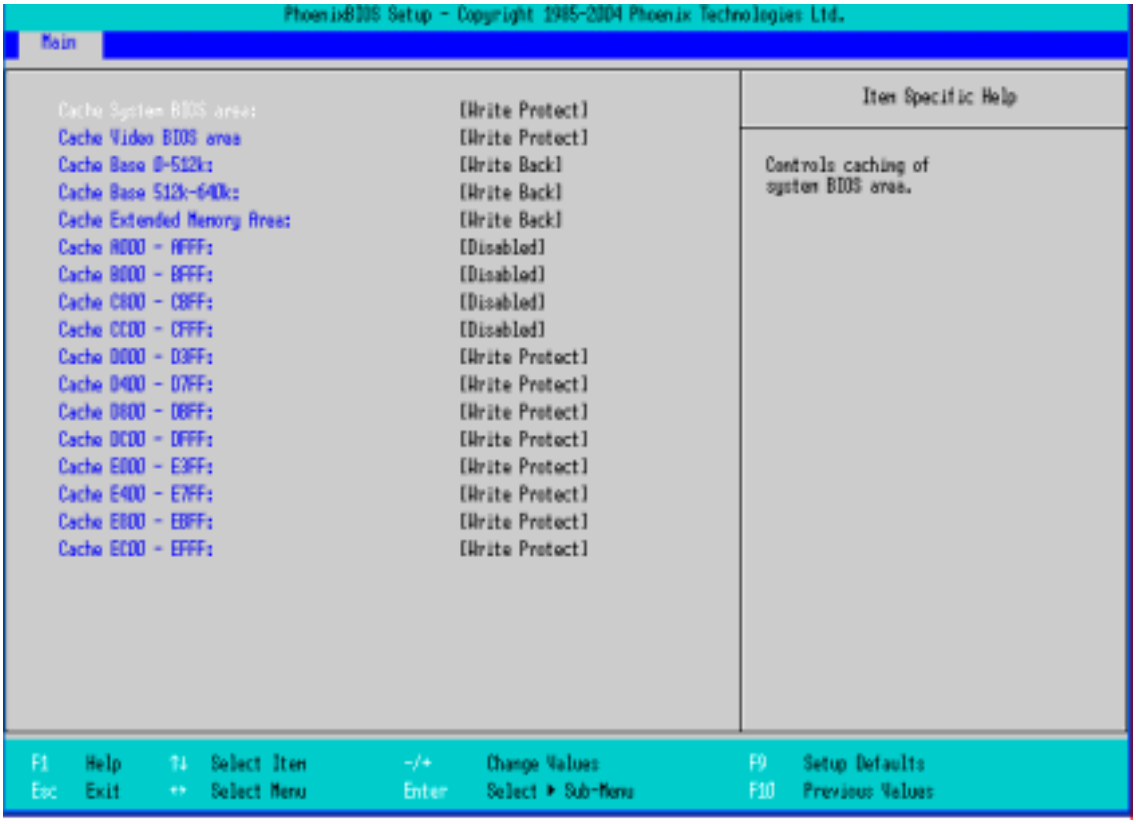
Enables or disables Ultra DMA Mode.

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.



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/C800-C8FF/CC00-CFFF

These features allow you to control caching of A000-AFFF/B000-BFFF/C800-C8FF/CC00-CFFF memory.

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

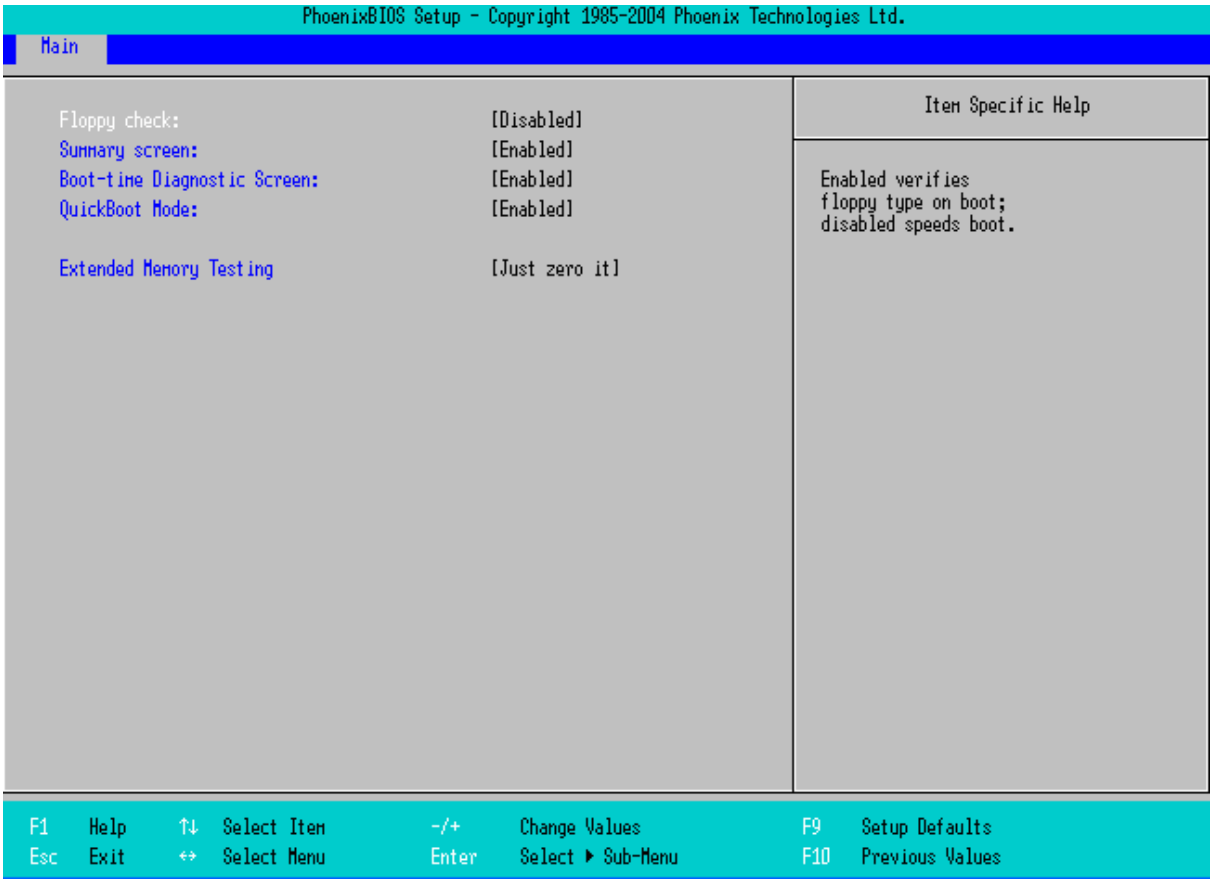
Cahe D000-D3FF/Cahe D400-D7FF/Cache D800-DBFF/Cahe DC00-DFFF/ Cache E000-E3FF/Cache E400-E7FF/Cache E800-E8FF/Cache EC00-EFFF

These feature allows you to control caching of D000-D3FF/D400-D7FF/D800-D8FF/DC00-DFFF Cache E000-E3FF/Cache E400-E7FF/Cache E800-E8FF/Cache EC00-EFFF 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.



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

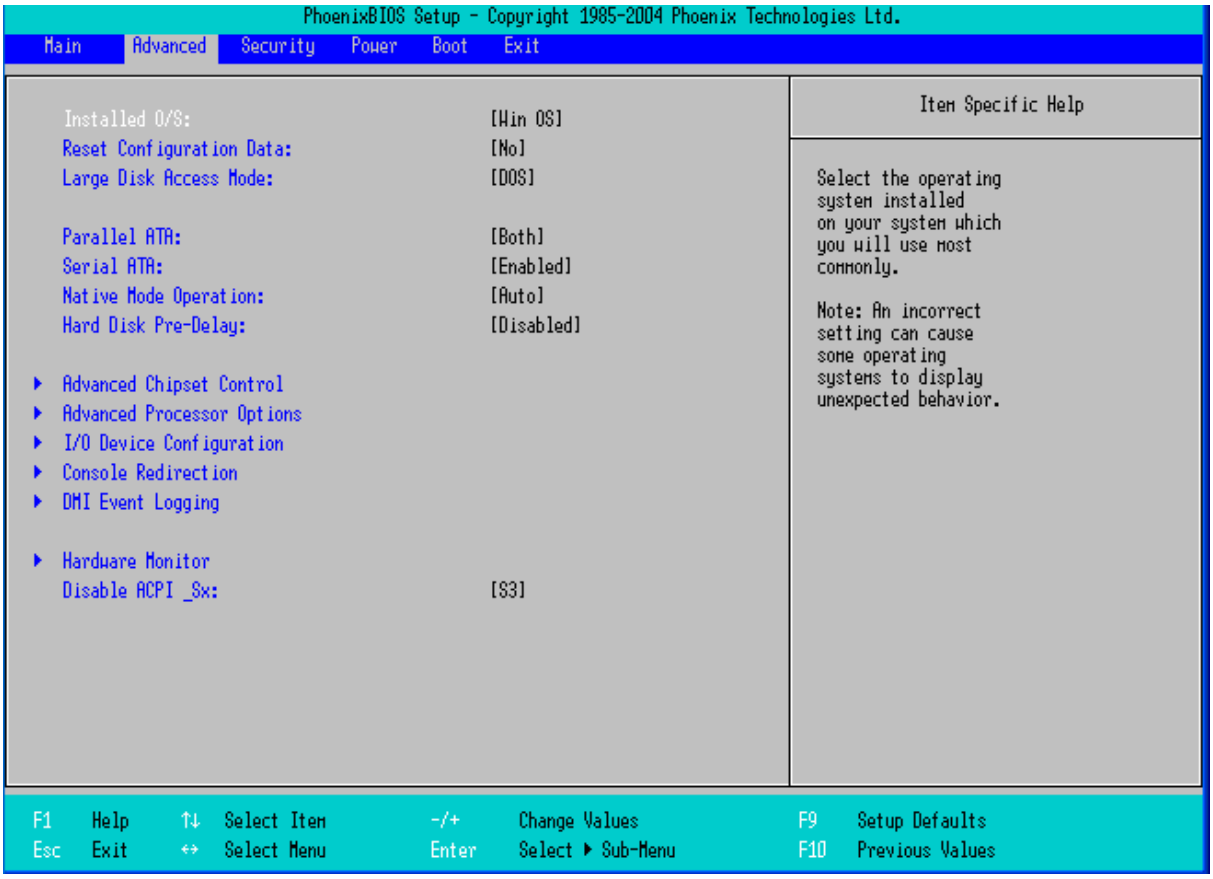
Extended Memory Testing

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

Normal / **Just zero it** / None

3.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



Installed OS
Select the operating system installed on the PC.
Note: An incorrect setting can cause the operating system to behave unpredictably.

