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Chapter 1: Introduction

1.1 Overview

The S1684S/SA* system board--TAHOE -(A)* ATX is a quality, high performance motherboard designed for Intel's latest generation of Pentium II microprocessors. This motherboard utilizes Intel's 440FX PCI series chipset and supports Pentium II CPU speeds of 233MHz to 300MHz. The S1684S/SA* will also support the Intel Pentium Pro Processors with a Tyan Riser Card (M2020).

The S1684S/SA's* PCI Local Bus provides high performance capabilities that are ideal for a wide range of demanding applications such as: CAD, CAM, CAE, networking, multi-user environments, database management, desktop publishing, image processing, 3D animation and video production.

This integrated system board achieves high reliability with numerous features, yet it is small enough to be supported in an "ATX" form-factor. Some of the features included are: on-board dual channel PCI PIO (Mode 3 & 4), Multiword DMA (Mode 2) IDE, on-board floppy controller, and on-board high speed I/O.

The S1684S/SA board is built to be both flexible and expandable. With I/O and drive controller support built on-board, the four 32-bit PCI Bus Master and four ISA slots (one shared/seven usable slots) are available for add-on expansion cards.

In order to provide you with more detailed information about board components and their functions, Tyan has designed the Web Page and clickable motherboards for your reference. Please refer to Tyan Computer's web site located at http://www.tyan.com for more information about your S1684S/SA* board. Here you will also find information on all of Tyan's products along with FAQ's, distributors, drivers and CMOS setting explanations.

Note on S1684SA model (with sound)

(* The S1684S motherboard does not have the built-in Vibra 16 Audio Feature. The S1684SA model is equipped with the Vibra 16 Audio System. Along with your Vibra 16 CL/X Drivers, the 1684SA motherboard also has a CD-ROM Connector, Tel/Modem Connector, Sound Port and WaveTable Connector on-board. Please refer to the Motherboard Layout on Page 10 for locations. **)**

Please refer to Addendum C for more information on installing, upgrading and configuring your on-board sound chip and its features.

1.2 Hardware Specifications/Features

The S1684S/SA board is designed for the demanding end-user who wants to accomplish complicated tasks in a user-friendly environment. To achieve this purpose, the motherboard includes the following features:

CPU Information

- One Pentium II Processor slot
- Intel Pentium II 233 MHz through 300 MHz (200, 233, 266, 300 MHz) CPUs
- Supports 150-200 MHz 150,166,180,200MHz) Pentium Pro Processors
- VRM (Voltage Regulator Module) on board
- On-board CPU fan header

Chipset Information

- Intel's Pentium II (440 FX Natoma) chipset 25/30/33 MHz PCI bus
- Dual channel PCI Busmastering ports (up to 22Mb/sec DTR)
- Support for up to 768MB System RAM

System RAM

- Six 72-pin SIMM slots/3 banks
- Supports 5V or 3.3V memory
- Supports EDO (Extended Data Out) DRAMs
- Supports FPM (Fast Page Mode) DRAMs
- Supports ECC (Error Correcting Code) or Parity checking

On-board Sound

(**1684SA** model ONLY)

- Built-in Creative Labs Vibra 16 sound with software/hardware upgradeability to wavetable synthesis
- Telephony / Answering machine capabilities

Expansion

- Four 32-bit PCI Bus Master slots
- Four 16-bit ISA Bus slots (1 shared / 7 usable)

PCI EIDE/Super I/O

- Dual channel PCI Busmastering ports (supports up to 4 HDD/CDROM drives)
- Two 16550 Serial ports
- One ECP/EPP Parallel
- Twin USB ports (up to 126 devices)
- Two floppy ports (up to 2.88Mb)

1.3 Software Specifications

BIOS	Award or AMI BIOS Plug 'n' Play Flash BIOS Deep Green and Energy Star compliant.
Operating System	Operates with MS-DOS, Windows 3.x, Windows for Workgroups 3.x, Windows 95, Windows, OS/2, and SCO Unix. ***Tyan is also a certified under Solaris***

1.4. Manual Organization

Chapter 1 "Introduction" describes the features and performance of the S1684S/SA system.

Chapter 2 "Installation" describes the procedures of setting up the system board. Also refer to this Chapter for detailed information about jumper settings.

Chapter 3 "Installation and Removal of the CPU" gives detailed instructions on installation and removal of the latest Pentium II--Active and Passive CPUs.

If you encounter any problem, refer to Chapter 4 "Trouble-shooting", which describes trouble-shooting procedures for the system.

