

**Trinity KT400****S2495**

Revision 1.02

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Table of Contents

Before you begin	iii
Chapter 1: Introduction	1-1
1.1 – Congratulations!.....	1-1
1.2 – Hardware Specifications	1-2
Chapter 2: Board Installation	2-1
2.1 – Board Image	2-2
2.2 – Board Parts.....	2-3
2.3 – Jumper Settings & Definitions	2-4
2.4 – Connector Description.....	2-5
2.5 – Mounting the Motherboard.....	2-13
2.6 – Installing the Memory.....	2-14
2.7 – Memory Installation Procedure.....	2-15
2.8 – Installing the Processor and Heatsink.....	2-16
2.9 – Attaching Drive Cables.....	2-18
2.10 – Installing Add-In Cards.....	2-20
2.11 – Connecting External Devices	2-21
2.12 – Installing the Power Supply	2-21
2.13 – Finishing Up	2-22
Chapter 3: BIOS Setup	3-1
3.1 – Main BIOS Setup	3-3
3.2 – Standard CMOS Features.....	3-5
3.3 – Advanced BIOS Features	3-7
3.4 – Advanced Chipsets Features	3-10
3.5 – Integrated Peripherals.....	3-14
3.6 – Power Management Setup.....	3-19
3.7 – PnP/PCI Configurations	3-23
3.8 – PC Health Status	3-24
3.9 – Frequency/Voltage Control	3-25
3.10 – Load Fail-Safe Defaults.....	3-26
3.11 – Load Optimized Defaults	3-26
3.12 – Supervisor/User Password Setting.....	3-27
3.13 – Exit Selecting	3-28
Chapter 4: Diagnostics	4-1
4.1 Beep Codes	4-1
4.2 Flash Utility	4-1
Appendix I: Glossary	5-1
Appendix II: Post Error Code for BIOS	5-7
Technical Support.....	5-15

Before you begin...

Check the box contents!

The retail motherboard package should contain the following:



1x Trinity KT400 S2495 motherboard



1x 34-Pin floppy drive cable



1x Ultra-DMA-133/100/66/33 IDE cable (One additional for IDE RAID)



1x Trinity KT400 S2495 User's Manual



1x TYAN driver CD



1x I/O shield



1 x Serial ATA Driver Diskette and User's Manual (Optional)



1 x IDE RAID Driver Diskette and User's Manual (Optional)

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 solutions for the AMD Athlon XP processor, the Trinity KT400 S2495. Based on VIA's KT400 chipsets, the main features of the Trinity KT400 S2495 are: ATX form factor, onboard 10/100 Fast Ethernet port, and 6-channel audio. It also offers optional features such as Serial ATA and IDE RAID for desktop demands.

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.

1.2 – Hardware Specifications

Processors

- Socket A processor
- AMD Athlon™ XP / Athlon™ / Duron™ processor supports up to 3000+ CPU
- Front-Side Bus support for 200/266/333MHz

Chipset

- VIA KT400 North Bridge chipset
- VIA VT8235 South Bridge chipset
- Winbond W83697HF LPC I/O chip

Memory

- Three 184-pin DIMM sockets
- Supports DDR 400*/333/266/200
- Up to 3GB Registered, unbuffered non-ECC type memory modules

* **NOTE:** PC2700 maximum to 2 DIMM support only. PC3200 maximum to 1 DIMM (DIMM 3) support only. Please go to TYAN website <http://www.TYAN.com> for the latest DDR400/PC3200 qualified memory test list.

Integrated LAN Controller

- VIA VT6103 PHY 10/100Base-TX Ethernet controller
- One RJ-45 LAN connector with LEDs

Intelligent Audio

- ALC650 6-Channel AC97 audio CODEC
- Line-in / Speaker-out / MIC-in phone jacks
- CD-in / Aux-in connectors
- SPDIF output connector

Integrated IDE RAID (Optional)

- High Point HPT372N supports IDE RAID 0, 1, 0+1
- Dual IDE channels for ATA 133

Integrated Serial ATA (Optional)

- Silicon Image Sil3112 controller
- Two Serial ATA ports

Integrated PCI IDE

- Dual channel master mode support up to four IDE devices
- Support for ATA-133 / 100 / 66 IDE drives and ATAPI compliant devices

Integrated I/O Interface

- One floppy connector supports up to two drives
- Six USB 2.0 ports (4 ports on rear panel, 2 ports by pin-header)
- One IrDA connector

Rear Panel I/O ports

- Stacked PS/2 Mouse & Keyboard ports
- Stacked two USB 2.0 ports and RJ45 LAN port on top
- Stacked two USB 2.0 ports
- Two 9-pin UART Serial ports
- One 25-pin SPP/ECP/EPP Parallel port
- Audio jacks

Expansion Slots

- Six 32-bit / 33MHz PCI 2.2 slots
- One 1.5V AGP 4X / 8X slot

BIOS

- Award BIOS 4Mbit Flash ROM
- Support APM 1.2 & ACPI 1.0B
- PnP, DNI 2.0, WFM 2.0 Power Management
- Jumper free for System over clocking and over voltage for CPU / Memory / AGP

Power

- On board VRM, 2-phase PWM
- ATX 20-pin power connector

Regulatory

- EMI - CE, FCC Class B

Miscellaneous

- WOL, STR, Three fan connectors
- POST code 7-segment LED display

Form Factor

- ATX footprint
- 305mm x 245mm (12" x 9.6")

Note: 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 holes pattern of the Trinity KT400 S2495 matches the ATX specification. Before continuing with installation, confirm that your chassis supports a standard ATX motherboard.

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

The first thing you should do read 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:

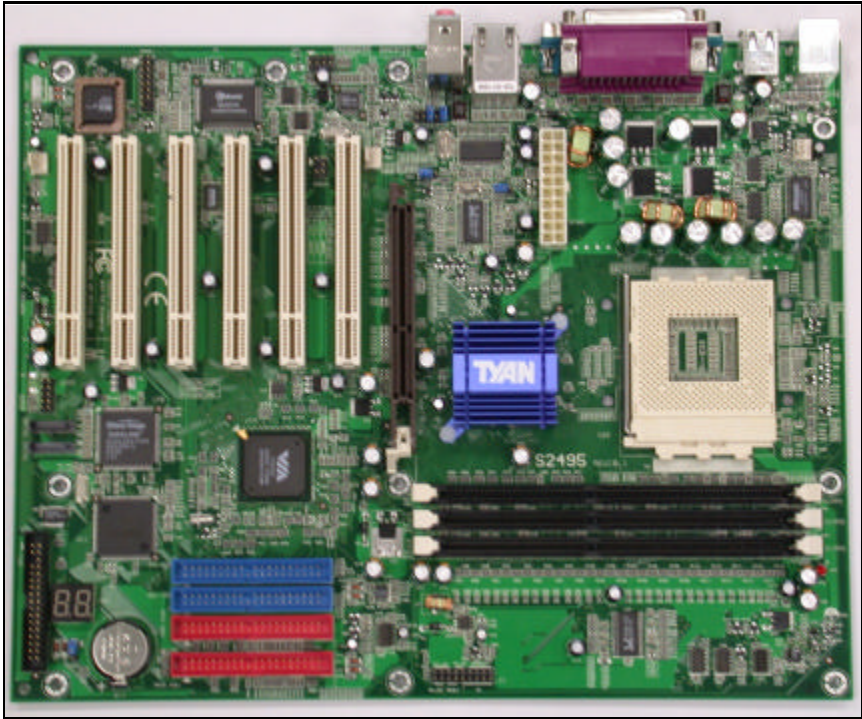
- (1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, TYAN recommends wearing a static safety wrist 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

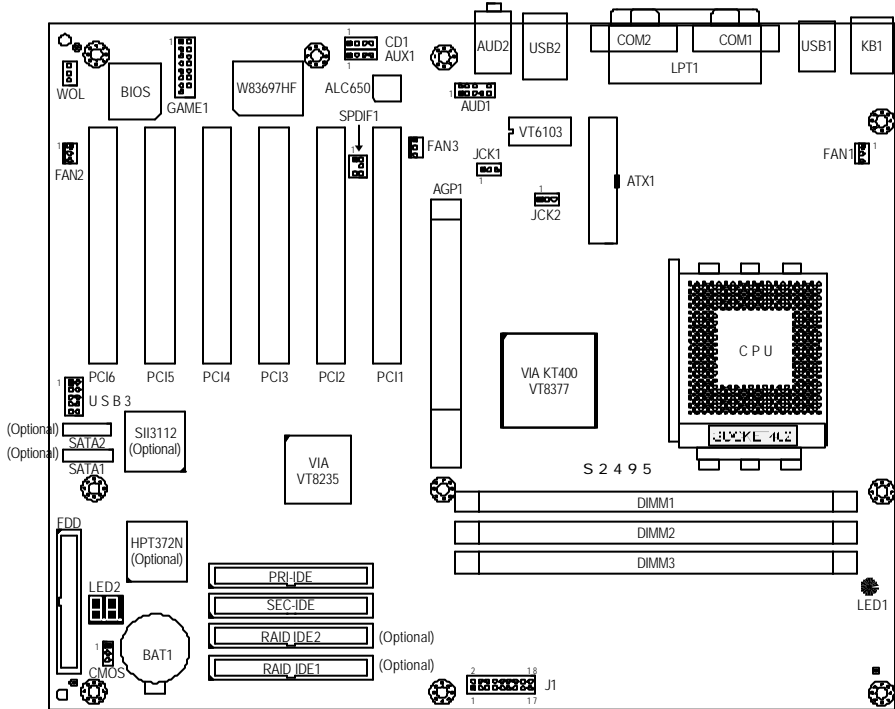
The following is an image of the Trinity KT400 S2495.