Win OS / 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 SystemConfiguration 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

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

Hard Disk Pre-Delay

This feature is used to add a delay before the first access of a hard disk by the BIOS. Some hard disks hang if accessed before they have initialized themselves. This delay ensures the hard disk has initialized after power up, prior to being accessed.

Disabled / 3 Seconds / 6 Seconds / 9 Seconds / 12 Seconds / 15 Seconds / 21 Seconds / 30 Seconds

Disable ACPI_Six

This feature is used to select one of the ACPI power status: S1, S2, or S3. If selected, the corresponding power state will be disabled.

S3 / S1 / None

3.3.1 Advanced Chipset Control

This section allows you to fine tune the chipset configuration.

DRAM Data Integrity Mode
If you have ECC memory modules installed, select the correct ECC mode with this setting.

Disabled / 72-bit ECC / 144-bit ECC / **Auto**

ECC Error Type
When an ECC error occurs, it generates an interrupt. This feature is used to select the type of interrupt to report: NMI (on-Maskable); SMI System-Management); SCI (System Control)

NMI / **SMI** / SCI / None

SERR signal condition
Select ECC error conditions that SERR# be asserted.

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

Memory Remap Function
Remaps the memory used by the BIOS (A0000 to FFFF – 384k) above the 1Mb limit. If enabled, you cannot shadow video and system BIOS.

Disabled / **Enabled**

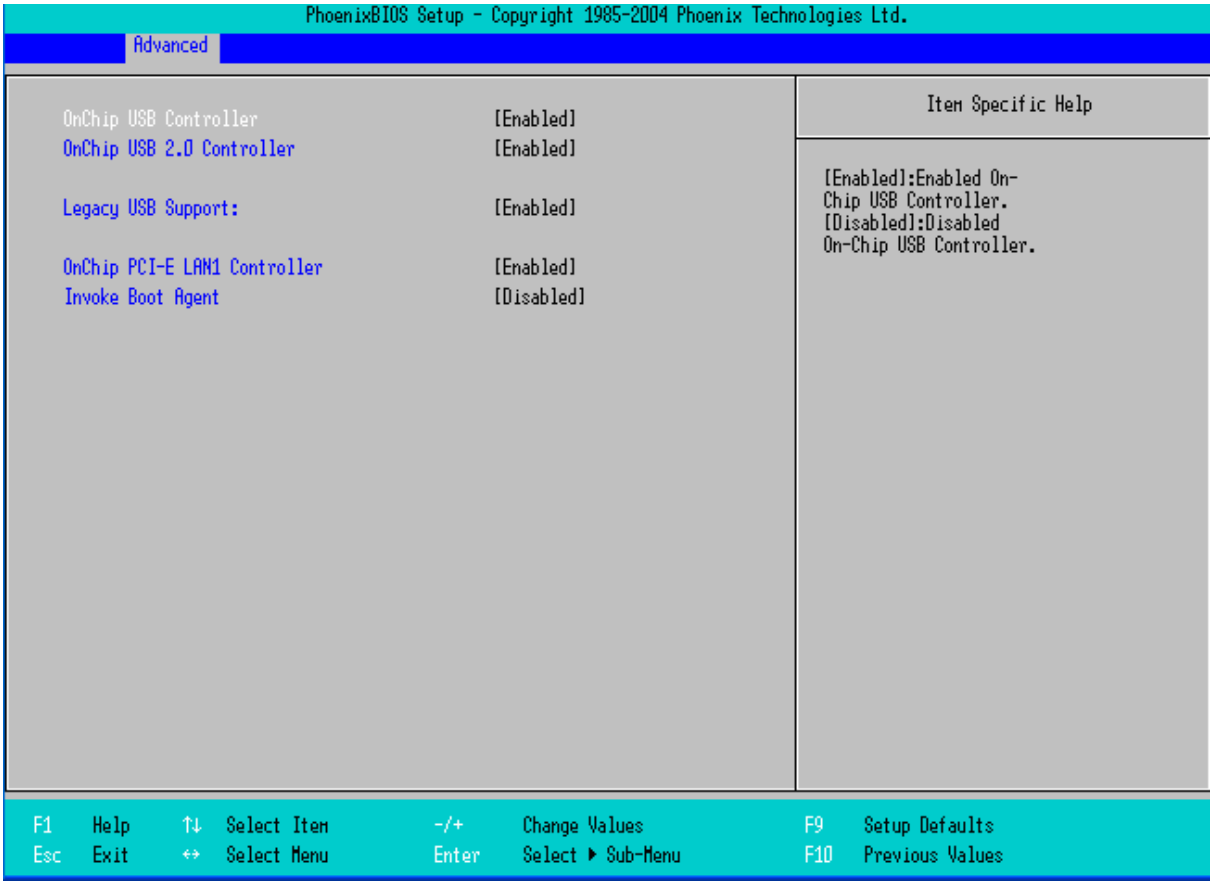
Memory RAS Feature Control
This option is used to select the special feature of DIMM sparing or memory mirroring.

Mirroring / **Standard** / Sparing

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.

128MB / 256MB / 512MB / 1.0GB

3.3.1.1 Integrated Device Control Sub-Menu



OnChip USB Controller
This option enables or disables IRQ allocation for the USB (Universal Serial Bus) controller. Enable this if you are using a USB device. If you disable this while using a USB device, you may have problems running that device. However, if you don't use any USB devices, set the option to Disabled. It will free up an IRQ for other devices to use.OnChip USB 2.0 Controller

Enabled / Disabled

Onchip USB 2.0 Controller
This option enables or disables IRQ allocation for the USB 2 (Universal Serial Bus - Specification 2.0) controller. Enable this if you are using a USB 2 device. If you disable this while using a USB 2 device, you may have problems running that device. However, if you don't use any USB 2 devices, set the option to Disabled. It will free up an IRQ for other devices to use.

Enabled / Disabled

Legacy USB Support
This option is used to enable the support for Legacy Universal Serial Bus.

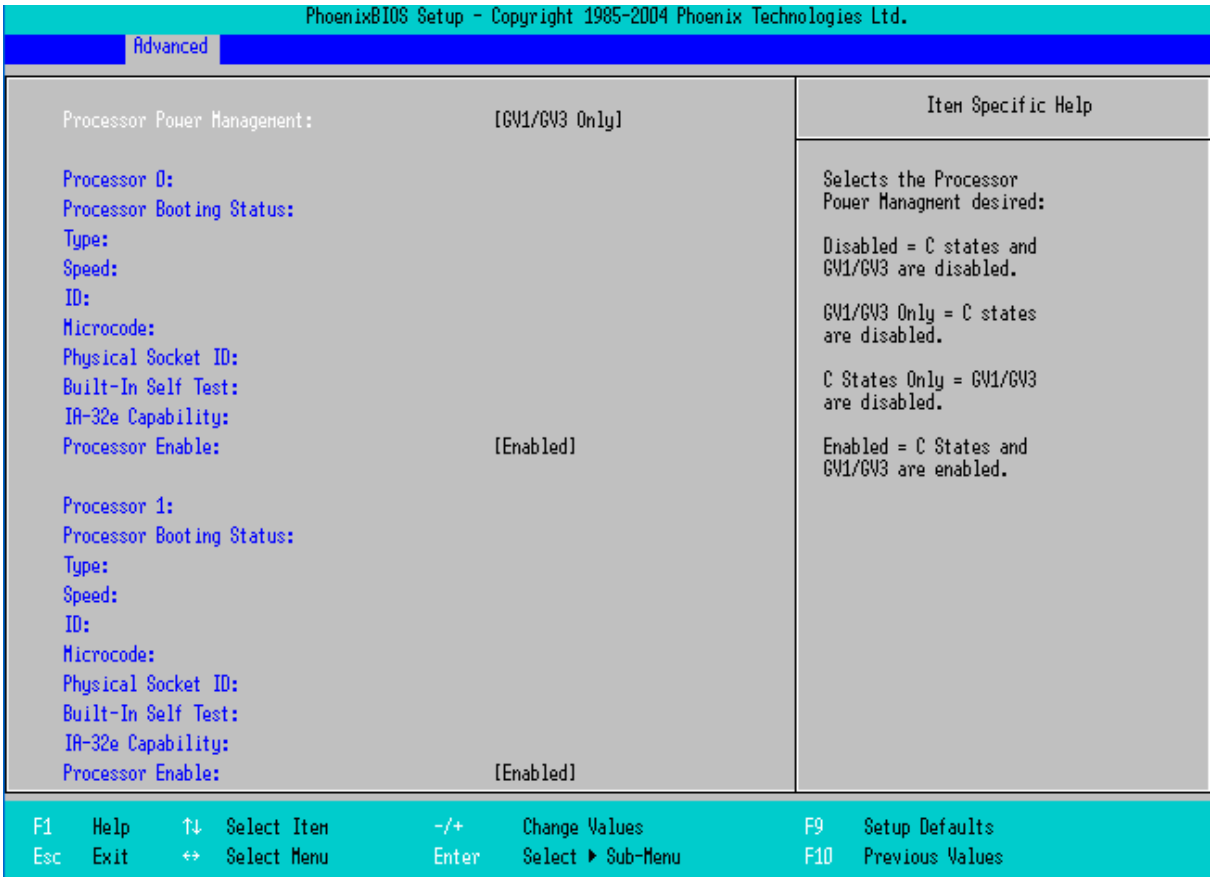
Disabled / Disabled

OnChip PCI-E LAN1 Controller
This option is used to enable/disable OnChip PCI-E LAN1 controller.
Enabled / Disabled

Invoke Boot Agent
This option is used to enable/disable Lan Boot ROM during BIOS post.
Disabled / Disabled