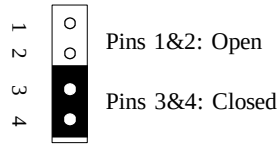
Refer to **Addendum A** (AMI BIOS CMOS Setup) and **Addendum B** (Award BIOS CMOS Setup) for the setup requirements and the CMOS Configuration information, including instructions to change the password, to format a hard disk, and to troubleshoot CMOS errors. Both AMI and Award BIOS Setup documents are also available in the Adobe Acrobat format. Please refer to the Web Page located at ftp://ftp.tyan.com/s1684saa.pdf for AMI and ftp://ftp.tyan.com/s1684sab.pdf for Award BIOS information.

1.5. Manual Conventions

In this manual, the following terms are used in reference to setting up jumpers:

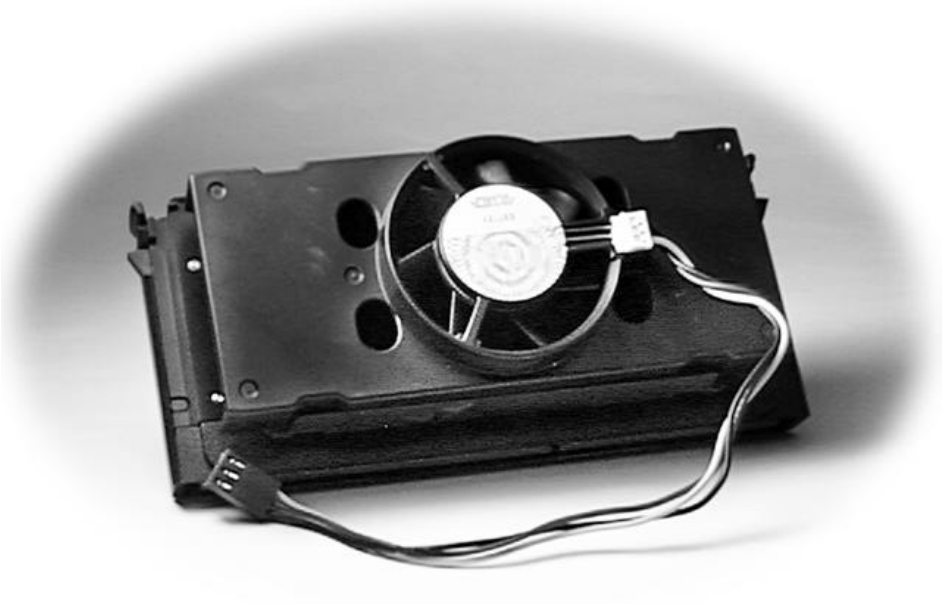
1. When the term **"Close"** or **"On"** is used, the pin (pins) specified for the jumper should be connected (closed), and the circuit of the connecting pins will be shorted.

2. When the term **"Open"**, **"Shorted"**, or **"Off"** is used, the pin (pins) specified for the jumper should not be connected, and the circuit of the connecting pins will not be shorted.

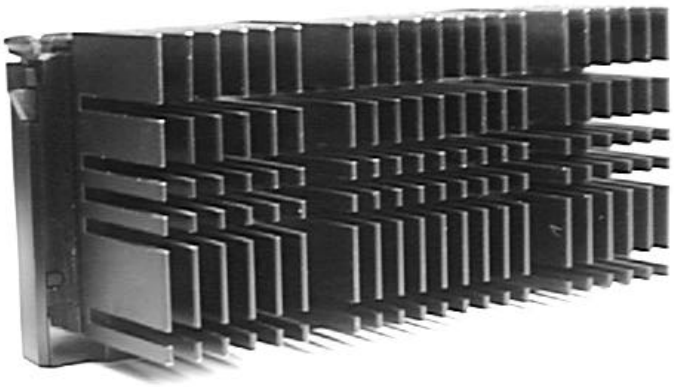


1.6. CPU types

Currently, Intel produces two types of Pentium II processors: the "Boxed" (or Active) Processor, and the Passive Processor.(Refer to the Pictures shown on Page 8) These two types of processors are essentially the same in design. The only difference between these two types of processors lies in their cooling methods. The Boxed (Active) Processor is equipped with a CPU cooling fan and heatsink built in with the CPU, and the Passive Processor is equipped with a heat sink only. These two types of CPUs provide the user with the same function, and should be installed in the "Pentium II" slots on the S1684SA board. (Refer to Chapter 3 for the installation and removal of Pentium II processors.)