The above photograph is purely representative. Due to engineering updates and new board revisions, certain components may change and or be repositioned. The picture above may or may not look exactly like the board you received.

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

2.2 – Board Parts





This jumper diagram 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 diagram. The board parts are not to scale.

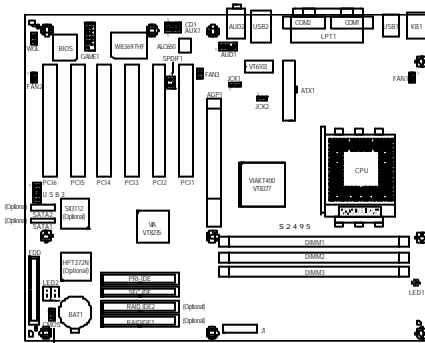
2.3 – Jumper Settings & Definitions

Jumper	Function	Ref. Page
CMOS	Clear CMOS	Page 2-4
JCK1	FSB Select	Page 2-5
JCK2	FSB Select	Page 2-5



Jumper Example

	Jumper OFF – open (without jumper cap)
	Jumper ON – closed (with jumper cap)

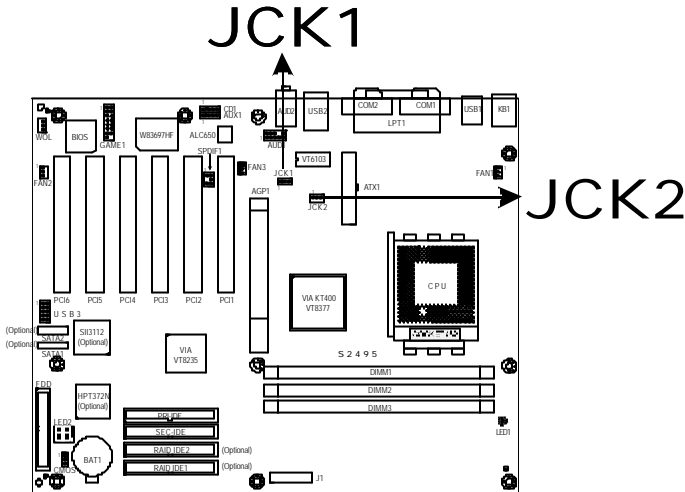
CMOS Reset (CMOS)



CMOS

<p>1</p>  <p>Normal</p>	<p>You can reset the CMOS settings in case an incorrect setting causes system instability or you have forgotten your system/setup password or have just flashed your BIOS by using these jumpers.</p> <ul style="list-style-type: none"> - Power off system, disconnect power supply from motherboard - Set jumper to Clear CMOS - Wait about 5 seconds - Set jumper to Normal (Default)
<p>1</p>  <p>Clear CMOS</p>	

CPU FSBSelect (JCK1 & JCK2)



Note:

- For software FSB programming by BIOS SETUP utility, JCK1 and JCK2 have to place at Default (see 3.9 – Frequency/Voltage Control).

JCK#	100MHz*(Default)	133MHz	166MHz
JCK1			
JCK2			

About the jumpers setting (JCK1 & JCK2) please see the following information:

1. If JCK1 and JCK2 are left in their default settings (100MHz) then the BIOS will automatically detect a 100MHz or 133MHz CPU automatically.
2. If you want to use a 333MHz CPU then you will need to manually change the jumpers to the 166MHz setting, however if you set the CPU FSB to this speed then you'll only be able to run the memory at DDR333.

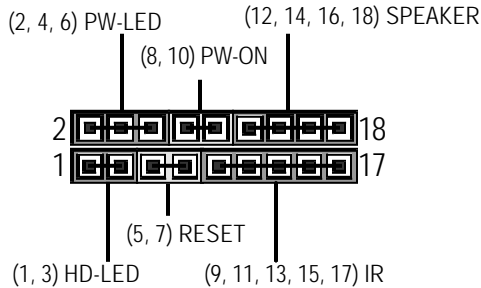
2.4 – Connector Description

Connector	Function	Ref. Page
J1	Front panel connector	Page 2-6
LED1	Power On LED	Page 2-7
LED2	Post error code for BIOS	Page 5-7
FAN1	CPU fan connector	Page 2-7
FAN2	Chassis fan connector	Page 2-7
FAN3	Power fan connector	Page 2-7
USB3	USB header #3	Page 2-8
WOL	Wake On LAN	Page 2-8
CD1	CD Audio-in connector	Page 2-9
AUX1	Auxiliary Line-In connector	Page 2-9
AUD1	Front Audio	Page 2-10
GAME1	Game port connector	Page 2-10
SPDIF1	Sony/Philips Digital InterFace connector	Page 2-11
SATA1/SATA2*	Serial ATA connector	Page 2-11
RAID IDE1/RAID IDE2*	IDE RAID connector	Page 2-12

* SATA and IDE RAID are optional functions.

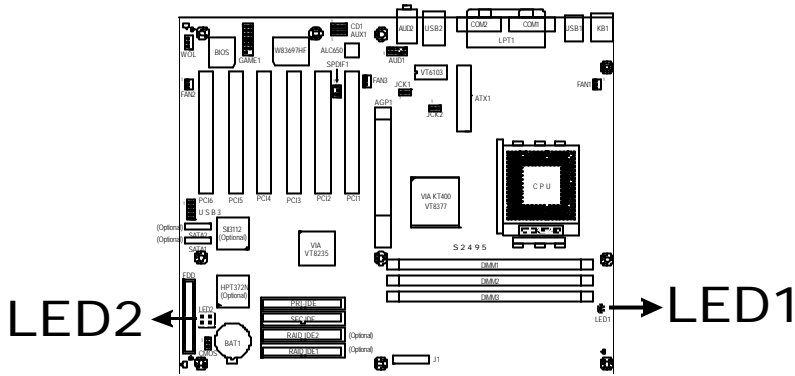
Front Panel Connector (J1)

Your chassis will usually come with connectors to install onto the motherboard, such as HD and Power LEDs. The Front Panel Connector (J1) has been implemented for such purposes.



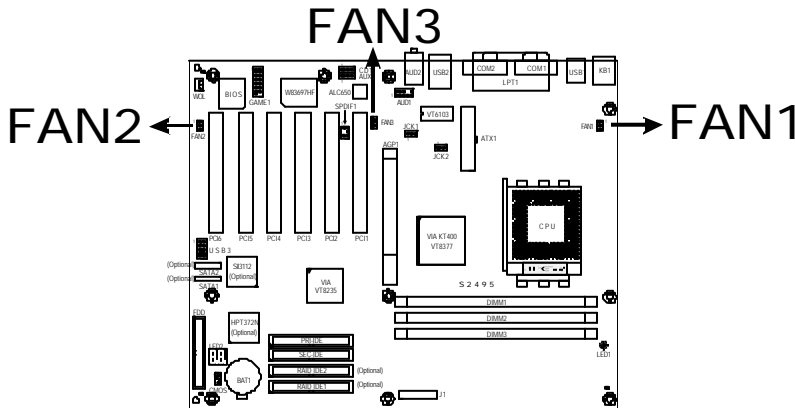
Pin 2	Pin 4	Pin 6	Pin 8	Pin 10	Pin 12	Pin 14	Pin 16	Pin 18
POWER_LED	GND	GND	POWER_BUTTON	GND	VCC	GND	NC	SPEAKER
Pin 1	Pin 3	Pin 5	Pin 7	Pin 9	Pin 11	Pin 13	Pin 15	Pin 17
VCC	HDD_LED	GND	REST_BUTTON	VCC	CIRRX	IRRX	GND	IRTX

LED Information (LED1 & LED2)



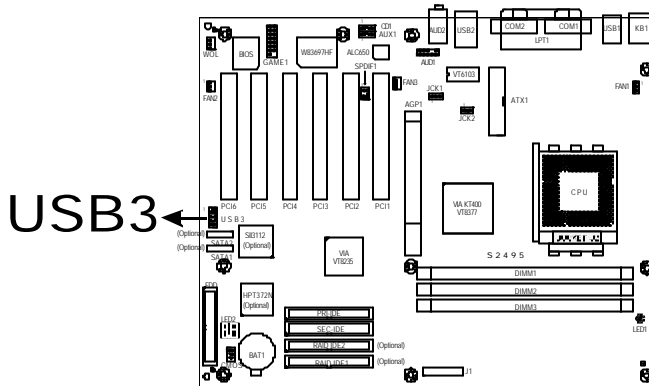
LEDs	Description
LED1	Power on LED
LED2	Post error code for BIOS (Ref. Appendix II)

Fan Connector (FAN1 & FAN2 & FAN3)



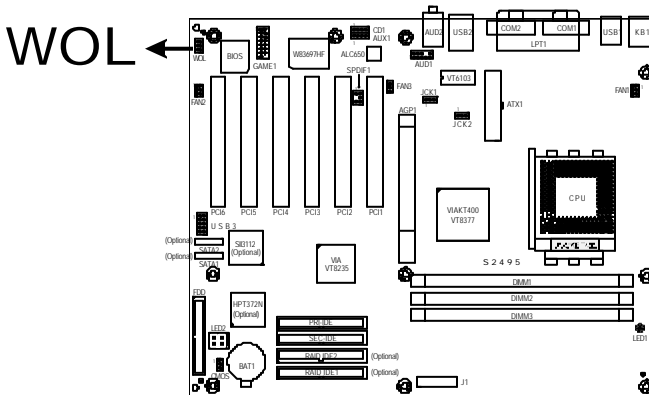
Fan #	Description	Functions
1	CPU fan	RPM Read and controlled
2	Chassis fan	RPM Read and controlled
3	Power fan	The fan connector does not support RPM function which can not detect speed of the fan.