3.3.2 Advanced Processor Options

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

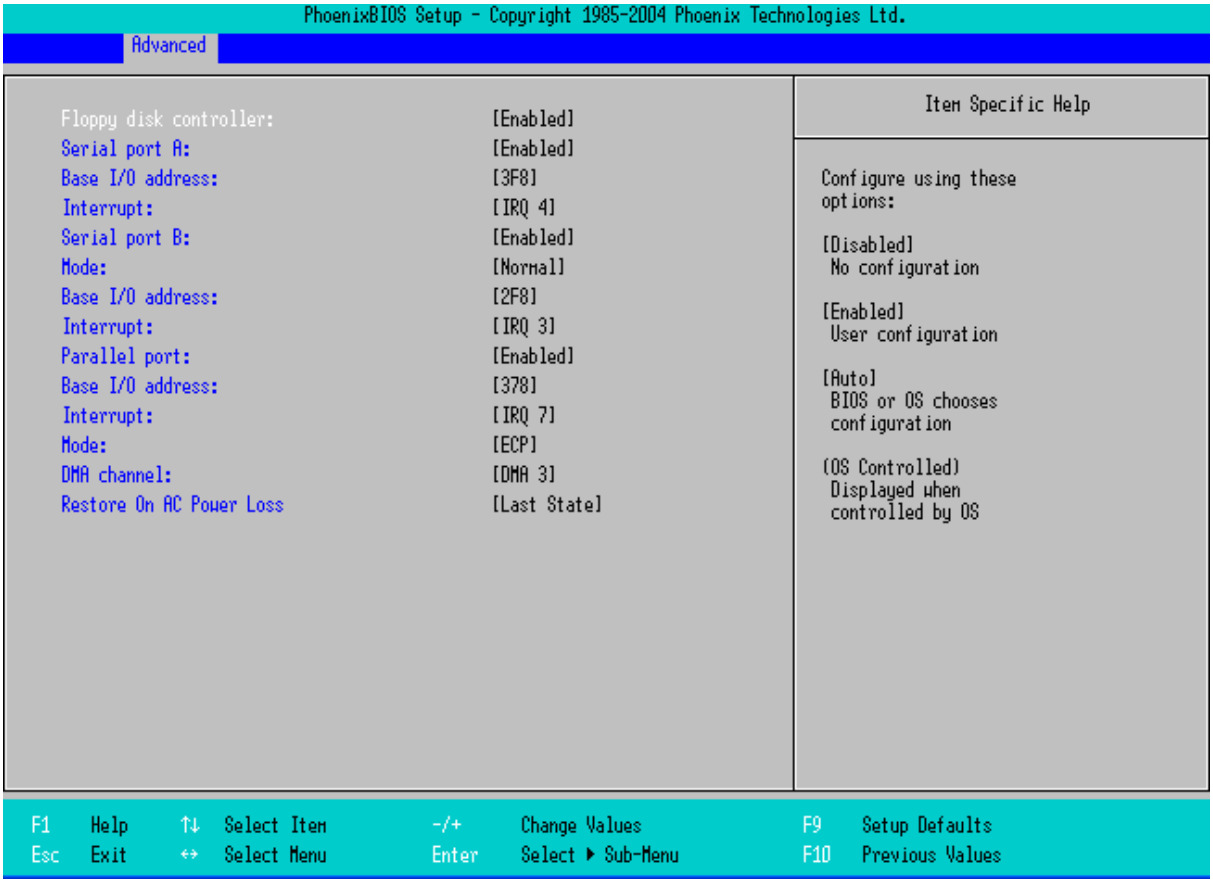


Processor Power Management
This option is used to select the Processor Power Management desired.
Disabled: C States and GV1/GV3 are disabled.
GV1/GV3 Only: C States are disabled.

Processor Enable
This option is used to enable the CPU for use by the operating system.
Enabled / Disabled

3.3.3 I/O Device Configuration

This setting allows you to configure I/O devices.



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.
Enabled / Disabled

Base I/O address:
This feature is used to set the base I/O address for serial port A.
2F8 / **3F8** / 3E8 / 2E8

Interrupt
This feature is used to set the interrupt for serial port A.
IRQ3 / **IRQ4**

Serial Port B:
This defines how the first serial port is detected and configured.
Enabled / Disabled

Mode
This feature is used to set the mode for serial port B.
Normal / IrDA / ASK-IR

Base I/O address:
This feature is used to set the base I/O address for serial port B.
2F8 / 3F8 / 3E8 / 2E8

Interrupt
This feature is used to set the interrupt for serial port A.
IRQ3 / IRQ4

Parallel port:
This defines how the parallel port is detected and configured.
Enabled / Disabled

Base I/O address:
This feature is used to set the base I/O address for parallel port.
378 / 278 / 3BC

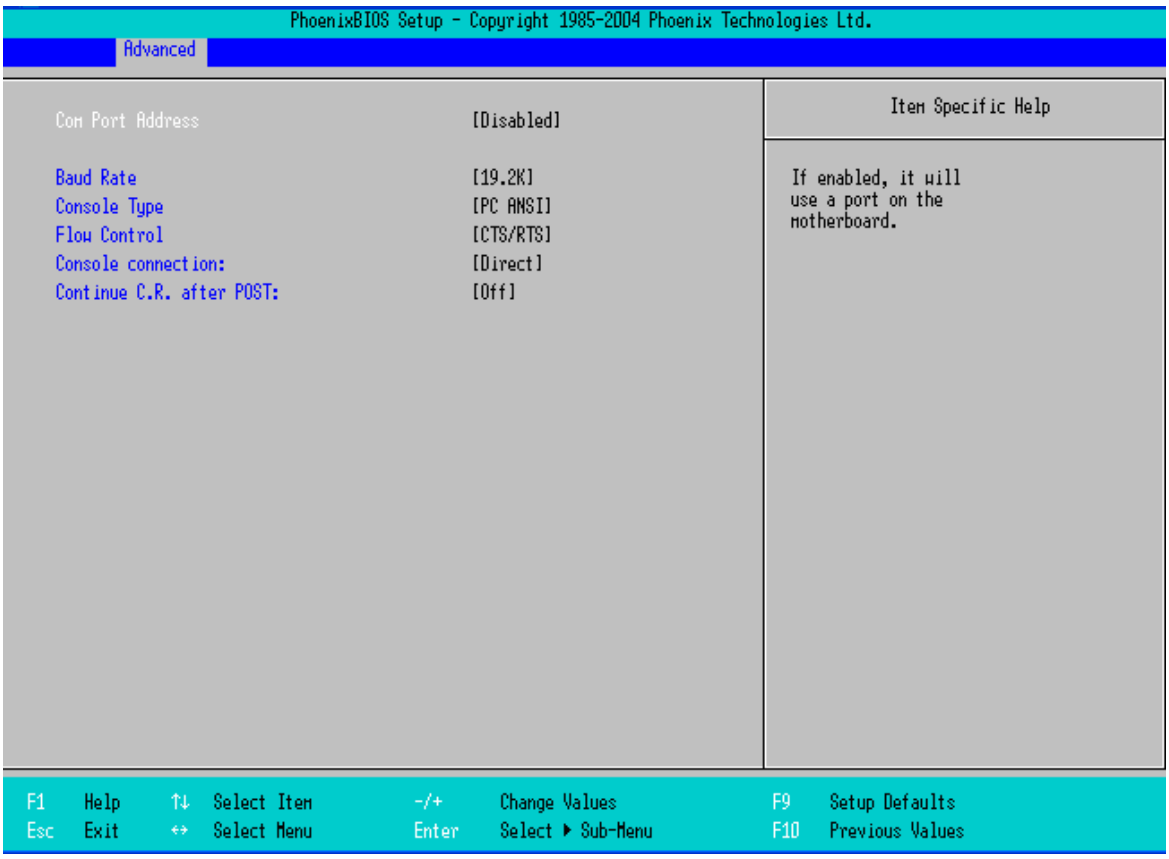
Interrupt
This feature is used to set the interrupt for parallel port.
IRQ7 / IRQ5

Mode
This feature is used to set the mode for parallel port.
ECP / Output Only / Bi-directional / EPP

DMA Channel
This feature determines which DMA channel the parallel port should be used when it is in ECP mode.
DMA3 / DMA1

Restore on AC Power Loss
This option is used to set the state of restoring system on AC power loss.
Power off: Stay in power off mode
Power on: Stay in power on mode
Last State: Stay in last system state

3.3.4 Console Redirection



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

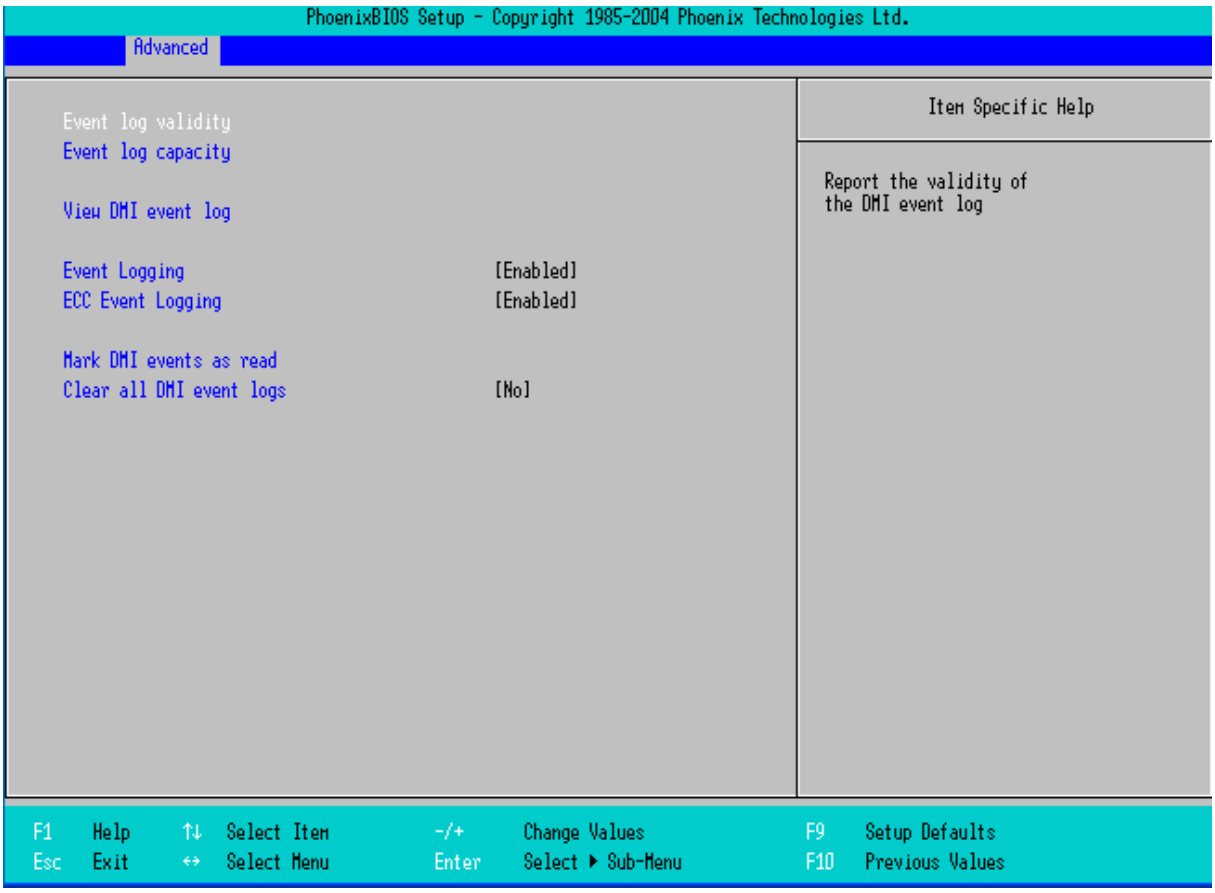
Console Type
This feature is used to enable the specified console type.
VT100 / VT100.8bit / PC-ANSI, 7bit / **PC ANSI** / VT100+ / VT-UTF8 / ASCII