Pentium II Boxed (Active) CPU
Shown with Power Connector for Fan



Pentium II (Passive) CPU
Shown with Heat-sink

Chapter 2: Board Installation

2.1 Unpacking

2.1.1. Item Checklist

The mainboard package should contain the following:

S1684S:	• S1684S/SA motherboard	• User's manual
	• One IDE 40 pin cable	• One 34-pin floppy cable
	• BIOS User's manual	• One Retention module
S1684SA(adds):	• Sound Addendum C	• Tyan Vibra 16 CD-ROM

2.1.2. Precautionary measures before handling the motherboard

Since the motherboard contains sensitive electronic components which can easily be damaged by static electricity, the motherboard should be kept in its original packaging until time of installation.

Before you open the carton of your motherboard, do the following:

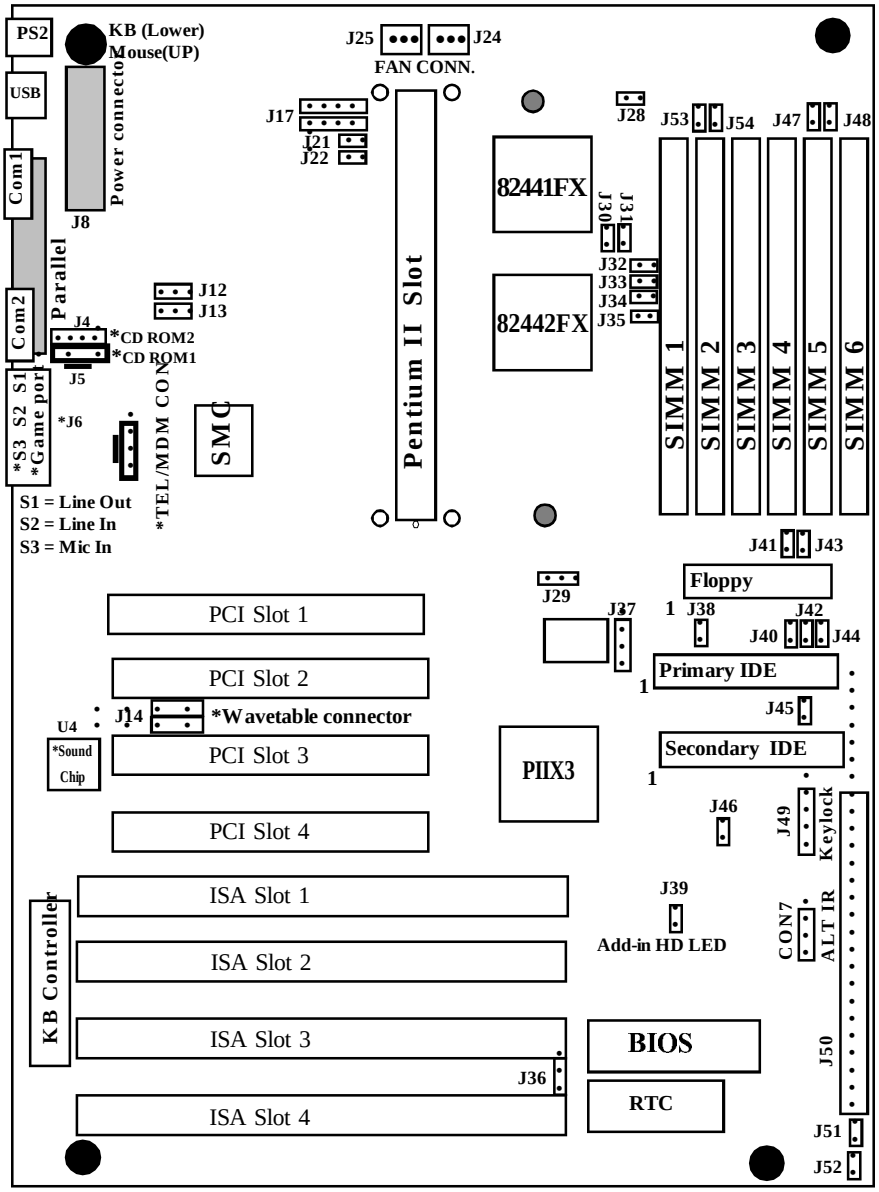
1.Make sure that you stand on an Anti-static mat. (Do not stand on a rug or carpet.)
2.It is also strongly recommended that you wear an anti-static strap. (Anti-static straps can be purchased at your local computer hardware stores.)
3.With the power supply plugged in and the system turned off, touch an unpainted area of the system chassis before handling the motherboard or any component. Remember to follow the above procedure whenever you handle the motherboard or its components.