USB3 Connector



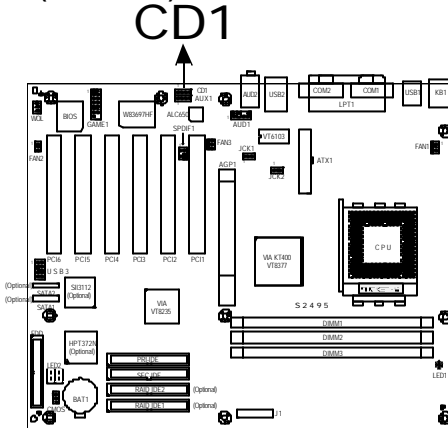
Connector	Description	Functions
	Pin 1: VCC Pin 6: GND Pin 2: -Data Pin 7: GND Pin 3: +Data Pin 8: +Data Pin 4: GND Pin 9: -Data Pin 5: GND Pin 10: VCC	Use the USB3 header here for front panel USB 2.0 connectors (via an optional cable)


WOL Connector



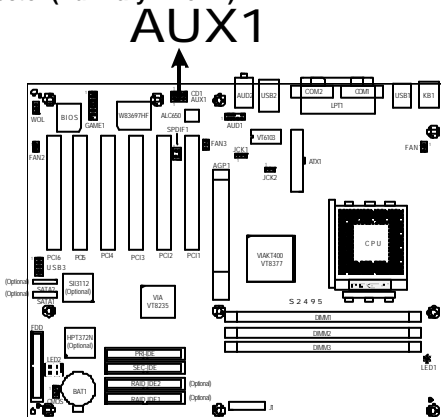
Connector	Description	Functions
WOL	Wake On LAN	Reserved for a network interface card to wake the system from power saving mode.


CD1 Connector (CD Audio-In)



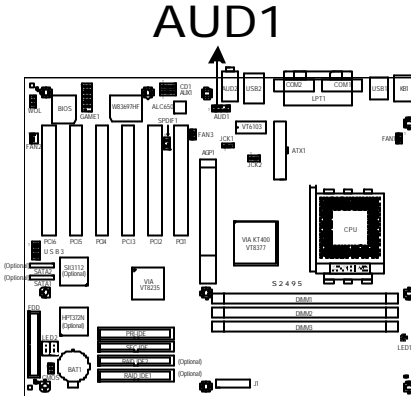
Connector	Description	Functions
 1 4	Pin 1: CD_In_Left Pin 2: CD_Reference Pin 3: CD_Reference Pin 4: CD_In_Right	Connect CD-ROM (DVD) audio out

AUX1 Connector (Auxiliary Line-In)



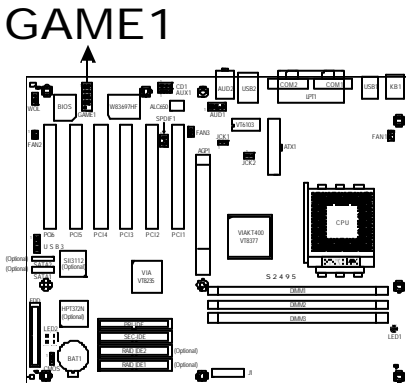
Connector	Description	Functions
 1 4	Pin 1: Lift Line_In Pin 2: GND Pin 3: GND Pin 4: Right Line_In	Connect other devices audio out

AUD1 Connector



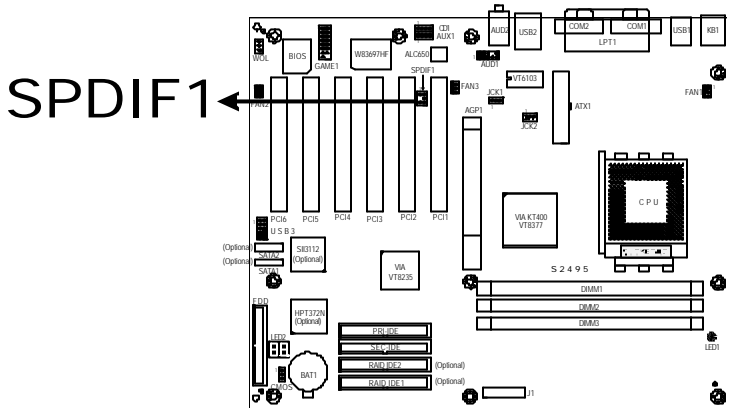
AUD1	Description
	<p>Jumper 5-6, 9-10 = Rear panel audio output (Default)</p>
	<p>Jumper open = Front panel audio output (via an optional cable)</p>

GAME1 Connector



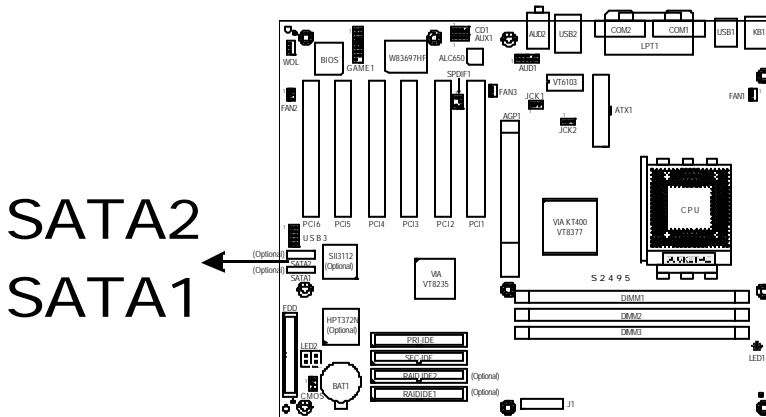
Connector	Description
GAME1	Game port connector (via an optional cable)

SPDIF1 Connector



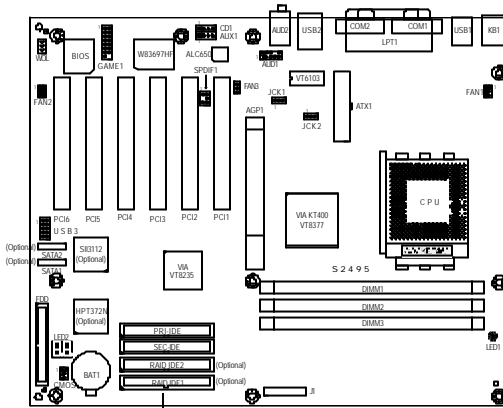
Connector	Description	Functions
1 2	Pin 1: VCC Pin 2: SPDIF_OUT	Sony/Philips Digital InterFace connector (via an optional cable)
6	Pin 3: Non Pin 4: NC	
5 6	Pin 5: SPDIF_IN Pin 6: GND	

SATA1 / SATA2 Connectors (Optional)



Connector	Description	Functions
SATA1	Serial ATA connector	Supports serial ATA devices
SATA2	Serial ATA connector	Supports serial ATA devices

RAID IDE1 / RAID IDE2 Connectors (Optional)



RAID IDE2
RAID IDE1

Connector	Description	Functions
RAID IDE1	IDE RAID connector	Supports IDE RAID 0, 1, 0+1
RAID IDE2	IDE RAID connector	Supports IDE RAID 0, 1, 0+1

2.5 – Mounting the Motherboard

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.

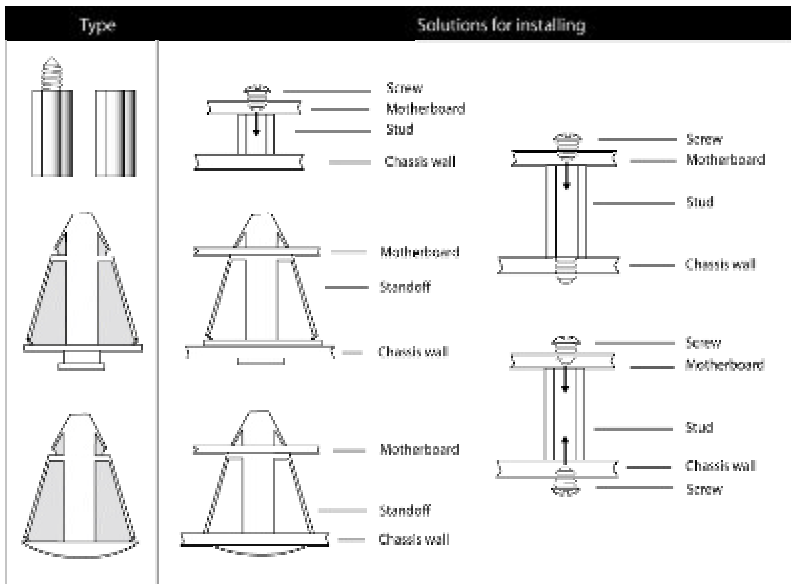
Some chassis' include plastic studs instead of metal. Although the plastic studs are usable, TYAN recommends using metal studs with screws that will fasten the motherboard more securely in place.

- **Memory Type** : The S2495 Trinity KT400 supports Registered, unbuffered non-ECC type memory modules.

- **CPU Front-Side Bus Speed Match**: When the CPU FSB is 333MHz, you must to use DDR333 (PC2700) memory modules.

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

Mounting the Motherboard

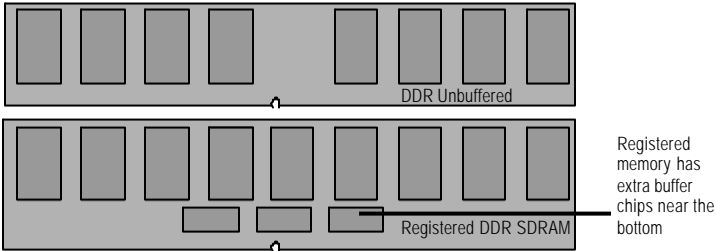


TIP: Use metal studs if possible, as they hold the motherboard into place more securely than plastic standoffs.