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

3.3.5 DMI Event Logging

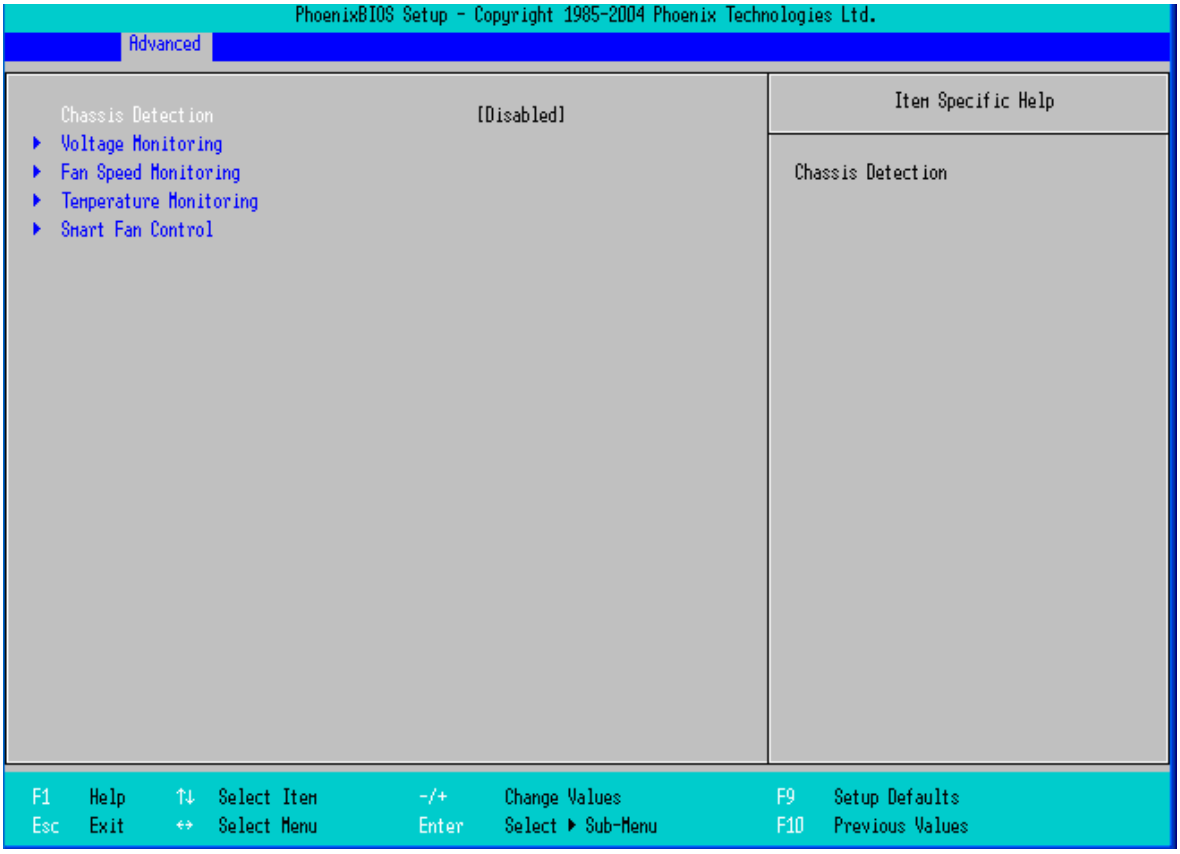


Event Logging
Select Enabled to allow logging of DMI events
Enabled/ Disabled

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.
No / Yes

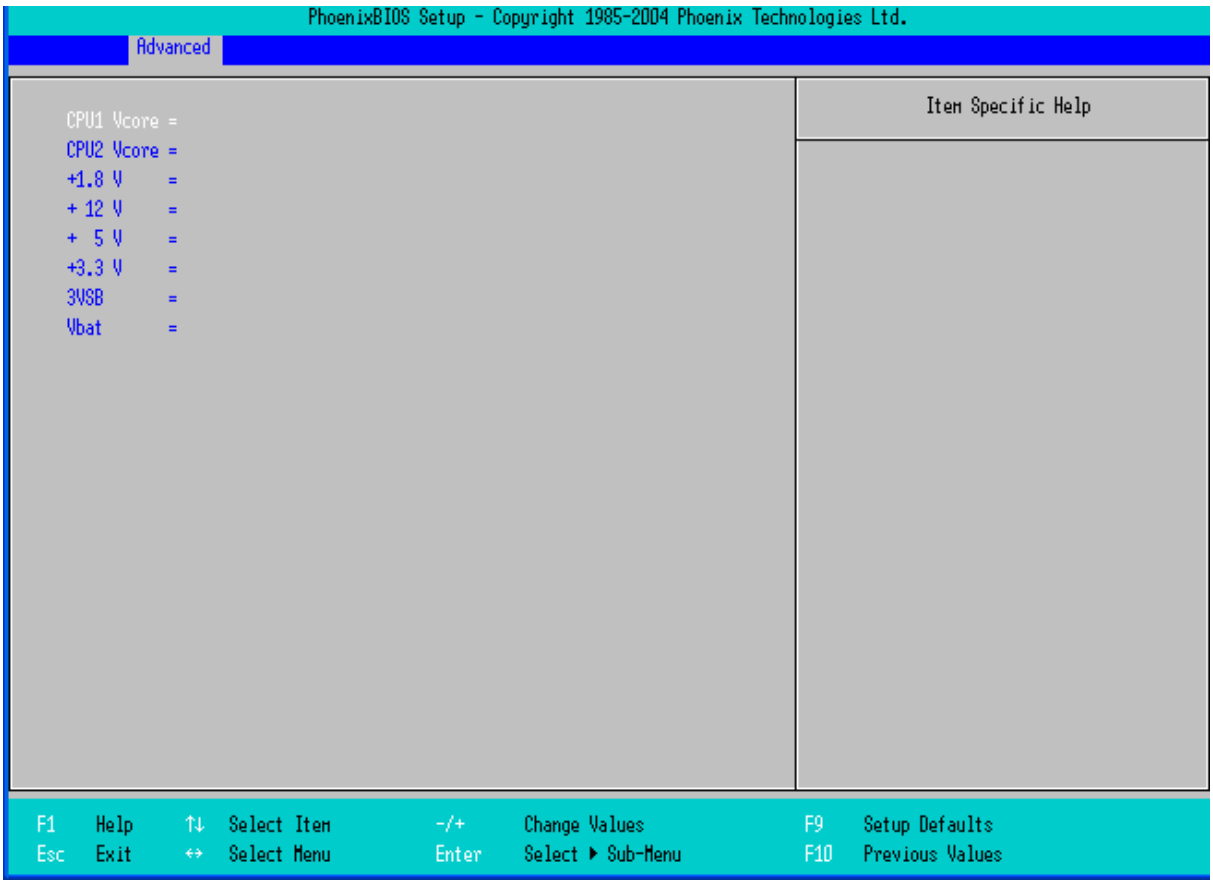
3.3.6 Hardware Monitor



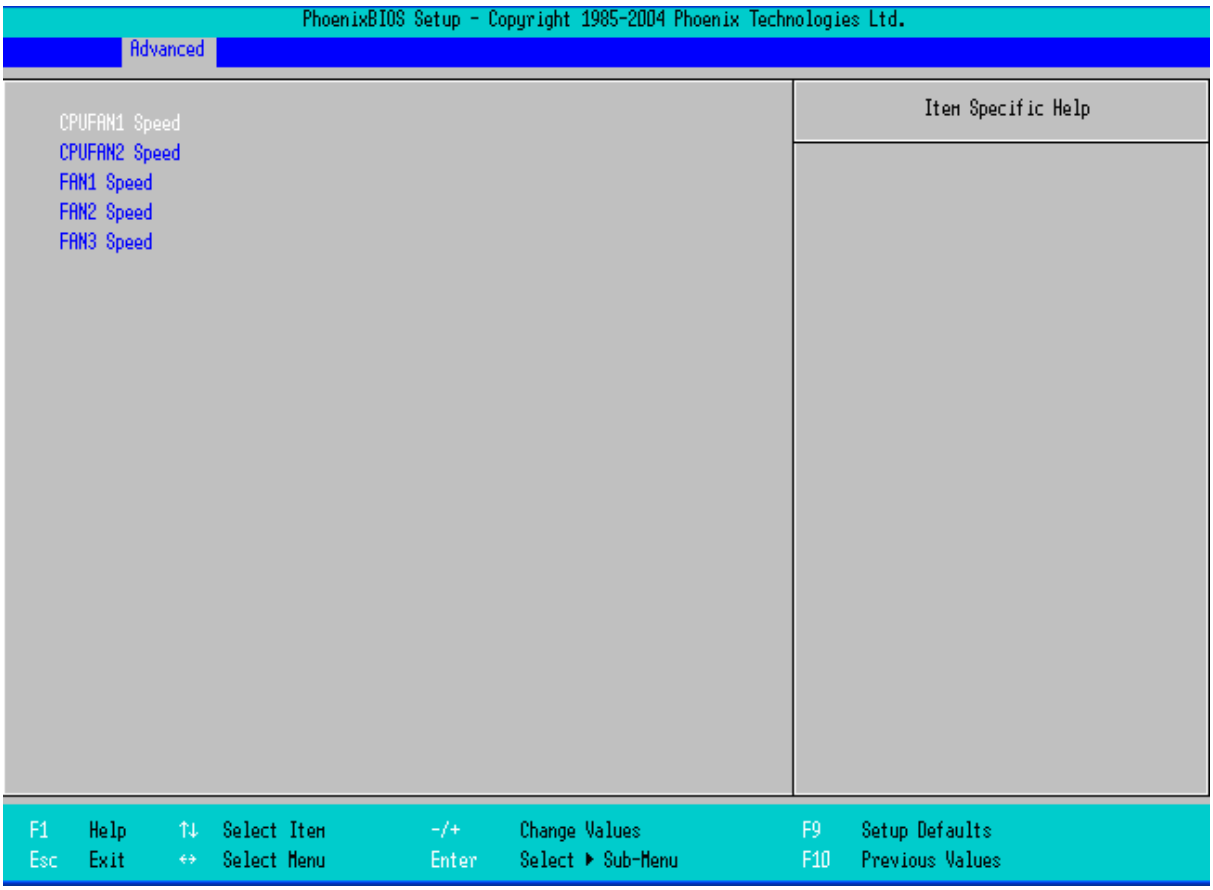
Chassis Detection
This feature is used to enable/disable the function: when chassis open event is detected, BIOS will record the event.