2.1.3. Proper handling of the motherboard

After opening the motherboard carton, remove the board by holding its edges. Place it on a grounded anti-static surface with the component side up. Inspect the board for damage. Do not touch the bottom of the board. ***(Note: DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED!)***

2.2 Installation of the motherboard

You are now ready to install your motherboard. The mounting hole pattern of the board matches the ATX system board specifications. Please install



1684S/SA Motherboard Layout

(For more information about this motherboard, please visit our Web Site and clickable motherboards at http://www.tyan.com/html/faq.html.)

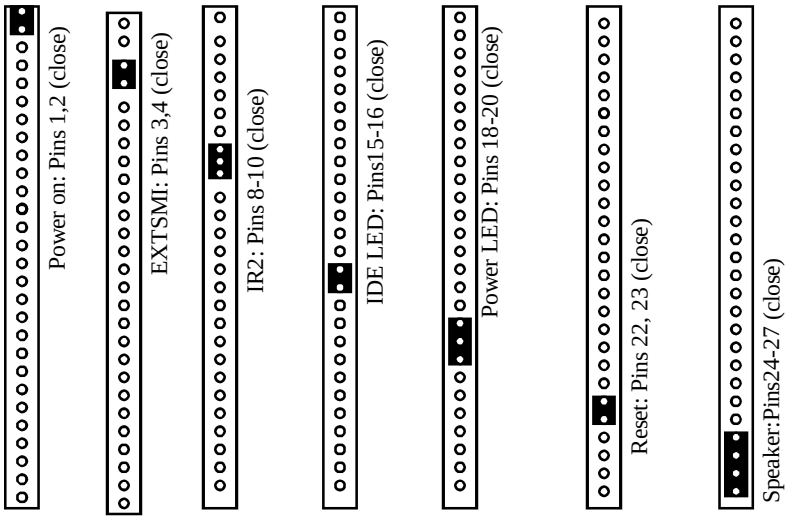
**** Features ONLY found on S1684SA model: Wavetable connector, CD-ROM connector, Tel/Modem connector, J6 port connectors.***

2.3 Jumper Settings

Refer to the following table for quick reference of jumper settings:

Jumper #	Assignments
J1, J2P	J1 (lower): PS2/KB J2(Upper): PS2/Mouse
J3	Universal Serial Bus
J4, J5	CD_Input (J4: Sony)
J6	Upper: Game Port, Lower: Mic/Line in/out
J7	TEL/MDM CON
J8	ATX Power CON
J14	WaveTable (Upgrade)
J50	Pins 1,2:Power on, Pins3,4:EXTSMI Pins 8-10:IR2 Pins15-16:IDE LED, Pins18-20:Power LED Pins22,23:Reset, Pins24-27: Speaker
J24, J25	CPU Fan Power (J24: Pin 2 is +12V)
J28	CPU Fan Fail Warning Set (when closed)
J32-J35	DRAM VCC for 3.3V (when closed)
J41,43,47,48	DRAM VCC for 5V (when closed)
J45	ATX Power always on (when closed)
J39	Add-in HDD LED
J49	4-5 Keylock
J17,J21,22,J29, J46, J51, CON7	Reserved

Block J50 Pin Assignments



CPU Speed Settings for Pentium II and Pentium Pro Processors:

CPU (Mhz)	J40	J42	J44	J38	J37	J31	J30
150	off	on	on	on	(3-4)	on	off
166	off	on	on	on	(1-2)	off	on
180	on	off	on	on	(3-4)	on	off
200	on	off	on	on	(1-2)	off	on
233	off	off	on	on	(3-4)	on	off
***266**	**on**	**on**	**off**	**on**	**(1-2)**	**off**	**on**
300	off	on	off	on	(3-4)	on	off

(*266--Default)

DRAM Voltage Select

	J32	J33	J34	J35	J41	J43	J47	J48
3.3V	Close	Close	Close	Close	Open	Open	Open	Open
***5V**	**Open**	**Open**	**Open**	**Open**	**Close**	**Close**	**Close**	**Close**

(*5V--Default)

CMOS Reset (Always reset after changing BIOS settings)

HOST Speed	PCI Speed	J37	J31	J30
60MHz	30MHz	3-4	on	off
66MHz	33MHz	1-2	off	on

Flash BIOS Voltage Select: J36(--Do not Change!)

***5V: Pin 1 and Pin 2 (Closed) (Default)**

12V: Pin 2 and Pin 3 (Closed)

	5V	12V
J36	1-2	2-3

5V (default)

12V

CMOS Reset: (J52)

J52: normal (open)

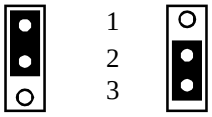
Clear - Cover J52 with a jumper cap to close 52 in order to reset CMOS.