2.6 – 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. For example, while PC1600 DDR modules are compatible with all DDR based motherboards, they **will not** work if you are required to run the motherboard and processor buses at 133MHz. For this, PC2100 DDR modules are required. Critically important is whether you're using the recommended memory for the current board you have. For this information, please check TYAN's web site at: www.tyan.com

The following diagram shows the types of RAM modules you may encounter depending on your board:



Here are a few key points to note before installing memory into your Trinity KT400 S2495:

- 128MB, 256MB, 512MB and 1GB Registered, unbuffered non-ECC PC1600/PC2100/PC2700/PC3200* DDR memory modules are supported
- All installed memory will be automatically detected - no need to set any jumpers
- The Trinity KT400 S2495 supports up to 3GB of memory

* **NOTE:** DDR400/PC3200 Qualified Memory Test List:

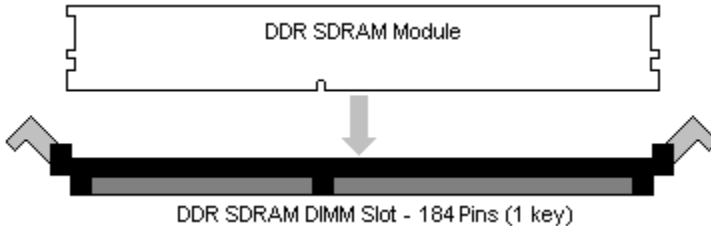
Vendor	Type	Size
ADATA winbond	W942508BH-5	256MB

PC2700 maximum to 2 DIMM support only. PC3200 maximum to 1 DIMM (DIMM 3) support only.

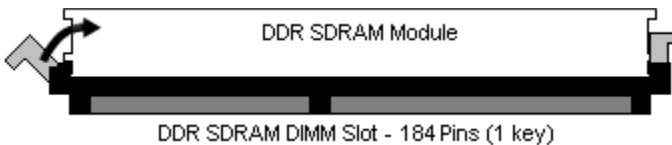
Please go to TYAN website <http://www.TYAN.com> for the latest DDR400/PC3200 qualified memory test list.

2.7 – 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. DDR modules and sockets have only one key, which is slightly near the center of the module/socket. SDRAM modules (also referred to as PC100 or PC133) and their sockets have two keys and will not insert into DDR DIMM sockets. The method of installing memory modules is detailed in the following diagrams.



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.

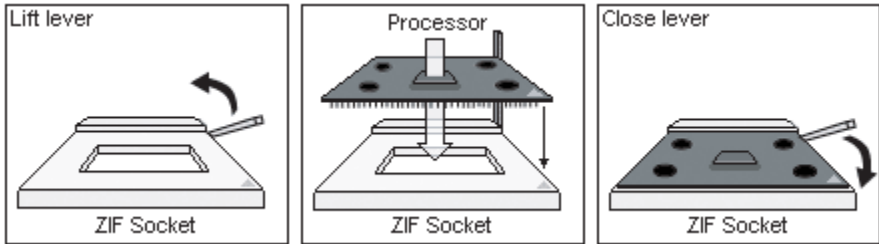
Note: **YOU MUST** unplug the power connector to the motherboard before performing system hardware changes, to avoid damaging the board or expansion device

2.8 – Installing the Processor and Heatsink

Your Trinity KT400 S2495 supports the latest processor technologies from AMD. Check the following page on TYAN' s website for latest processor support:

<http://www.tyan.com>

The following diagrams will detail how to install your processor(s):



The diagram is provided as a visual guide to help you install socket processors and may not be an exact representation of the processors you have.

1. **Lift the lever on the socket until it is approximately 90° or as far back as possible to the socket.**
2. Align the processor with the socket. There are keyed pins underneath the processor to ensure that the processor is installed correctly.
3. Seat the processor firmly into the socket by gently pressing down until the processor sits flush with the socket.
4. Place the socket lever back down until it locks into place.
5. Your processor is installed.

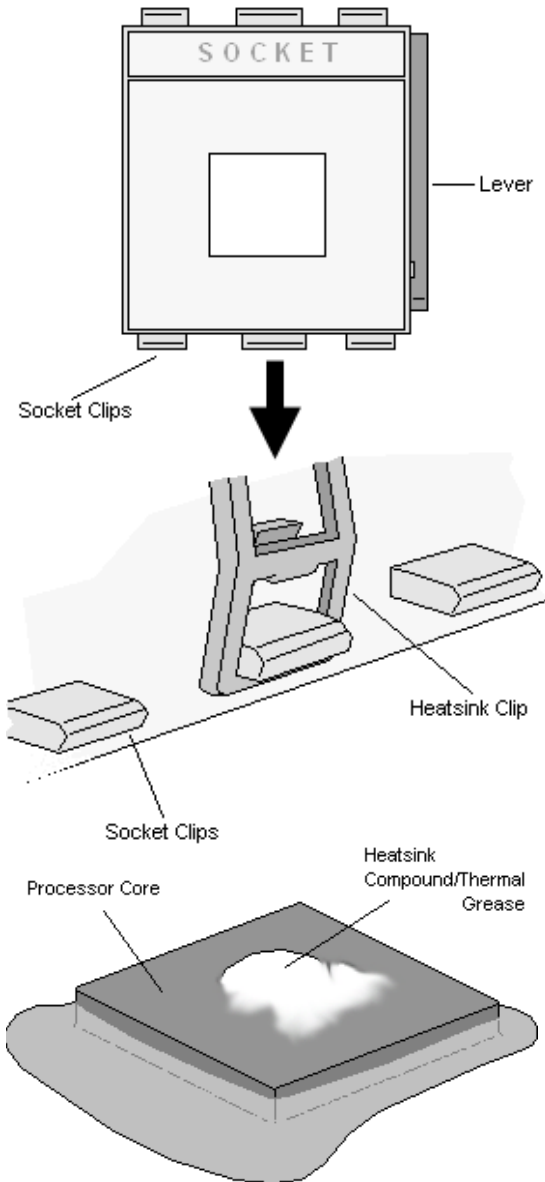
Take care when installing processors as they have very fragile connector pins below the processor and can bend and break if inserted improperly.

Heatsink Installation

After you are done installing the processor(s), you should proceed to installing the heatsinks. Heatsinks will ensure that the processors do not overheat and continue to operate at maximum performance for as long as you own them. Overheated processors are also dangerous to the health of the motherboard.

Because there are many different types of heatsinks available from many different manufacturers, a lot of them have their own method of installation. For the safest method of installation and information on choosing the appropriate heatsink, please refer to AMD' s website at www.amd.com.

The following diagram will illustrate how to install the most common heatsinks:



First, use thermal compound (also called heatsink compound or thermal grease) and apply a small amount on to the processor's core (applying too much will actually reduce the cooling) – the small shiny square in the center of the processor.

You may then use a small soft plastic tool, like a credit card to gently smear a thin layer of heatsink compound as evenly as you can across the core.

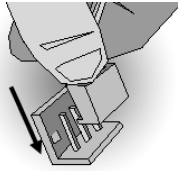
Because one side of the socket is raised (and usually has "SOCKET" imprinted into it) heatsinks have an indent on one side to secure flush with the raised side of the socket.

Then clip one side of the heatsink onto the socket and then lay the heatsink flat onto the processor. Then clip the other end of the heatsink down either with your finger or by using a flathead screwdriver.

Be sure to carefully observe which side your heatsink is seated before securing it down to avoid damaging the processor, the heatsink or both. This is will probably be the most difficult portion of setting up your computer so please exercise caution. TYAN will not accept responsibility and no warranty will be given for damage due to improperly installed heatsinks.

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.

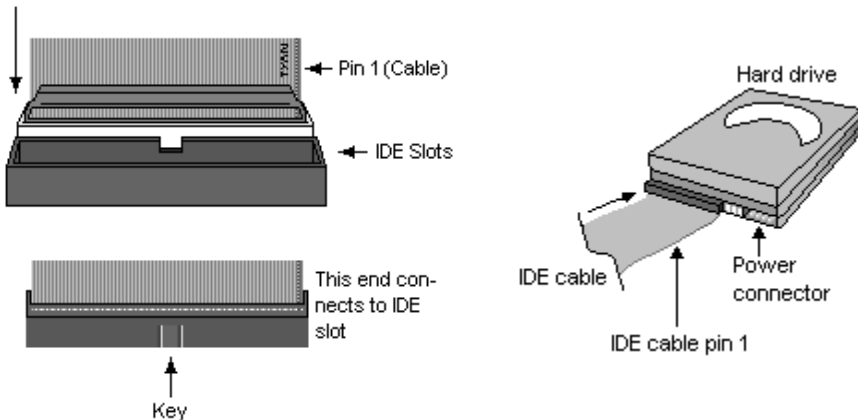


After you're finished installing all the fans you can connect your drives (hard drives, CD-ROM drives, etc.) to your motherboard.