Disabled / Enabled

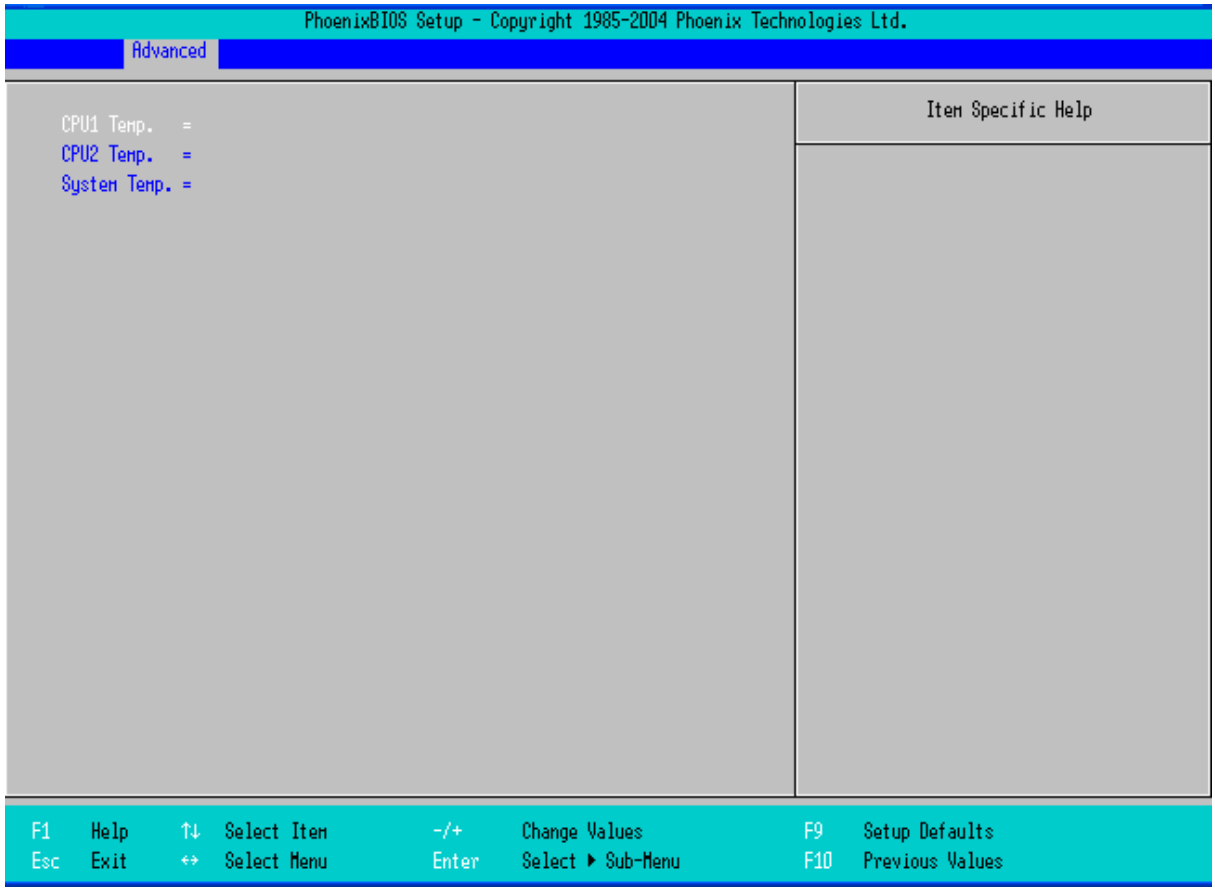
3.3.6.1 Voltage Monitoring



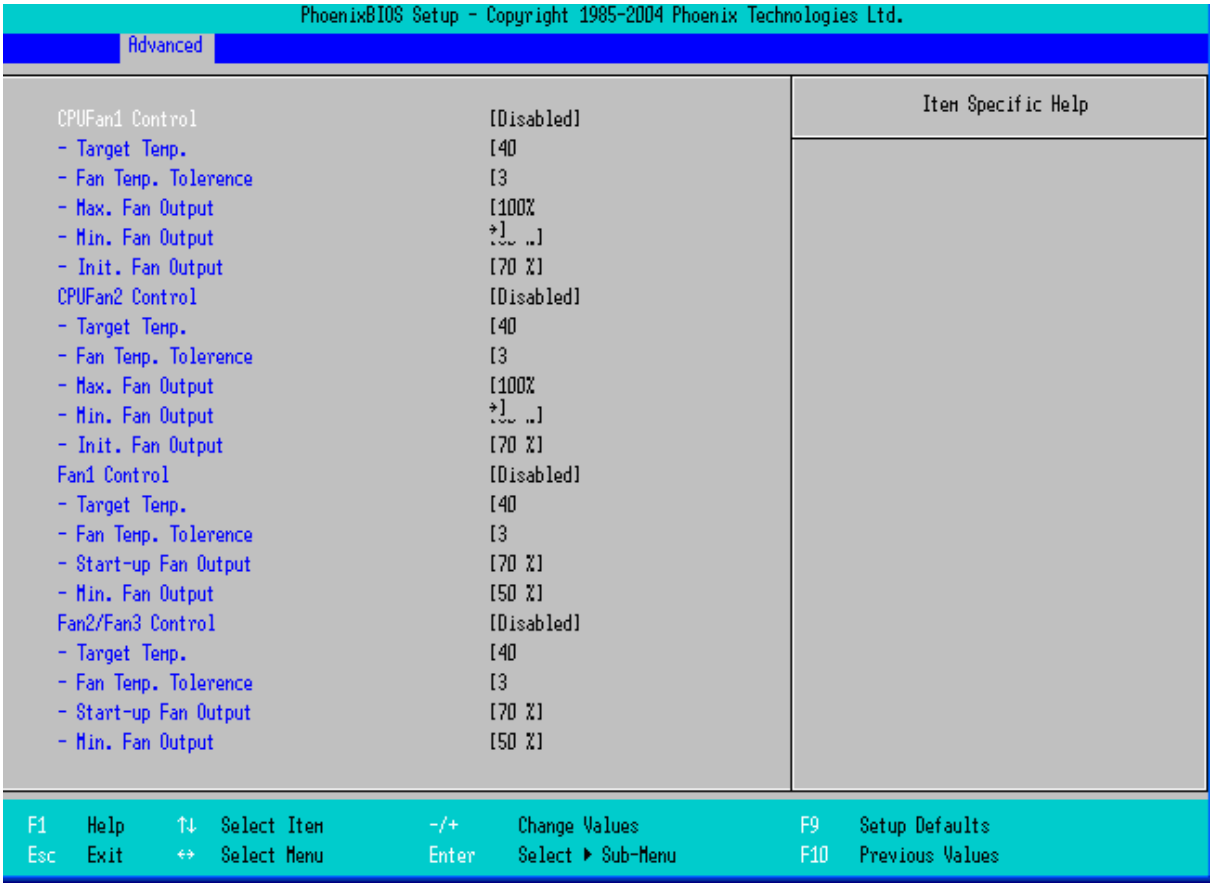
3.3.6.2 Fan Speed Monitoring



3.3.6.3 Temperature Monitoring

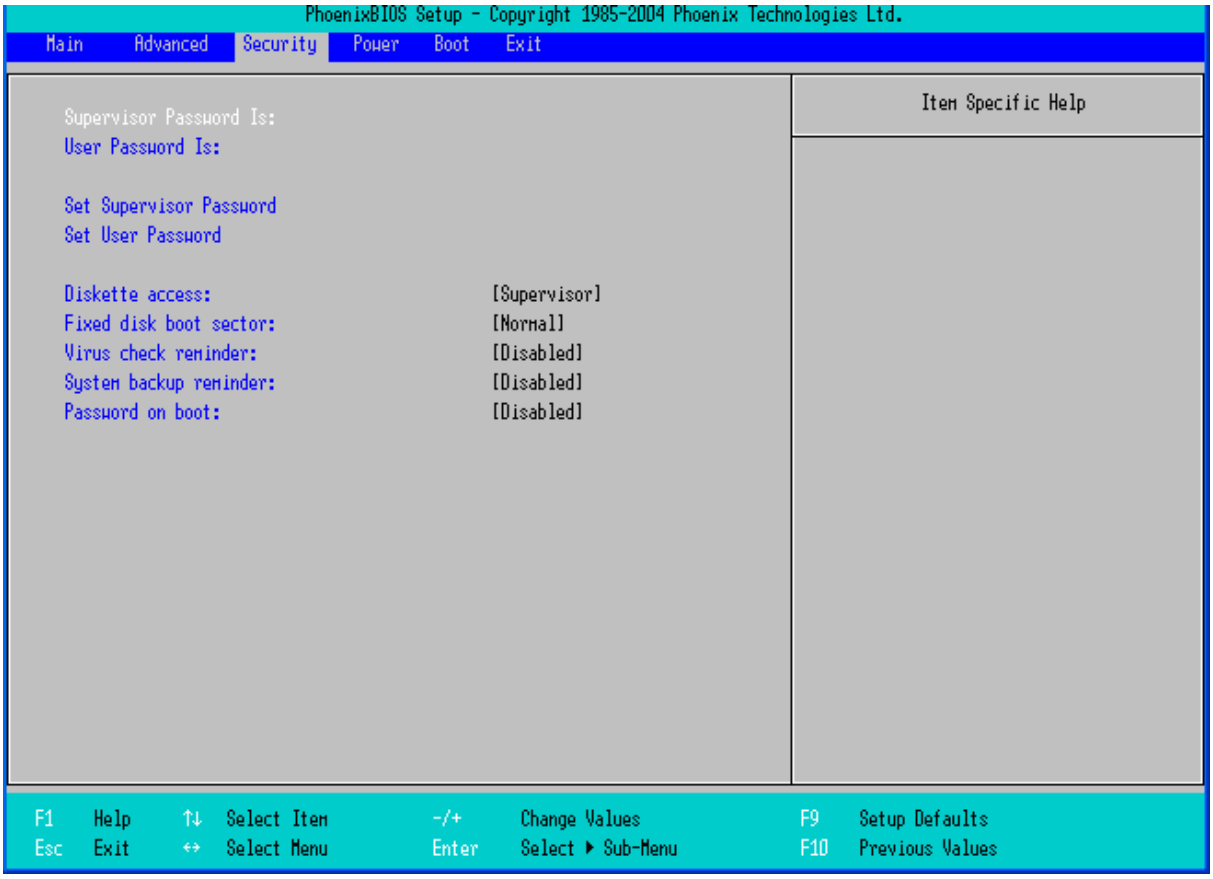


3.3.6.4 Smart Fan Control



3.4 Security Menu

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



The system displays the current supervisor and user passwords.