ATX Power always on: (J45--closed)

Cover J45 with a jumper cap to close J45; then the ATX Power will always be on.

	1-2	2-3
J12	COM Port	IR

Default 1-2



COM Port **IR**

Connectors:

Block J50:

Pin No.	Definition
1 & 2	Power On
3&4	EXTSMI
8-10	Infra Red
15-16	IDE LED
18-20	Power LED
22 & 23	Reset
24-27	Speaker

(Refer to Page 11 for more details)

J3: Universal Serial Bus

CON 1: COM1

CON 2: COM2

CON 3: LPT1

CON 4: Primary IDE

CON 5: Secondary IDE

CON 6: FDD CON

CON 7: Reserved

Speaker Connector: J50 pins 24-27

Pin	Assignments
24	+5V
25	ground
27	Speaker data

(Refer to Page 11 for more information.)

IDE LED: J50 pins15-16

Pin	Assignments
15	IDE LED -
16	IDE LED +

(Refer to Page 11 for more information.)

IR2: J50 pins 8-10

Pin	Assignments
8	IR in
9	Ground
10	IR out

(Refer to Page 11 for more information.)

2.4 CMOS RTC (Real Time Clock)

The CMOS RTC includes an internal battery and real time clock circuit which provides the date and the time, and the CMOS Chipset Default Register for the system. Normally, the life span of a RTC internal battery is more than 10 years. This RTC chip cannot be field upgraded and can only be changed at a Tyan repairing facility.

2.5 Installing Cables and Connectors

2.5.1 Speaker Connector Installation (J50)

Your S1684S/SA board provides a 4-pin header to connect the speaker. The speaker is connected to pins 24-27 of J50. (Refer to Page 10 and Page 11 for detailed information.)

2.5.2 Hardware Reset Switch Connector Installation (J50)

The RESET switch on your case's display panel provides you with the HARDWARE RESET function which is the same as power on/off. The system will do a cold start after the RESET switch is pushed by the user. The RESET switch is a 2 pin connector and should be installed on pins 22 and 23 on J50. (Refer to Page 10 and Page 11 for detailed information.)

2.5.3 IDE LED Connector Installation (J50)

Your board provides a 2-pin header to connect the IDE LED cable. When connected, the IDE LED light on the panel of the case flashes if an activity is detected in an IDE device. The cable is connected to pins 15-16 of J50. (Refer to Page 10 and Page 11 for detailed information.)

2.5.4 Power LED Connector Installation (J50)

The motherboard also provides a 3-pin header to connect the Power LED cable. When connected, the Power LED light on the panel of the case indicates power on/off of the system. The cable is connected to pins 18-20 of J50. (Refer to Page 10 and Page 11 for detailed information.)

2.5.5 Infra Red Connector Installation (J50)

The motherboard provides a 3-pin connector (Pins 8-10 of J50) for the Infra Red cable which connects to a Homing Device on the back of the case. When activated, the Homing Device will send out IR signals to remote I/O IR devices. (Refer to Page 10 and Page 11 for detailed information.)

2.5.5 Flash ROM-Jumper J36

The S1684S/SA uses flash memory to store BIOS Setups. It can be updated as new versions of the BIOS become available. The flash utility will guide you through the process step-by-step. **However, we do not recommend that you flash the onboard BIOS. This procedure should only be done by a qualified technician or a Tyan technical support engineer.**

J36 determines which type of Flash EPROM is used. This jumper has been set to match the onboard BIOS chip. **The factory default for the S1684S is on pins 1-2(5V).** Depending on the type of EPROM used, some boards may have J36 on pins 2-3(12V). (Refer to Page 12 for more information.)

Warning!!

Do not change J36--(It has been pre-configured at the factory.)

2.5.6 Hardware CMOS & Password Reset

If you are locked out of your system because you have forgotten your password, or you have set the CMOS incorrectly, follow the instructions below:

a. Power off the system

b. Close J52 by covering the pins of J52 with a jumper cap to short the circuit between the pins.

c. Wait for 5 seconds, and then remove the jumper from J52.

d. Apply power to the system.

By following the above procedures, the password and CMOS will be reset to BIOS defaults. (Refer to Page 12 for more information.)