2.9 – Attaching Drive Cables

Attaching IDE drive cabling 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 PRI-IDE connector designates the Primary channel, while the SEC-IDE connector designates the Secondary channel.**

Attaching IDE cables to the IDE connectors is illustrated below:



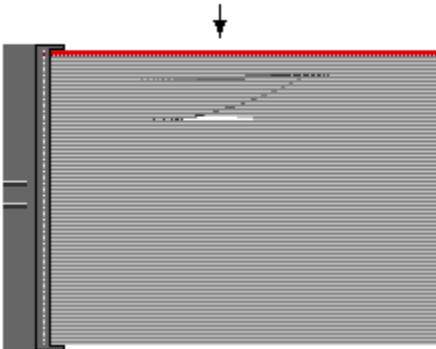
Simply plug in the BLUE END of the IDE cable into the motherboard IDE connector, and the other end(s) into the drive(s). Each standard IDE cable has three connectors, two of which are closer together. The BLUE connector that is furthest away from the other two is the end that connects to the motherboard.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

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

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.

Twist at the end of the ribbon 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	
Drive is not automatically detected	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.
Drive Fail message at bootup	The cable, floppy drive or motherboard may be faulty. Try another drive or cable to verify.
Drive does not power on	Check power cable and cabling. Maybe a bad power supply or drive cable problem.
Drive activity light is constantly on	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.

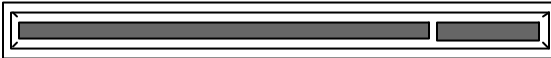
2.10 – Installing Add-In Cards

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 most common 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.

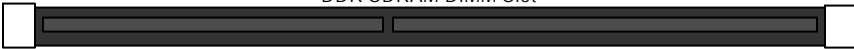
AGP Slot - 1.5 Volts



32 bit - 33MHz PCI Slot - 5 Volts



DDR SDRAM DIMM Slot



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.

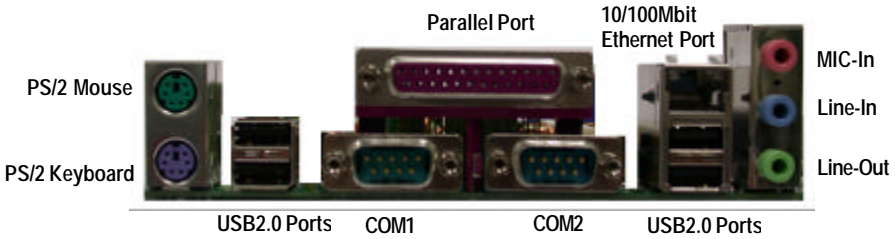
TIP: It's a good practice to install add-in cards in a staggered manner, rather than directly adjacent to each other. This allows air to more easily circulate within the chassis, providing improved cooling for all installed devices.

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

2.11 – Connecting External Devices

Connecting external devices to the motherboard is an easy task. The standard devices you should expect to plug into the motherboard are keyboards, mice, and printer cables. The following diagram will detail the ATX port stack for the following board:

Trinity KT400 S2495

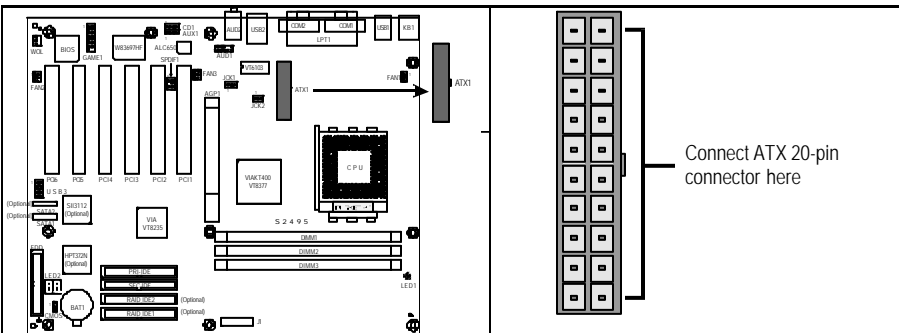


Besides being used primarily to connect printers, the Printer Port is also used for devices such as Zip drive, some external CD-RW drives and or other external devices. More on the uncommon side these days are the Serial Ports. They were primarily used to connect external modems, but most modems today are using USB or are installed internally.

TIP: While the ports have been created to accept connectors in only one direction, make sure to be careful when inserting connectors. At times, attaching connectors in the incorrect orientation can damage, bend and or break the pins.

2.12 – Installing the Power Supply

The Trinity KT400 S2495 has a single 20-pin connector for ATX power supplies.



NOTE

YOU MUST unplug the power supply before plugging the 20-pin cables to motherboard connectors.

2.13 – 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

Installation

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. This chapter describes different settings for the BIOS 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 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 when the power is turned off.

This motherboard's BIOS is a customized version of the industry-standard BIOS for IBM PC AT-compatible personal computers. The BIOS provides critical, low-level support for the system's central processing unit (CPU), memory, and I/O subsystems.

This BIOS has been customized by adding important features such as virus and password protection, power management, and chipset "tuning" features that control the system. This section will guide you through the process of configuring the BIOS for your system setup.

Starting Setup

The BIOS is immediately activated when you turn on the computer. The BIOS reads system configuration in CMOS RAM and begins the process of checking out the system and configuring it through the Power-On-Self-Test (POST).

When these preliminary tests are complete, the BIOS searches for an operating system on one of the system's data storage devices (hard drive, CD-ROM, etc). If one is found, the BIOS will launch that operating system and hand control over to it. You can enter the BIOS setup by pressing the **[Delete]** key when the machine boots up and begins to show the memory count.

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	Change from one menu to the next
Up/Down Arrow Keys	Move between selections
Enter	Opens highlighted section
PgUp/PgDn Keys	Change settings.

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.

In Case of Problems

If you discover that you have trouble booting the 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 the outcome. The Chipset defaults were carefully chosen by TYAN or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

Setup Variations

Not all systems will 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: On the following pages, options written in **bold type** represent the BIOS Setup default.

Load Optimized Defaults

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

Supervisor / User Password

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

3.2 – Standard CMOS Features

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. User can Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm: dd: yy)	Tue, Oct 1 2002	Item Help
Time (hh: mm: ss)	17:36:22	
? IDE Primary Master	[2557MB]	Menu Level ?
? IDE Primary Slave	[None]	
? IDE Secondary Master	[None]	Change the day, month, year
? IDE Secondary Slave	[None]	and century
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/VGA]	
Halt On	[All, But Keyboard]	
Based Memory	640K	
Extended Memory	64512K	
Total Memory	65536K	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

Date / Time Setup:

System Date: Adjusts the system date.

- MM Months
- DD Days
- YYYY Years

System Time: Adjusts the system clock.

- HH Hours (24hr. format)
- MM Minutes
- SS Seconds

IDE Master / Slave Setup:

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

- None / Auto / Manual

Drive A / B:

Defines the floppy drive type.

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

Video:

Defines video display mode.

EGA/VGA / CGA 40 / CGA 80 / MONO

Halt On:

Determines if the computer should stop when an error is detected during power up.

No Errors / All Errors / All, But Keyboard / All, But Diskette / All, But Disk/Key

3.3 – Advanced BIOS Features

In Advanced BIOS features, you will be able to adjust many of the feature that effect system speed and boot-up options.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning [Disabled] CPU L2 Cache ECC Checking [Enabled] Processor Number Feature [Enabled] Quick Power On Self Test [Enabled] ? Boot Sequence [Press Enter] Swap Floppy Drive [Disabled] Boot Up Floppy Seek [Disabled] Boot Up NumLock Status [On] Gate A20 Option [Fast] Typematic Rate Setting [Disabled] X Typematic Rate (Chars/Sec) 6 X Typematic Delay (Msec) 250 Security Option [Setup] APIC Mode [Enabled] MPS Version Control For OS [1.4] OS Select For DRAM > 64MB [Non-OS2] Small Logo (EPA) Show [Disabled]	Item Help <hr style="width: 80%; margin: 0 auto;"/> Menu Level ? Allow you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults	

Virus Warning:

This settings toggles virus protection on or off for boot sector writes.
 Disabled / Auto

CPU L1 & L2 Cache :

Toggles the use of CPU L1 and L2 cache.
 Enabled / Disabled

Processor Number Feature:

This option allows you to enabled or disabled the Processor Number feature.
 Enabled / Disabled

Quick Power On Self Test:

This option allows the system to skip self tests for faster startup.
 Enabled / Disabled

Boot Sequence:

Phoenix – AwardBIOS CMOS Setup Utility
Boot Sequence

First Boot Device	[Floppy]	Item Help
Second Boot Device	HDD-0	
Third Boot Device	LS120	
Boot Other Device	Enabled	Menu Level ? ?
		Select Your Boot Device Priority
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

First / Second / Third / Other Boot Device:

This BIOS attempts to load the operating system from the devices in the sequence selected in these item.

Floppy / LS120 / HDD-0 / SCSI / CDROM / HDD-1, HDD-2 / HDD-3 / ZIP100 / USB-FDD / USB-ZIP / USB-HDD / LAN / Disabled

Swap Floppy Drive :

This option switches A: to B: drive.

Enabled / Disabled

Boot Up Floppy Seek :

This option causes the floppy drives to be detected at startup.

Enabled / Disabled

Boot Up NumLock Status :

Sets the Num Lock on or off.

On / Off

Gate A20 Option:

Leave as default.

Normal / Fast

Typematic Rate Setting:

Toggles control of keyboard key repeat rate.

Enabled / Disabled

Typematic Rate (Chars/Sec):

Defines how many characters are repeated per second when holding down a key on the keyboard.

6 / 8 / 10 / 12 / 15 / 20 / 24 / 30

Typematic Delay (Msec):

Defines the delay that occurs at keystroke before that key will start to repeat.

250 / 500 / 750 / 1000

Security Option:

Sets the password on either just the BIOS setup or the entire system (BIOS setup included).

Setup / System

APIC Mode:

This option allows you to enabled or disabled Advanced Programmable Interrupt Controller (APIC) Mode.