Diskette access
This option allows the user to control access to diskette drives.
Supervisor / Disabled

Fixed disk boot sector
This option allows the user to write protect boot sector on hard disk to protect against viruses.
Normal / Write Protect

Virus check reminder
This feature is used to display reminder message at the boot process.
Disabled / Enabled

System backup reminder
This feature is used to display reminder message at the boot process.
Disabled / Enabled

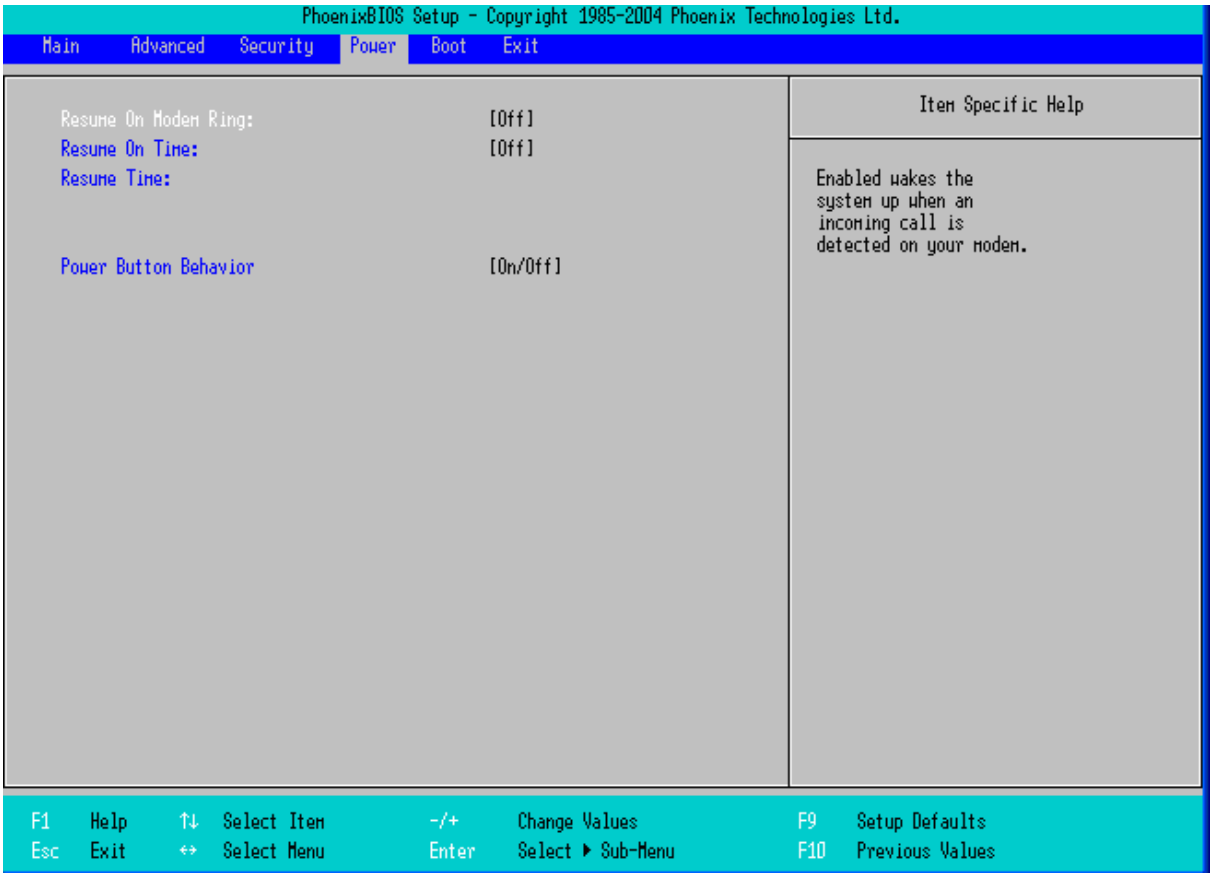
Password on boot

When enabled, the system will ask for a password at every boot. The system will continue booting only if the correct password is entered. If the wrong password is entered three times, the system will automatically shut down.

Disabled / Enabled

3.5 Power Menu

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



Resume on Modem Ring
When enabled, the system will be waked up when an incoming call is detected on the system.

Off / On

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.

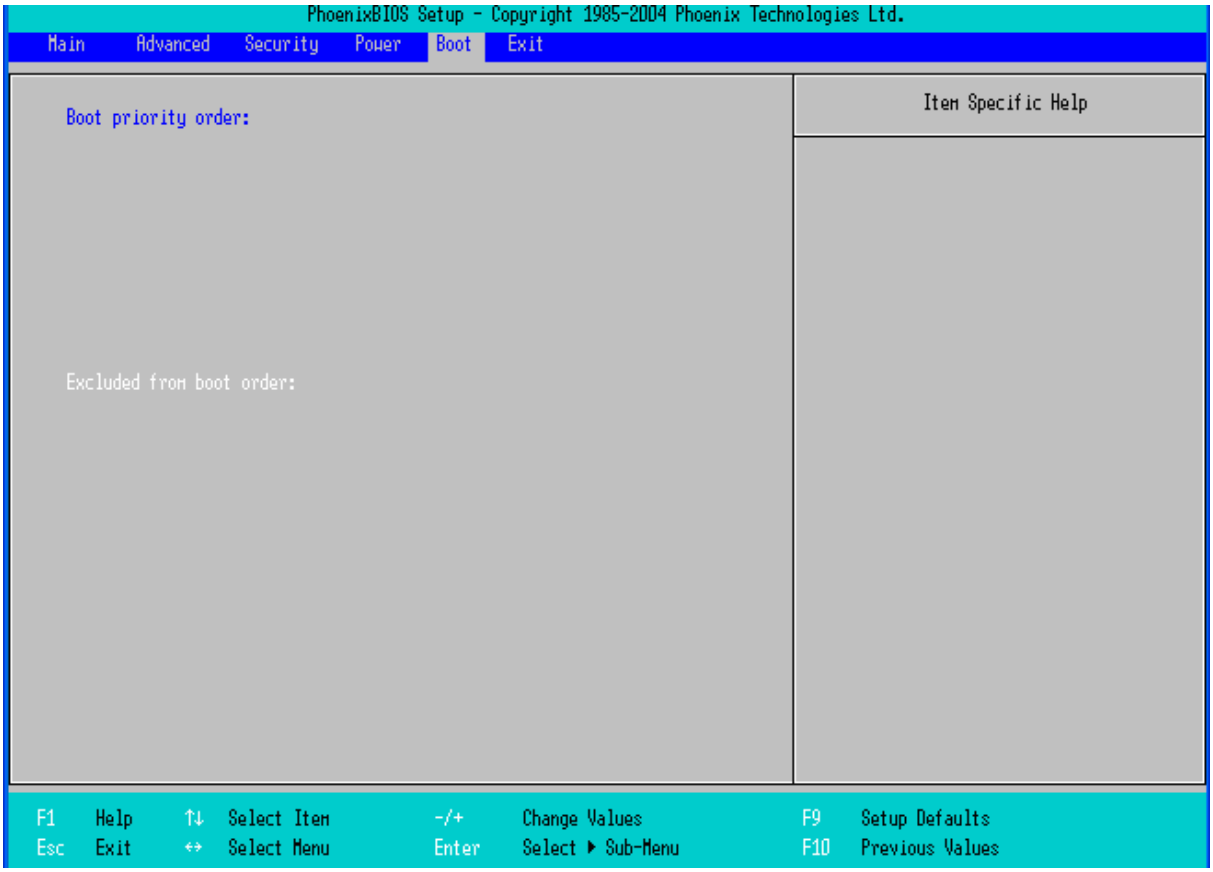
Power Button Behavior
This specifies the behavior of the system after the power button is pressed.

On/Off - This powers on or off the system after the power button is pressed.

Wake/Sleep - This wakes the system from sleep or puts the system to sleep.

3.6 Boot Menu

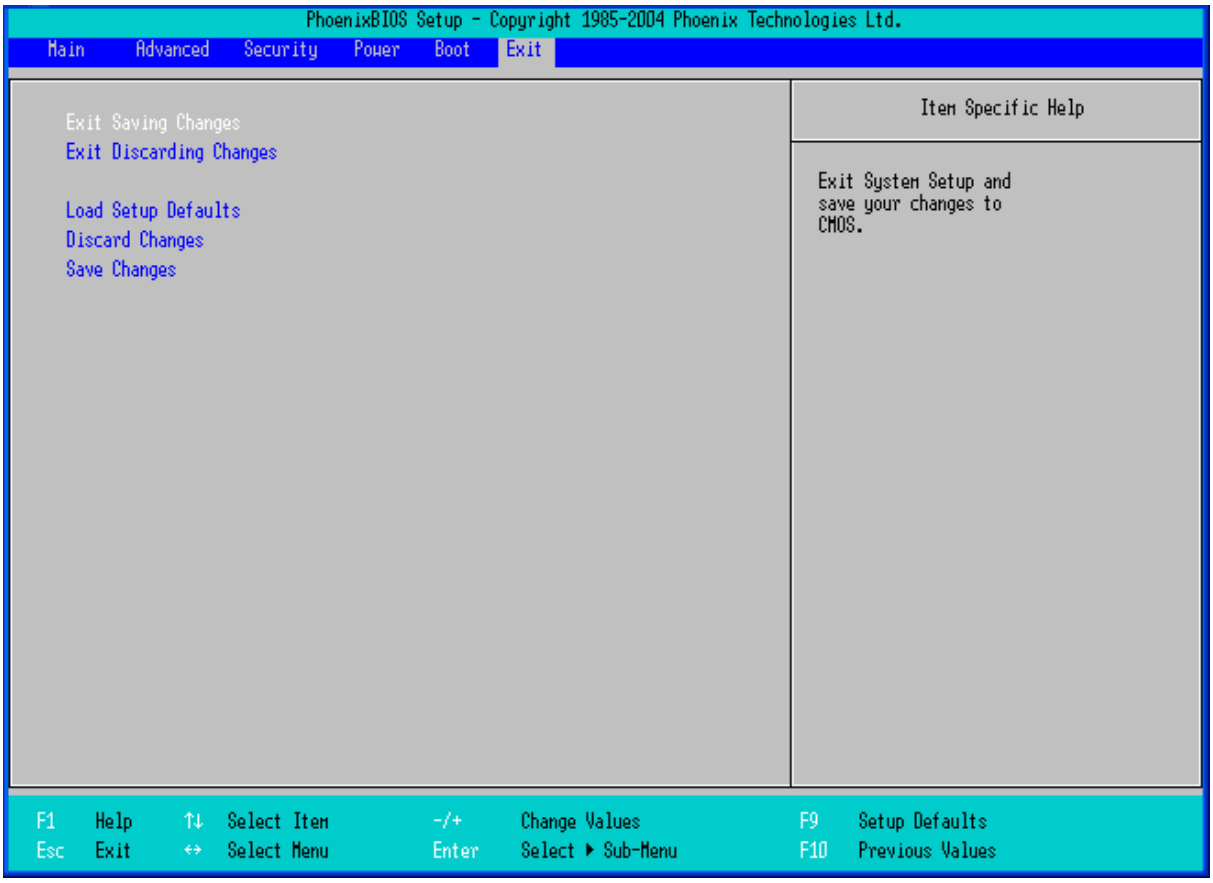
Use this screen to select options for the Boot Settings Configuration.