2.6 DRAM Installation

The S1684S/SA uses a 64-bit data path from memory to the CPU which will accommodate up to 768MB of RAM. The motherboard supports FPM (Fast Page Mode), EDO (Extended Data Out), ECC (Error Correcting Code), and Parity 72-pin SIMMs. The following table shows some of the available memory configurations.

Bank 0	Bank 1	Bank 2	total
4MBx2	none	none	8MB
8MBx2	none	none	16MB
4MBx2	4MBx2	none	16MB
8MBx2	8MBx2	none	2MB
4MBx2	4MBx2	4MBx2	24MB
16MBx2	none	none	32MB
16MBx2	16MBx2	none	64MB
32MBx2	none	none	64MB
64MBx2	none	none	128MB
16MBx2	16MBx2	16MBx2	96MB
32MBx2	32MBx2	none	128MB
32MBx2	32MBx2	32MBx2	192MB
64MBx2	64MBx2	none	256MB
128MBx2	none	none	256MB
64MBx2	64MBx2	64MBx2	384MB
128MBx2	128MBx2	none	512MB
128MBx2	64MBx2	64MBx2	512MB

2.7 Level 2 Cache Memory/SRAM Memory

The S1684S/SA's L2 Cache Memory is built into the Intel Pentium II CPU. There are no L2 Cache Memory slots or SRAM slots on the board.

2.8 VRM (Voltage Regulator Module)

The CPU will program the VRM for the correct voltage needed. No jumper settings are required. Your 1684S/SA has a built-in VRM on-board.

2.9 Peripheral Device Installation

Install the motherboard after you have checked all of the jumper settings. Also be sure to check all connectors thoroughlyand read the technical manuals that come with your peripheral cards before you install your add-on peripheral cards.

If a PCI-Bus interface card is to be installed in the system, any one of the four PCI-Bus slots will support either a Master or a Slave device.

2.10 Connecting the Power Supply and On/Off Switch

The system is configured for a standard ATX power supply. The ATX connectors can only be plugged in one way and should install easily.

Chapter 3: CPU Installation and Removal

Pentium II (233 through 300MHz) and Pentium Pro Processors (150 through 200 MHz) can be used on the S1684S/SA board. Please refer to section 2.3 for the correct CPU jumper settings for your board.

The S1684SA board provides a slot for the Pentium II Processor. (Refer to the layout on Page 10.)

Caution!! The CPU is a sensitive electronic component which can be easily damaged by static electricity. Do not touch the CPU contacts with your fingers.

3.1 Installation of the Pentium II Boxed (Active) Processor

(Note: An Active Processor is equipped with a cooling fan. When installing an Active Processor, you need to connect it's power cable to the cooling fan connector located on the board.)

Installing the CPU Retention Module

1. Installation of a Pentium II Active Processor requires a CPU Retention Module, which is first secured onto the motherboard. (Refer to the motherboard layout on Page 10.)

2. To attach the Retention Module, place the motherboard on a flat surface.

3. Locate the key pin on one end of the Pentium II Slot on the board. Then carefully line up the key notch on the Retention Module with the key pin on the Pentium II Slot. (The key pin on the Pentium II Slot indicates the correct orientation of the CPU.)

Pentium II Slot Connector and Key Pin

Retention Module

4. Drop the Retention Module down over the Pentium II Slot so that the Retention Module seats flat against the motherboard. Tighten the screws in a clockwise manner to secure the module to the board.
(Warning — Do not overtighten the screws as you may damage the module and/or the motherboard.)

Installing the Pentium II Processor

5. When the Retention Module is securely installed, you are ready to plug the CPU into the Retention Module. Make sure that the CPU's Cooling Fan is turned away from the I/O connectors before you plug the CPU into the CPU module.

6. Press firmly on the CPU until you hear a "click". The Pentium II CPU will make a clicking sound when it is fully locked into the Retention Module.

7. After the CPU is securely seated on the Retention Module in the Pentium II Slot, connect the CPU's Cooling Fan cable to the Cooling Fan power Connector on the board.

3.2 Installing the Cooling Fan

8. Locate the Cooling Fan Connectors: J24 (Pin 2 is 12V) and J25 on the motherboard.

9. Plug the CPU's Cooling Fan Cable into the Cooling Fan Connectors on the board. Make sure that the black wire of the cable is plugged into Pin1 of the connector. (Refer to Pin 1 marked on the layout on P10.) (Pin Assignments: Pin 1: ground--black, Pin 2: 12 V--red, Pin 3: Signal--yellow.)