Enabled / Disabled

MPS Version Control For OS:

Selects Multi Processor specification V1.4 or V1.2.

1.4 / 1.2

OS Select For DRAM > 64MB:

Select OS2 only if you are running OS/2 operating system with more than 64MB of RAM.

Non-OS2 / OS2

Small Logo (EPA) Show :

Toggles the display of the EPA Energy Star logo at POST.

Enabled / Disabled

3.4 – Advanced Chipsets Features

In Advanced Chipset Features, you will be able to adjust many of the chipset special features.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

? DRAM Clock / Drive Control ? AGP & P2P Bridge Control ? CPU & PCI Bus Control System BIOS Cacheable Video RAM Cacheable	[Press Enter] [Press Enter] [Press Enter] [Disabled] [Disabled]	Item Help <hr/> Menu Level ?
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

DRAM Clock / Drive Control:

Phoenix – AwardBIOS CMOS Setup Utility
DRAM Clock / Drive Control

DRAM Timing X DRAM CAS Latency X Bank Interleave X Precharge to Active (Trp) X Active to Precharge (Tras) X Active to CMD (Trcd) DRAM Burst Length DRAM Queue Depth DRAM Command Rate Write Recovery Time DRAM tWTR	[Auto By SPD] 2.5 Disabled 3T 6T 3T [4] [4 level] [2T Command] [3T] [3T]	Item Help <hr/> Menu Level ? ?
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

DRAM Timing:

Select SPD for setting SDRAM timing by SPD.

Manual / Auto By SPD

DRAM CAS Latency:

This setting defines the number of cycles after a read command until output starts.

2 / 2.5 / 3

Bank Interleave:

The item allows to increase memory performance by interleaving the memory chip-internal banks.

2 Bank / 4 Bank / Disabled

Precharge to Active (Trp):

Setup the minimum row precharge time.

2T / 3T

Active to Precharge (Tras):

Setup the minimum RAS pulse width.

5T / 6T

Active to CMD (Trcd):

Setup the minimum CAS to RAS delay.

2T / 3T

DRAM Command Rate:

Specifies the chipset latency needed to decode memory addresses and commands. With higher system memory configurations or when Registered DIMMs are used, this item needs to be set to 2T.

1T Command / 2T Command

AGP & P2P Bridge Control:

Phoenix – AwardBIOS CMOS Setup Utility
 AGP & P2P Bridge Control

AGP Aperture Size	[128M]	Item Help ----- Menu Level ? ?
AGP Mode	[4X]	
AGP Driving Control	[Auto]	
X AGP Driving Value	DA	
AGP Fast Write	[Disabled]	
AGP Master 1 WS Write	[Disabled]	
AGP Master 1 WS Read	[Disabled]	
DBI Output for AGP Trans.	[Disabled]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

AGP Aperture Size:

The amount of system memory that the AGP card is allowed to share with.
 4MB / 8MB / 16MB / 32MB / 64MB / 128MB / 256MB

AGP Mode:

Chipset AGP Mode support.
 1X / 2X / 4X

If to use 8x mode AGP card, the AGP mode already lock at 8x mode, that's why there's no 1x/2x/4x select item on it.

AGP Driving Control:

This item allows you to adjust the AGP driving force. Choose Manual to key in an AGP Driving Value in the next selection. This field recommended to set "Auto" for avoiding any error in your system.

Auto

AGP Fast Write:

Enables writes to AGP directly from memory bypassing the CPU in AGP4X and 8X .
 Enabled / Disabled

AGP Master 1 WS Write:

When "Enabled", Write to the AGP are executed with one waiting states.
 Enabled / Disabled

AGP Master 1 WS Read:

The default is 2T, enabling 1T can increase the performance but also introduce stability problems.

Enabled / Disabled

DBI Output for AGP:

Dynamic Bus Inversion(DBI) reduces simultaneously switching output(SSO) noise and increases stability and signal integrity(only available with AGP 8X cards)

Enabled / Disabled

CPU & PCI Bus Control:

Phoenix – AwardBIOS CMOS Setup Utility
CPU & PCI Bus Control

PC11 Master 0 WS Write	[Enabled]	Item Help ----- Menu Level ? ?
PC12 Master 0 WS Write	[Enabled]	
PC11 Post Write	[Enabled]]	
PC12 Post Write	[Enabled]	
VLink 8X Support	[[Enabled]	
PCI Delay Transaction	[Enabled]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

PC11 Master 0 WS Write:

When "Enabled", Write to the PC11 bus is commanded with zero waiting states.
Enabled / Disabled

PC12 Master 0 WS Write:

When "Enabled", Write to the PC12 bus is commanded with zero waiting states.
Enabled / Disabled

PCI Delay Transaction:

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select "Enabled" to support compliance with PCI specification version 2.1
Enabled / Disabled

VLink 8X Support:

Enables 533Mbytes/sec connection between South and Northbridge.
Enabled / Disabled

System BIOS Cacheable:

This option allows you to copy your BIOS code from slow ROM to fast RAM.
Enabled / Disabled

Video RAM Cacheable:

This option allows the CPU to cache read / write of the video RAM. Leave as default.
Enabled / Disabled

3.5 – Integrated Peripherals

Options related to onboard peripheral features can be altered through the following:

Phoenix – AwardBIOS CMOS Setup Utility
Integrated Peripherals

? VIA OnChip IDE Device ? PCI Device Setup ? Super IO Device Init Display First	[Press Enter] [Press Enter] [Press Enter] [PCI Slot]	Item Help <hr/> Menu Level ?
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

VIA OnChip IDE Device:

Phoenix – AwardBIOS CMOS Setup Utility
VIA OnChip IDE Device

OnChip IDE Channel0 OnChip IDE Channel1 IDE Prefetch Mode Primary Master PIO Primary Slave PIO Secondary Master PIO Secondary Slave PIO Primary Master UDMA Primary Slave UDMA Secondary Master UDMA Secondary Slave UDMA IDE HDD Block Mode HDD S.M.A.R.T. Capability	[Enabled] [Enabled] [Enabled] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Enabled] [Disabled]	Item Help <hr/> Menu Level ? ?
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

OnChip IDE Channel0 / 1:

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

Enabled / Disabled

IDE Prefetch Mode:

Enabled prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI / IDE field, above, is Disabled.

Enabled / Disabled

Primary / Secondary Master/ Slave PIO:

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

Auto / Mode 0 / Mode 1 / Mode 2 / Mode 3 / Mode 4

Primary / Secondary Master/ Slave UDMA:

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

Auto / Disabled

IDE HDD Block Mode:

Leave this setting as is.

Enabled / Disabled

HDD S.M.A.R.T. Capability:

Allow you to choose the HDD S.M.A.R.T. for detect HDD CONDITION.

Enabled / Disabled

PCI Device Setup:

Phoenix – AwardBIOS CMOS Setup Utility

PCI Device Setup

USB 2.0 Support	[Enabled]	Item Help ----- Menu Level ? ?
AC97Audio	[Auto]	
OnChip LAN	[Enabled]	
Onboard Lan Boot ROM	[Disabled]	
OnChip USB Controller	[All Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	
Onboard RAID IDE Device	[Enabled]	
Onboard SATA IDE Device	[Enabled]	

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

USB 2.0 Support:

This item allows you to decide to "Enable" or "Disable" the USB 2.0 device.

Enabled / Disabled

AC97Audio:

This item allows you to decide to Audio / disable the chipset family to support AC97 Audio. The function is setting AC97 Audio Codec states.

Auto / Disabled

OnChip LAN:

This item allows you to "Enable" or "Disable" onboard LAN function.

Enabled / Disabled

OnChip USB Controller:

This item allows you to "Enable" or "Disable" onboard USB function.

All Enabled / All Disabled / 1&2 USB Port / 2&3 USB Port / 1&3 USB Port / 1 Port / 2 Port / 3 Port

USB Keyboard Support:

Select "Enabled" if your system contains a USB controller and you have a USB keyboard.

Enabled / Disabled

USB Mouse Support:

Select "Enabled" if your system contains a USB controller and you have a USB mouse.

Enabled / Disabled

Onboard RAID IDE Device: (Optional)

This item is optional function. It allows you to decide to "Enable" or "Disable" the onboard RAID IDE device.

Enabled / Disabled

Onboard SATA IDE Device: (Optional)

This item is optional function. It allows you to decide to "Enable" or "Disable" the onboard SATA (Serial ATA) device.

Enabled / Disabled

Super IO Device:

Phoenix – AwardBIOS CMOS Setup Utility
Super IO Device

Onboard FDC Controller	[Enabled]	Item Help <hr/> Menu Level ? ?
Onboard Serial Port 1	[3F8 / IRQ4]	
Onboard Serial Port 2	[2F8 / IRQ3]	
UART Mode Select	[Normal]	
RxD, TxD Active	[Hi, Lo]	
IR Transmission Delay	[Enabled]	
UR2 Duplex Mode	[Half]	
Use IR Pins	[IR-Rx2Tx2]	
Onboard Parallel Port	[378 / IRQ7]	
Parallel Port Mode	[SPP]	
EPP Mode Select	[EPP1.7]	
ECP Mode Use DMA	[3]	
Game Port Address	[201]	
Midi Port Address	[Disabled]	
X Midi Port IRQ	10	

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Onboard FDC Controller:

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select "Disabled" in the field.

Enabled / Disabled

Onboard Serial Port 1 / 2:

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

3F8/IRQ4 / 2E8/IRQ3 / 3E8/IRQ4 / 2F8/IRQ3 / Disabled / Auto

UART Mode Select:

This field allows the users to configure what IR mode the 2nd serial port should use.