The boot menu will list all bootable devices. Use <Enter> to expand or collapses 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.



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.

NOTE

Chapter 4: Diagnostics

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

Memory, Video, CPU

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.

4.1 Beep Codes

Fatal errors, which halt the boot process, are communicated through two kinds of audible beeps.
•A single long beep followed by two short beeps: It indicates that a video error has occurred and the BIOS can't initialize the video screen to display and additional info.
•A single long beep repeatedly: This indicates that a DRAM error has occurred.
The most common type of error is a memory error.

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.

4.2 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.

4.3 - BIOS Post Code

BootBlock POST Code List :

Post Code (Port 80)	Mnemonic	Post Routine Description
80H	TP_BB_CS_INIT	Initializes the host PCI device.
81H	TP_BB_BRIDGE_INIT	Initializes the SMB support.
82H	TP_BB_CPU_INIT	Initializes the CPU if needed.
83H	TP_BB_TIMER_INIT	Initializes timer.
84H	TP_BB_IO_INIT	Configures I/O floppy and LPT port.
85H	TP_BB_FORCE	Checks for a forced flash.
86H	TP_BB_CHKSUM	Check BIOS checksum.
87H	TP_BB_GOTOBIOS	Transition from Boot Block to the system BIOS.
88H	TP_BB_MP_INIT	Initializes multi-processors.
89H	TP_BB_SET_HUGE	Sets huge (4GB) segment for DS, ES, FS and GS.
8AH	TP_BB_OEM_INIT	OEM special initialization. (Null)
8BH	TP_BB_HW_INIT	Initializes PIC and DMA controller.
8CH	TP_BB_MEM_TYPE	Initializes memory type.
8DH	TP_BB_MEM_SIZE	Initializes memory size.
8EH	TP_BB_SHADOW	Shadows the Boot Block.
8FH	TP_BB_SMM_INIT	Initializes SMM. (Null)
90H	TP_BB_RAMTEST	Tests the first 640KB of RAM.
91H	TP_BB_VECS_INIT	Initializes the interrupt vector area.
92H	TP_BB_RTC_INIT	Initializes RTC. (Null)
93H	TP_BB_VIDEO_INIT	Initializes Video. (Null)
94H	TP_BB_OUT_INIT	Initializes the output devices.
95H	TP_BB_BOOT_INIT	Initializes the boot devices.
96H	TP_BB_CLEAR_HUGE	Resets the segment to 64KB
97H	TP_BB_BOOT_OS	Begins booting to the crisis diskette.
98H	TP_BB_USB_INIT	Enables USB devices.
99H	TP_BB_SECUR_INIT	Initializes security. (Null)

Main BIOS POST Code List :

Post Code (Port 80)	Mnemonic	Post Routine Description
01H	TP_IPMI_INIT	Initializes the IPMI interface and check BMC status. (Optional)
02H	TP_VERIFY_REAL	Verifies if the CPU is in real mode from cold start.
03H	TP_DISABLE_NMI	Disables NMIs.
04H	TP_GET_CPU_TYPE	Gets CPU Type.
06H	TP_HW_INIT	Miscellaneous hardware initialization.
07H	TP_CS_BIOS_DESHAD	Disables system ROM shadow and start to execute ROMEXEC code from the flash part. (Optional)
08H	TP_CS_INIT	Initializes chipset registers to power-on defaults.
09H	TP_SET_IN_POST	Sets InPostBit in CMOS.
0AH	TP_CPU_INIT	Initializes CPU registers.
0BH	TP_CPU_CACHE_ON	Enables L1 cache during POST.
0CH	TP_CACHE_INIT	Initializes cache(s).
0EH	TP_IO_INIT	Initializes I/O component. (Optional)
0FH	TP_FDISK_INIT	Disables IDE operation.
10H	TP_PM_INIT	(Optional)
11H	TP_REG_INIT	General dispatcher for alternate register initializations. (Optional)
12H	TP_RESTORE_CR0	Restores CR0 after CPU is reset.
13H	TP_PCI_BM_RESET	Resets PCI devices to disable bus master in early post. (Optional)
14H	TP_8742_INIT	Initializes and configures the keyboard controller.
16H	TP_CHECKSUM	Verifies ROM BIOS checksum.
17H	TP_PRE_SIZE_RAM	Initializes external cache before memory auto-sizing. (Optional)
18H	TP_TIMER_INIT	Initializes the times.
1AH	TP_DMA_INIT	Tests the DMA registers.
1CH	TP_RESET_PIC	Initializes interrupt controllers for some shutdowns.
20H	TP_REFRESH	Verifies DRAM refresh.

22H	TP_8742_TEST	Report if there was a keyboard controller failure.
24H	TP_SET_HUGE_ES	Makes huge (4GB) segments for DS, ES, FS, GS, SS.
26H	TP_ENABLE_A20	(Optional)
28H	TP_SIZE_RAM	Determines DRAM size and configure the chipset accordingly.
29H	TP_PMM_INIT	Initializes the POST Memory Manager.
2AH	TP_ZERO_BASE	Zeros the RAM up to minimum RAM specified in the chipset RAM table.
2BH	TP_ENH_CMOS_INIT	(Optional)
2CH	TP_ADDR_TEST	Tests address lines of the RAM.
2EH	TP_BASERAML	Tests the first 4MB of RAM.
2FH	TP_PRE_SYS_SHADOW	Initializes external cache before shadowing. (Optional)
30H	TP_BASERAMH	(Optional)
32H	TP_COMPUTE_SPEED	Computes CPU clock speed in MHz.
33H	TP_PDM_INIT	Initializes the Phoenix Dispatch Manager.
34H	TP_CMOS_TEST	(Optional)
36H	TP_CHK_SHUTDOWN	Vector to proper shutdown routine.
38H	TP_SYS_SHADOW	Shadows the system BIOS.
3AH	TP_CACHE_AUTO	Sizes the external cache.
3BH	TP_DBGSRV_INIT	(Optional)
3CH	TP_ADV_CS_CONFIG	Advanced chipset configuration.
3DH	TP_ADV_REG_CONFIG	General dispatcher for alternate register. (Optional)
3FH	TP_ROMPILOT_MEMORY	(Optional)
41H	TP_ROMPILOT_INIT	(Optional)
42H	TP_VECTOR_INIT	Initializes interrupt vectors.
45H	TP_DEVICE_INIT	POST device initialization routine. (Optional)
46H	TP_COPYRIGHT	Verifies that the copyright message is intact.
48H	TP_CONFIG	Verifies the hardware configuration and note whether we have color or monochrome mode.
49H	TP_PCI_INIT	Initializes PNP and PCI.
4AH	TP_VIDEO	Initializes the video.

4BH	TP_QUIETBOOT_START	(Optional)
4CH	TP_VID_SHADOW	Shadows the video BIOS.
4EH	TP_CR_DISPLAY	Displays the copyright message.
4FH	TP_MULTBOOT_INIT	Allocates storage for the old and new history tables. (Optional)
50H	TP_CPU_DISPLAY	Displays CPU type and speed.
51H	TP_EISA_INIT	(Optioanl)
52H	TP_KB_TEST	Initializes and configures the keyboard and PS/2 mouse.
54H	TP_KEY_CLICK	(Optional)
55H	TP_USB_INIT	Configures USB devices. (Optional)
56H	TP_ENABLE_KB	(Optional)
57H	TP_1394_INIT	(Optional)
58H	TP_HOT_INT	Tests for hot (unexpected) interrupts.
59H	TP_PDS_INIT	Initializes the POST display services. (Optional)
5AH	TP_DISPLAY_F2	Displays “Press F2 for Setup” prompt and enables the keyboard interrupt.
5BH	TP_CPU_CACHE_OFF	Disables CPU cache.
5CH	TP_MEMORY_TEST	Sizes conventional memory, stores the amount and prints this to the screen.
5EH	TP_BASE_ADDR	(Optional)
60H	TP_EXT_MEMORY	Performs memory tests on extended RAM.
62H	TP_EXT_ADDR	Performs address tests on extended RAM.
64H	TP_USERPATCH1	Jump to UserPatch1.
66H	TP_CACHE_ADVNCD	Configures advanced cache features.
67H	TP_MP_INIT_MIN	Quick initializes of all AP’s in early post. (Optional)
68H	TP_CACHE_CONFIG	Enables cache(s).
69H	TP_PM_SETUP_SMM	Performs SMM initializations. (Optional)
6AH	TP_DISP_CACHE	Displays cache RAM size if desired.
6BH	TP_CUST_DFLT	(Optional)
6CH	TP_DISP_SHADOWS	Displays BIOS shadow status.

70H	TP_ERROR_MSGS	Displays any errors found.
72H	TP_TEST_CONFIG	Checks for bad configurations.
74H	TP_RTC_TEST	(Optional)
76H	TP_KEYBOARD	Reports if there was a keyboard or controller failure.
7AH	TP_KEYLOCK	(Optional)
7CH	TP_HW_INTS	Initializes hardware interrupt vectors.
7DH	TP_ISM_INIT	(Optional)
7EH	TP_COPROC	Tests for coprocessor.
80H	TP_IO_BEFORE	(Optional)
81H	TP_LATE_DEVICE_INIT	POST device initialization routine. (Optional)
82H	TP_RS232	(Optional)
83H	TP_FDISK_CFG_IDE	Configures Non-MCD IDE controllers.
84H	TP_LPT	(Optional)
85H	TP_PCI_PCC	Configures PnP PCC devices. (Optional)
86H	TP_IO_AFTER	(Optional)
87H	TP_MCD_INIT	Configures MCD devices.
88H	TP_BIOS_INIT	Initializes timeouts, key buffer, soft reset flag.
89H	TP_ENABLE_NMI	Enable NMIs.
8AH	TP_INIT_EXT_BDA	Initializes extended BIOS data area.
8BH	TP_MOUSE	Checks if mouse is installed, displays “Installed” message. (Optional)
8CH	TP_FLOPPY	POST task for installing and initializing legacy floppy disk drives.
8EH	TP_AUTOTYPE	(Optional)
8FH	TP_FDISK_FAST_PREINIT	(Optional)
90H	TP_FDISK	Tests hard disks.
91H	TP_FDISK_FAST_INIT	Programs timing registers according to PIO modes. (Optional)
92H	TP_USERPATCH2	Jump to UserPatch2.
93H	TP_MP_INIT	Creates the MP table. (Optional)
95H	TP_CD	Installs CD-ROM for boot. (Optional)