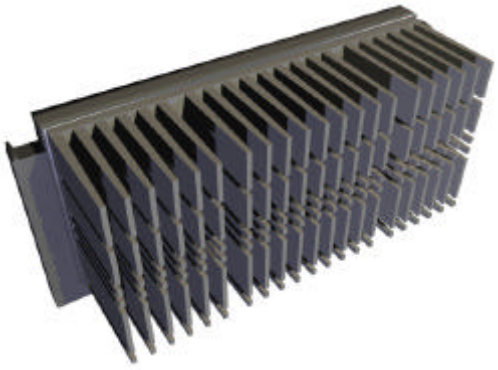
3.3 CPU (Pentium II Active Processor) Removal

1. Locate the locks on both ends of the CPU. Unlock the CPU by pressing the locks toward the center of the CPU until you hear a click. A clicking sound indicates that the CPU is unlocked.

2. When the CPU is unlocked, gently pull the CPU out from the Pentium II Slot and the Retention Module.

3.4 Installation/Removal of the Pentium II Passive Processor

(Unlike Active Processors, Passive Processors are not equipped with cooling fans. Passive Processors are equipped with Heat-sinks instead.)



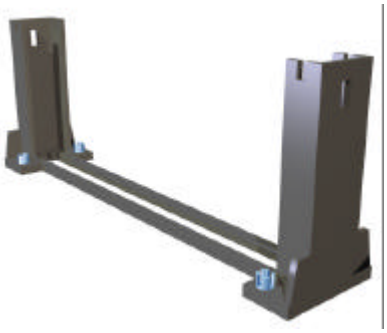
Pentium II Passive CPU Module

Each CPU package could also contain the following:

CPU Retention Module (x1)
Heat-sink Retention Bracket with mounting locks (x1)
Mounting Attach-mounts (x 2)
Heat-sink Lock (x1)

3.4.1: Installation: CPU Retention Module

1. When installing the CPU Retention Module, make sure that you have the appropriate end of the module lined up with the key notch on the Pentium II Slot connector. This will ensure that the module is installed properly.



Retention Module

2. Before tightening the screws, make certain that the module is flush against the motherboard. If one end of the module is raised above the board, check the orientation of the module.

3. Install the module on the board by turning the screws in a clockwise direction. (Do not over tighten the screws).

3.4.2 Installation: Heat-sink Mounting Bracket

1. The Heat-sink mount has two pins on the bottom and 4 pins on the top. Notice that the bottom two pins are of different sizes. The size of the pins and the holes in the motherboard will determine the correct orientation. When the bracket is correctly installed, these 4 pins should be on the top and closest to the Pentium II CPU slot.

Passive Heat-sink mounting bracket

2. Insert the Heat-sink mount into the holes on the motherboard. When the bracket is properly inserted into the holes on the motherboard, you will hear a clicking noise .

3. Lock the Heat-sink mount to the board by inserting the two mounting locks into the pins of the Heat-sink mounting bracket which are now below the motherboard. There will be a click when the locks are securely fastened.

Mounting Locks

3.4.3: Installation of the Pentium II Passive Processor

1. Align the CPU with the CPU Retention Module. Make sure the Heat-sink is lined up with the Heat-sink mount bracket. If you put the CPU in the wrong way, you may damage the CPU, the motherboard, and/or the CPU socket.

2. Slowly press down on the CPU module until the CPU locks into place. A clicking noise will be heard when the CPU is locked securely.

3.4.4: Installation of the Heat-sink Lock

The Heat-sink lock has 4 notches which will correspond to the 4 pins on the Heat-sink mounting bracket. Gently slide the lock between the Heat-sink onto the Heat-sink Mounting Bracket until both sides of the lock are firmly secured. A clicking sound will be heard when the lock is securely fastened to the heat-sink mounting bracket. To remove the lock from the Heat-sink mounting bracket, gently press the ends of the locks inward and pull.

Heat-Sink Lock

3.4.5: Removal of the Pentium II Passive Processor and CPU Retention Module

To remove the CPU, move the locks to the center of the CPU. A click will be heard when the CPU has been unlocked. Gently pull up on the CPU, taking care not to bend the motherboard or the CPU Retention Module.

3.4.6: Removal of the Heat-Sink Lock

To remove the lock from the Retention Bracket, gently press the ends of the locks inward and pull.

Chapter 4: Troubleshooting

4.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the "Technical Support Procedures" and/or "Returning Merchandise for Service" section(s) in this chapter.

No Video

If you do not have video, follow the Troubleshooting Flowchart on the next page.