Normal / IrDA and ASKIR

RxD, TxD Active:

This field configures the receive and transmit signals generated from the IR port.

Hi, Hi / Hi, Lo / Lo, Hi / Lo, Lo

IR Transmission Delay:

This item allows you to "Enabled" or "Disabled" the IR transmission delay.

Enabled / Disabled

UR2 Duplex Mode:

This item allows you to select IR "Half" or "Full" duplex function.

Half / Full

Use IR Pins:

This item allows you to select IR transmission routes, one is "RxD2, TxD2 (COM Port) and the other is IR-Rx2Tx2.

RxD2, TxD2 / IR-Rx2Tx2

Onboard Parallel Port:

This field allows the user to configure the LPT port.

378/IRQ7 / 278/IRQ5 / 3BC/IRQ7 / Disabled

Parallel Port Mode:

This field allows the user to select the parallel port mode.

SPP / EPP / ECP / ECP+EPP

EPP Mode Select:

This item allows you to determine the IR transfer mode of onboard I/O chip.

EPP1.9 / EPP1.7

ECP Mode Use DMA:

This field allows the user to select the DMA1 or DMA3 for the ECP mode.

DMA1 / DMA3

Game Port Address:

Select an address for the Game port.

201 / 209 / Disabled

Midi Port Address:

Select an address for the MiDi port.

290 / 300 / 330 / Disabled

Midi Port IRQ:

Select an interrupt for the MiDi port.

5 / 10

3.6 – Power Management Setup

Options related to power management can be altered through the following:

Phoenix – AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	[Enabled]	Item Help
ACPI Suspend Type	[S1 (POS)]	
Power Management Option	[User Define]	
HDD Power Down	[Disabled]	Menu Level ?
Suspend Mode	[Disabled]	
Video Off Option	[Suspend -> off]	
Video Off Method	[V/H SYNC+Blank]	
MODEN Use IRQ	[3]	
Soft-off by PWRBTN	[Instant]	
Run VGABIOS if S3 Resume	[Auto]	
States After Power Failure	[Auto]	
? IRQ/Event Activity Detect	[Press Enter]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

ACPI Function:

Toggles advanced power and configuration done by OS.
Enabled / Disabled

ACPI Suspend Type:

Defines ACPI system suspend mode.
S1 (POS)

Power Management Option:

Defines the type of power saving features the system should follow.
User Define / Maximum Saving / Minimum Saving

HDD Power Down:

Defines hard drive power down delay.
Disabled / 1 minutes / 5 minutes / 10 minutes / 30 minutes / 45 minutes / 60 minutes

Suspend Mode:

Defines the method used to power off the system.
Disabled / Standby / Sleep

Video Off Option:

Tell you what time frame that the video will be disabled under current power management settings.
Always On / Suspend -> Off

Video Off Method:

Defines the method used to power off graphics.

V/H SYNC+Blank / Blank / DPMS

MODEM Use IRQ:

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

N/A / 3 / 4 / 5 / 7 / 9 / 10 / 11

Soft-off by PWRBTN:

Defines the action of the power button when pressed.

Instant-Off / 4-seconds

States After Power Failure:

This field lets you determine the state that your PC returns to after a power failure. If set to "Off", the PC will not boot after a power failure, if set to "On", the PC will restart after a power failure.

Auto / On / Off

IRQ/Event Activity Detect:

Phoenix – AwardBIOS CMOS Setup Utility

IRQ/Event Activity Detect

PS2KB Wakeup Select	[Hot Key]	Item Help
PS2KB Wakeup from S3/S4/S5	[Disabled]	
PS2MS Wakeup from S3/S4/S5	[Disabled]	Menu Level ? ? When Select Password, Please press ENTER key to change Password Max 8 numbers.
USB Resume from S3	[Disabled]	
VGA	[OFF]	
LPT & COM	[LPT / COM]	
HDD & FDD	[ON]	
PCI Master	[OFF]	
PowerOn by PCI Card	[Disabled]	
Wake Up On LAN / Ring	[Disabled]	
RTC Alarm Resume	[Disabled]	
X Date (of Month)	0	
X Resume Time (hh: mm: ss)	0: 0: 0	
? IRQs Activity Monitoring	[Press Enter]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

PS2KB Wakeup Select:

This item allows you to select Hot Key or Password to wake-up the system by PS2 Keyboard. When select Password, please press "ENTER" key to change password max 8 numbers.

PS2KB / MS Wakeup from S3/S4/S5:

This item allows you to set a Hot Key to wake-up the system by PS2 Keyboard.

Disabled / Ctrl+F1 / Ctrl+F2 / Ctrl+F3 / Ctrl+F4 / Ctrl+F5 / Ctrl+F6 / Ctrl+F7 / Ctrl+F8 / Ctrl+F9 / Ctrl+F10 / Ctrl+F11 / Ctrl+F12 / Power / Wake / Any Key

Note: Power and Wake are the Windows98 Keyboard button.

VGA:

When set to "On", any event occurring at a VGA port will awaken a system, which has been powered down.

On / Off

LPT & COM:

When set to "LPT/COM", any event occurring at a COM (serial) / LPT (printer) port will awaken a system, which has been powered down.

LPT/COM

HDD & FDD:

When set to "On", any event occurring at a hard or floppy drive port will awaken a system, which has been powered down.

On / Off

PCI Master:

When set to "Off", any event occurring to the DMA controller will awaken a system, which has been powered down.

On / Off

PowerOn by PCI Card:

An input signal from PME on the PCI card awakens the system from a soft off state.

Enabled / Disabled

Wake Up On LAN / Ring:

Defines whether the system will wake up if the modem is dialed into.

Enabled / Disabled

RTC Alarm Resume:

Defines the time / date when the system will wake up.

Enabled / Disabled

IRQs Activity Monitoring:

Phoenix – AwardBIOS CMOS Setup Utility
IRQs Activity Monitoring

Primary INTR	[On]	Item Help
IRQ3 (COM 2)	[Enabled]	
IRQ4 (COM 1)	[Enabled]	
IRQ5 (LPT 2)	[Enabled]	Menu Level ? ? ?
IRQ6 (Floppy Disk)	[Enabled]	
IRQ7 (LPT 1)	[Enabled]	
IRQ8 (RTC Alarm)	[Enabled]	
IRQ9 (IRQ2 Redir)	[Enabled]	
IRQ10 (Reserved)	[Enabled]	
IRQ11 (Reserved)	[Enabled]	
IRQ12 (PS/2 Mouse)	[Enabled]	
IRQ13 (Coprocessor)	[Enabled]	
IRQ14 (Hard Disk)	[Enabled]	
IRQ15 (Reserved)	[Enabled]	

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Primary INTR:

When set to "On", any event occurring at will awaken a system which has been powered down.
On / Off

IRQs 3 ~ 15:

Allows you to set system to monitor IRQs 3 ~ 15 for activity to awaken system from a power management mode.

3.7 – PnP/PCI Configurations

Options related to all the configurations of PnP / PCI resources.

Phoenix – AwardBIOS CMOS Setup Utility
PnP / PCI Configurations

PNP OS Installed Reset Configuration Data	[No] [Disabled]	Item Help <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> Menu Level ? Select Yes if you are using a Plug and Play capable operation system Select No if you need the BIOS to configure n0n-boot devices
X Resources Controlled By IRQ Resources	[Auto (ESCD)] [Press Enter]	
PCI / VGA Palette Snoop PCI Device List	[Disabled] [Enabled]	
↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

PNP OS Installed:

Select "Yes", if you are using a PNP OS, otherwise select "No".
 Yes / **No**

Reset Configuration Data:

This setting allow you to clear ESCD data.
 Enabled / **Disabled**

Resources Controlled By:

Default whether system resources are controller by BIOS or by user.
 Manual / **Auto (ESCD)**

PCI / VGA Palette Snoop:

Leave as default.
 Enabled / **Disabled**

3.8 – PC Health Status

This menu is related to detecting system temperature, voltage, fan and speed.

Phoenix – AwardBIOS CMOS Setup Utility
PC Health Status

<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 35%;">CPU Warning Temperature</td> <td style="width: 25%;">[Disabled]</td> <td style="width: 40%;"></td> </tr> <tr> <td>Current System Temp.</td> <td>24°C / 75°F</td> <td></td> </tr> <tr> <td>Current CPU Temp.</td> <td>40°C / 104°F</td> <td></td> </tr> <tr> <td>Current FAN1 Speed</td> <td>5152RPM</td> <td></td> </tr> <tr> <td>Current FAN2 Speed</td> <td>4182RPM</td> <td></td> </tr> <tr> <td>Vcore (V)</td> <td>1.71V</td> <td></td> </tr> <tr> <td>Vagp (V)</td> <td>1.52V</td> <td></td> </tr> <tr> <td>+5 V</td> <td>4.81V</td> <td></td> </tr> <tr> <td>+12 V</td> <td>11.73V</td> <td></td> </tr> <tr> <td>3.3 (V)</td> <td>3.32V</td> <td></td> </tr> <tr> <td>Vdimm (V)</td> <td>2.56V</td> <td></td> </tr> <tr> <td>VBAT (V)</td> <td>3.02V</td> <td></td> </tr> <tr> <td>5VSB (V)</td> <td>4.46V</td> <td></td> </tr> <tr> <td>Shutdown temperature</td> <td>[Disabled]</td> <td></td> </tr> </table>	CPU Warning Temperature	[Disabled]		Current System Temp.	24°C / 75°F		Current CPU Temp.	40°C / 104°F		Current FAN1 Speed	5152RPM		Current FAN2 Speed	4182RPM		Vcore (V)	1.71V		Vagp (V)	1.52V		+5 V	4.81V		+12 V	11.73V		3.3 (V)	3.32V		Vdimm (V)	2.56V		VBAT (V)	3.02V		5VSB (V)	4.46V		Shutdown temperature	[Disabled]		<p style="text-align: center;">Item Help</p> <hr style="border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p>Menu Level ?</p>
CPU Warning Temperature	[Disabled]																																										
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Shutdown temperature	[Disabled]																																										
↑↓←→: Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults																																											

CPU Warning Temperature:

To set the CPU warning temperature.