96H	TP_CLEAR_HUGE_ES	Performs a shutdown eight to transition from the warm start table to the cold start table. (Optional)
97H	TP_MP_FIXUP	Fix-up MP table physical pointer and checksum. (Optional)
98H	TP_ROM_SCAN	Configures Non-PCC PnP ISA devices, PCI IRQs, enables PCI devices and rom scan.
99H	TP_FDISK_CHECK_SMART	POST task to check SMART status. (Optional)
9AH	TP_MISC_SHADOW	(Optional)
9BH	TP_PMCPUSPEED	(Optional)
9CH	TP_PM_SETUP	Late SMM initialization. (Optional)
9DH	TP_SECURITY_INIT	Initializes the system security engine. (Optional)
9EH	TP_IRQS	Enables the proper hardware interrupts.
9FH	TP_FDISK_FAST_INIT2	(Optional)
A0H	TP_TIME_OF_DAY	Sets time of day.
A2H	TP_KEYLOCK_TEST	Tests if key-lock or keyboard controller password is on. (Optional)
A4H	TP_KEY_RATE	(Optional)
A8H	TP_ERASE_F2	Removes “Press F2” prompt from the screen.
AAH	TP_SCAN_FOR_F2	Checks if user has requested SETUP.
ACH	TP_SETUP_CHECK	Checks to see if SETUP should be executed.
AEH	TP_CLEAR_BOOT	Clears ConfigFailedBit and InPostBit in CMOS.
B0H	TP_ERROR_CHECK	Checks for POST errors.
B1H	TP_ROMPILOT_UNLOAD	(Optional)
B2H	TP_POST_DONE	Sets/clears status bits to reflect POST is completed.
B3H	TP_ENH_CMOS_STORE	Stores enhanced CMOS values in Non-volatile area. (Optional)
B4H	TP_ONE_BEEP	(Optional)
B5H	TP_QUIETBOOT_END	(Optional)
B6H	TP_PASSWORD	Queries for password before boot. (Optional)
B7H	TP_ACPI	Setups ACPI table in shadow RAM

		and in extended memory. (Optional)
B8H	TP_SYSEM_INIT	(Optional)
B9H	TP_PREPARE_BOOT	Cleans up all graphics before booting.
BAH	TP_DMI	Executes DMI handlers. (Optional)
BBH	TP_INIT_BCVS	(Optional)
BCH	TP_PARITY	Clears the parity error latch, set correct NMI state.
BDH	TP_BOOT_MENU	Displays boot first menu. (Optional)
BEH	TP_CLEAR_SCREEN	Clears the screen.
BFH	TP_CHK_RMDR	Checks the reminder features. (Optional)
C0H	TP_INT19	Cleans up the system and boots via INT 19h.
C1H	TP_PEM_INIT	Invokes via shutdown table to initialize PEM data structure.
C1H	TP_CHKBOOTTYPE	(Optional)
C2H	TP_PEM_LOG	Invokes the error logging function of all registered error handlers.
C2H	TP_SAVEBOOTTYPE	Saves the current boot type into CMOS.
C3H	TP_PEM_DISPLAY	Scans the PEMRegTbl and calls the display function for each registered error handler in the same order as they were registered with the PEM.
C3H	TP_CHKREQBOOTTYPE	Determines if a specific boot type has been requested.
C4H	TP_PEM_SYSER_INIT	Initializes (clears) the system error flags. (Optional)
C4H	TP_HOTKEY_START	Installs the IRQ1 vector. (Optional)
C5H	TP_DUAL_CMOS	(Optional)
C5H	TP_HOTKEY_END	Marks the fact that we are no longer in POST. (Optional)
C6H	TP_DOCK_INIT	(Optional)
C6H	TP_CONSOLE_INIT	Installs console before any text output, if requested. (Optional)
C7H	TP_DOCK_INIT_LATE	(Optional)
C7H	TP_CONSOLE_COMPORT	Removes display manager and INT 10h hook. (Optional)

C8H	TP_FORCE	Forces check. (Optional)
C8H	TP_A20_TEST	Performs A20 test. (Optional)
C9H	TP_EXT_CHECKSUM	Checks (and do) if flash recovery is necessary.
C9H	TP_EISA_BEFORE_INIT	(Optional)
CAH	TP_SERIAL_KEY	(Optional)
CAH	TP_EISA_AFTER_INIT	(Optional)
CBH	TP_ROMRAM	(Optional)
CBH	TP_SAVE_MEMCFG	(Optional)
CCH	TP_SERIAL_VID	(Optional)
CCH	TP_RESTORE_MEMCFG	(Optional)
CDH	TP_PCMATA	(Optional)
CDH	TP_CONSOLE_VECTOR	Reclaims console vector after H/W vectors are initialized. (Optional)
CEH	TP_PEN_INIT	(Optional)
CEH	TP_ERRLOG_INIT	(Optional)
CFH	TP_XBDA_FAIL	Extended BIOS data area allocating failure.
CFH	TP_ERRLOG_MSG	(Optional)
D1H	TP_BIOS_STACK_INIT	Initializes BIOS stack during POST. (Optional)
D2H	TP_UNKNOWN_INT	Unknown interrupt.
D3H	TP_SETUP_WAD	Finds space for memory wad and zeros it.
D4H	TP_CPU_GET_STRING	Gets CPU brand string. (Optional)
D5H	TP_SWITCH_POST_TABLES	(Optional)
D6H	TP_PCCARD_INIT	(Optional)
D7H	TP_FIRSTWARE_CHECK	(Optional)
D8H	TP_ASF_INIT	(Optional)
D9H	TP_IPMI_INIT_LATE	Performs any IPMI initialization in late post. (Optional)
DAH	TP_PCIE_INIT	Initializes PCI-E devices. (Optional)
DBH	TP_SROM_TEST	(Optional)
DCH	TP_UPD_ERROR	Registers with the error manager and reports error. (Optional)
DDH	TP_REMOTE_FLASH	(Optional)
DEH	TP_UNDI_INIT	(Optional)
DFH	TP_UNDI_SHUTDOWN	(Optional)

P.S. : The red means an empty routine with POST code only

Appendix 1: How to Make a Driver Diskette

Follow the steps below to make a driver diskette from the TYAN driver CD provided

1. Insert the Driver CD into the CD-ROM drive and copy the RAID driver from \drivers\Windows\RAID\ESB RIAD Driver 6.075.2.3\ to the floppy disk in another Windows system

2. Insert the floppy disk to the original system and install the RAID driver

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 at only 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, then, also results in greater speed.

BBS (BIOS Boot Specification): is 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 for some reason. 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, and 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, all at once, 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 also the possibility of losing your data should the system crash. Information stored 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 needed information is stored in the SRAM instead of in the slow 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.

Cache size: refers to the physical size of the cache onboard. This should not be confused with the cacheable area, which is the total amount of memory which can be scanned by the system in search of data to put into the cache. A typical setup would be a cache size of 512KB, and a cacheable area of 512MB. In this case, up to 512KB of the main memory onboard is capable of being cached. However, only 512KB of this memory will be in the cache at any given moment. Any main memory above 512MB could never be cached.

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).

DDR (Double Data Rate): is 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 sockets, 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.

Doze mode: in this mode, only the CPU's speed is slowed.
DRAM (Dynamic RAM): widely available, very affordable form of RAM which has the unfortunate tendency to lose 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, 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

EMRL: Embedded RAID Logic. An Adaptec specific RAID technology.

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.

Fault-tolerance: a term describing a system where one component can quickly be replaced without causing a loss of service, such as in a RAID system.

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, although TYAN also makes some Baby-AT and ATX Footprint boards.

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

Handshaking: a process where two devices initiate communications. One device, typically the server, sends a message to another device, typically a client, in order to request establishment of a communications channel. The two devices will then exchange messages back and forth in order to settle on a communications protocol.

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

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

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.)

Initial Program Load (IPL): a feature built into BBS-compliant devices, describing those devices as capable of loading and executing an OS, as well as being able to provide control back to the BIOS if the loading attempt fails.

IPL: see Initial Program Load.

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.

ISA (Industry Standard Architecture): a slower 8- or 16-bit bus (data pathway).

Latency: the amount of time that one part of a system spends waiting for another part to catch up. This is most common when the system sends data out to a peripheral device, and it waiting for the peripheral to send some data back (peripherals tend to be slower than onboard system components).

Mirroring: see RAID.

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

OEMs (Original Equipment Manufacturers): Compaq or IBM package other companies' motherboards and hardware inside their case and sell them.

Parallel port: transmits the bits of a byte on eight different wires at the same time (that is, in parallel form, eight bits 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 type of RAM that can maintain it's data as long as power is provided to the memory chips. In this configuration, SRAM requests are pipelined, which means that larger packets of data are sent to the memory at one time, and acted upon quickly. This type of SRAM operates at bus speeds higher than 66MHz.

Pipelining: improves system performance by allowing the CPU to begin executing a second instruction before the first is completed. A pipeline can be likened to an assembly line, with a given part of the pipeline repeatedly executing a set part of an operation on a series of instructions.

PM timers (Power Management timers): software timers that count down the number of seconds or minutes until the system times out and enters sleep, suspend, or doze mode.

PnP (Plug-n-Play): a design standard that has become ascendant in the industry. Plug-n-Play devices require little set-up to use. Novice end users can simply plug them into a computer that is running on a Plug-n-Play aware operating system (such as Windows 98), and go to work. 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, towards 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, also the 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: stands for RAID I/O Steering, a type of RAID technology from Intel. RAIDIOS is a specification used to enable an embedded I/O controller, embedded on the motherboard, to be used as just an I/O controller or to be the I/O component of a hardware RAID subsystem. The RAIDIOS circuit allows an I/O Processor (either embedded on the motherboard or on an add-in card) to configure the I/O controller and service the I/O controller's interrupts. The I/O controller and the I/O Processor together are two of the primary components of a hardware RAID subsystem.

RAM (Random Access Memory): technically refers to a type of memory where any byte can be accessed without touching the adjacent data, is often used to refer 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.

SATA (Serial ATA): is an evolutionary replacement for the Parallel ATA physical storage interface. Serial ATA is a drop-in solution in that it is compatible with today's software and operating systems. It will provide for systems which are easier to design, with cables that are simpler to route and install, smaller cable connectors, and lower voltage requirements.

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

SIMM (Single In-line Memory Module): formally the most common form of RAM for motherboards. They must be installed in pairs, and do not have the carrying capacity or the speed of DIMM modules.

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

SRAM (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.

SSI (Server System Infrastructure): an industry initiative intended to provide ready-to-use design specifications for common server hardware elements (chassis, power supplies, and racks) to promote and support server industry growth.

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

Striping: see RAID

UltraDMA-33/66/100: a fast version of the old DMA channel. UltraDMA is also called UltraATA. Without 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 shift the processor over and down, guiding into the board and locking it into place.

Technical Support

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

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

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 norms de Classe B d'interference radio tel que specifie par le Ministere Canadien des Communications dans les reglements d'ineteference 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.

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