50°C, 122°F / ... / 70°C, 158°F / [Disabled] (Step by 3°C).

Shutdown temperature:

To shut down the system when temperature exceeds. [C/P]

60°C, 140°F / 65°C, 149°F / 70°C, 158°F / 75°C, 167°F / [Disabled]

Note: The onboard Winbond® 83697HF hardware monitoring ASIC automatically detects the system, motherboard and CPU temperature. It detects the CPU and chassis fan speeds in RPM. The hardware monitor ASIC also detects the voltage output through the voltage regulators.

Auto Detect DIMM / PCI Clk:

Sets the BIOS to automatically adjust PCI and memory bus speeds accordingly.

Enabled / Disabled

Spread Spectrum:

Reduces interference on the motherboard. Leave as default if your system works correctly.

Enabled / Disabled

CPU Clock:

Enter a decimal number to set the front side bus speed of the motherboard. For all purposes and to maintain stability, please keep this setting at its default setting.

100MHz. If JCK1 and JCK2 are both at 1-2,

133MHz. If JCK1 and JCK2 are at 2-3 and 1-2 respectively

or 166MHz, If JCK1 and JCK2 are both at 2-3.

CPU Ratio:

Sets the CPU multiplier. TYAN does not recommend changing this setting from the default setting.

16X...22X / Auto / Default

CPU Voltage Regulator:

This option allows you to change the default core voltage of the processor. Please always leave at default settings.

Default

DIMM Voltage Regulator:

This option allows you to change the default core voltage of the DIMM memory. Please always leave at default settings.

Default

3.10 – Load Fail-Safe Defaults

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

Load Fail-Safe Defaults (Y/N)? **N**

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

3.11 – Load Optimized Defaults

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

Load Optimized Defaults (Y/N)? **N**

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

3.12 – Supervisor/User Password Setting

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

Set Supervisor Password: can enter and change the options of the setup menus.

Set User Password: just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

3.13 – Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

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

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

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

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

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 a series of audible beeps. For example, if the BIOS POST can initialize the video but an error occurs, an error message will be displayed. If it cannot display the message, it will report the error as a series of beeps.

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.

Appendix I: 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 the 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. This feature is not supported on S2495.

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: 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, 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.

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 shifts the processor over and down, guiding it into the board and locking it into place.

Appendix II: Post Error Code for BIOS

<u>POST (hex)</u>	<u>Description</u>
CFh:	Test CMOS R/W functionality.
C0h:	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h:	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h:	Expand compressed BIOS code to DRAM
C5h:	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
01h:	Expand the Xgroup codes locating in physical address 1000:0
02h:	Reserved
03h:	Initial Superio_Early_Init switch.
04h:	Reserved
05h:	1. Blank out screen 2. Clear CMOS error flag
06h:	Reserved
07h:	1. Clear 8042 interface 2. Initialize 8042 self-test
08h:	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h:	Reserved
0Ah:	1. Disable PS/2 mouse interface (optional). 2. Autodetect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh:	Reserved
0Ch:	Reserved
0Dh:	Reserved
0Eh:	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.

<u>POST (hex)</u>	<u>Description</u>
0Fh:	Reserved
10h:	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h:	Reserved
12h:	Use walking 1' s algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h:	Reserved
14h:	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h:	Reserved
16h:	Initial onboard clock generator if Early_Init_Onboard_Generator is defined. See also POST 26h.
17h:	Reserved
18h:	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h:	Reserved
1Ah:	Reserved
1Bh:	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch:	Reserved
1Dh:	Initial EARLY_PM_INIT switch.
1Eh:	Reserved
1Fh:	Load keyboard matrix (notebook platform)
20h:	Reserved
21h:	HPM initialization (notebook platform)
22h:	Reserved
23h:	<ol style="list-style-type: none">1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.

<u>POST (hex)</u>	<u>Description</u>
24h:	Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD' s legacy information.
25h:	Early PCI Initialization: -Enumerate PCI bus number. -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0
26h:	1. If Early_Init_Onboard_Generator is not defined Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. 2. Init onboard PWM 3. Init onboard H/W monitor devices
27h:	Initialize INT 09 buffer
28h:	Reserved
29h:	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed.
2Ah:	Reserved
2Bh:	Invoke Video BIOS
2Ch:	Reserved
2Dh:	1. Initialize double-byte language font (Optional) 2. Put information on screen display, including Award title, CPU type, CPU speed, full screen logo.
2Eh:	Reserved
2Fh:	Reserved
30h:	Reserved
31h:	Reserved
32h:	Reserved
33h:	Reset keyboard if Early_Reset_KB is defined e.g. Winbond 977 series Super I/O chips. See also POST 63h.
34h:	Reserved
35h:	Test DMA Channel 0

<u>POST (hex)</u>	<u>Description</u>
36h:	Reserved
37h:	Test DMA Channel 1.
38h:	Reserved
39h:	Test DMA page registers.
3Ah:	Reserved
3Bh:	Reserved
3Ch:	Test 8254
3Dh:	Reserved
3Eh:	Test 8259 interrupt mask bits for channel 1.
3Fh:	Reserved
40h:	Test 8259 interrupt mask bits for channel 2.
41h:	Reserved
42h:	Reserved
43h:	Test 8259 functionality.
44h:	Reserved
45h:	Reserved
46h:	Reserved
47h:	Initialize EISA slot
48h:	Reserved
49h:	1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU.
4Ah:	Reserved
4Bh:	Reserved
4Ch:	Reserved
4Dh:	Reserved

<u>POST (hex)</u>	<u>Description</u>
4Eh:	<ol style="list-style-type: none">1. Program MTRR of M1 CPU2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range.3. Initialize the APIC for P6 class CPU.4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh:	Reserved
50h:	Initialize USB Keyboard & Mouse.
51h:	Reserved
52h:	Test all memory (clear all extended memory to 0)
53h:	Clear password according to H/W jumper (Optional)
54h:	Reserved
55h:	Display number of processors (multi-processor platform)
56h:	Reserved
57h:	<ol style="list-style-type: none">1. Display PnP logo2. Early ISA PnP initialization<ul style="list-style-type: none">-Assign CSN to every ISA PnP device.
58h:	Reserved
59h:	Initialize the combined Trend Anti-Virus code.
5Ah:	Reserved
5Bh:	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch:	Reserved
5Dh:	<ol style="list-style-type: none">1. Initialize Init_Onboard_Super_IO2. Initialize Init_Onboard_AUDIO.
5Eh:	Reserved
5Fh:	Reserved
60h:	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h:	Reserved
62h:	Reserved

<u>POST (hex)</u>	<u>Description</u>
63h:	Reset keyboard if Early_Reset_KB is not defined.
64h:	Reserved
65h:	Initialize PS/2 Mouse
66h:	Reserved
67h:	Prepare memory size information for function call: INT 15h ax=E820h
68h:	Reserved
69h:	Turn on L2 cache
6Ah:	Reserved
6Bh:	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch:	Reserved
6Dh:	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh:	Reserved
6Fh:	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h:	Reserved
71h:	Reserved
72h:	Reserved
73h:	Reserved
74h:	Reserved
75h:	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h:	(Optional Feature) Enter AWDFLASH.EXE if: -AWDFLASH.EXE is found in floppy drive. -ALT+F2 is pressed.
77h:	Detect serial ports & parallel ports.
78h:	Reserved

<u>POST (hex)</u>	<u>Description</u>
79h:	Reserved
7Ah:	Detect & install co-processor
7Bh:	Reserved
7Ch:	Init HDD write protect.
7Dh:	Reserved
7Eh:	Reserved
7Fh:	Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: •Clear EPA or customization logo.
80h:	Reserved
81h:	Reserved

<u>E8POST.ASM starts</u>	<u>Description</u>
82h:	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h:	Save all data in stack back to CMOS
84h:	Initialize ISA PnP boot devices
85h:	1. USB final Initialization 2. Switch screen back to text mode
86h:	Reserved
87h:	NET PC: Build SYSID Structure.
88h:	Reserved
89h:	1. Assign IRQs to PCI devices 2. Set up ACPI table at top of the memory.
8Ah:	Reserved
8Bh:	1. Invoke all ISA adapter ROMs 2. Invoke all PCI ROMs (except VGA)
8Ch:	Reserved

<u>E8POST.ASM starts</u>	<u>Description</u>
8Dh:	1. Enable/Disable Parity Check according to CMOS setup 2. APM Initialization
8Eh:	Reserved
8Fh:	Clear noise of IRQs
90h:	Reserved
91h:	Reserved
92h:	Reserved
93h:	Read HDD boot sector information for Trend Anti-Virus code
94h:	1. Enable L2 cache 2. Program Daylight Saving 3. Program boot up speed 4. Chipset final initialization. 5. Power management final initialization 6. Clear screen & display summary table 7. Program K6 write allocation 8. Program P6 class write combining
95h:	Update keyboard LED & typematic rate
96h:	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh:	Boot attempt (INT 19h)

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. Hence, they should be of the most assistance. Furthermore, if you purchased your system from a dealer near you, you can actually 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:

- 1) This device may not cause harmful interference, and
- 2) 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'interference 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 #: D1496 - 102