1. Check for missing jumpers or improper installation of the ROM BIOS.

2. Make sure the video card and its jumper setting (as appropriate) match the monitor type.

3. Check to make sure that all peripheral cards are properly installed in their slots.

4. The I/O Bus speed should be running in the standard 8 MHz range.

5. Use the speaker to determine if any beep codes exist. Refer to the end of this manual for details about beep codes.

Note: If you are a system integrator, VAR, or OEM, a POST diagnostics card is recommended for Port 80h codes. (Please visit our Web Site for detailed information.)

Memory Error/Parity Error

If you encounter memory or parity errors, follow the procedures below.

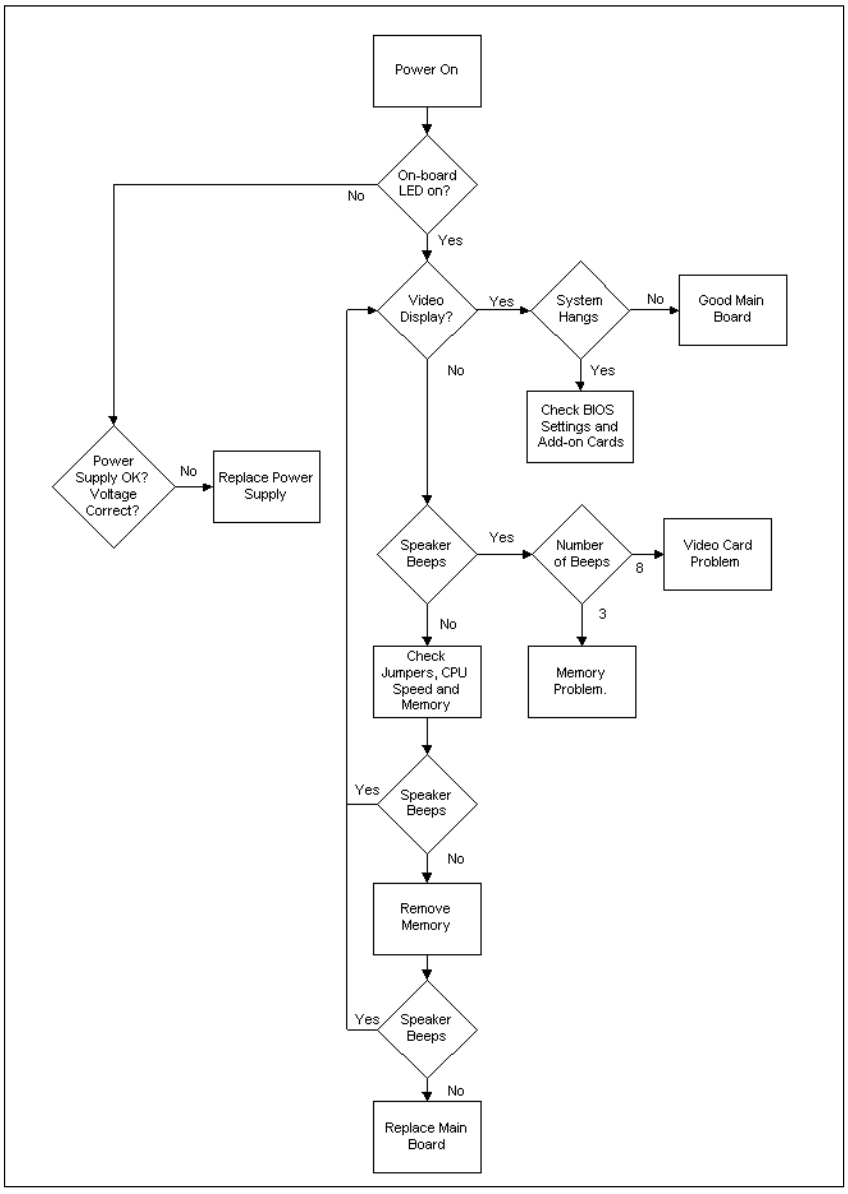
1. Check to determine if SIMM modules are improperly installed.

2. Make sure that different types of SIMMs have not been installed in the same bank. (e.g. a mixture of 265KB x 9 and 1 MB x 9)

3. Determine if different speeds of SIMMs have been installed in the same or different banks, and the BIOS setup is configured for the slowest speed of RAM used. It is recommended to use the same RAM speed for SIMMs in different banks.

4. Check for bad SIMM modules and chips.

Troubleshooting Flowchart



Losing the System's Setup Configuration

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose its CMOS setup.

2. Determine if the Dallas Battery is bad. If it is bad, replace it with a good one.

(The following steps will help you determine if the RTC is bad:

a. Turn on the system and set the system clock.

b. Let the system run for more than 6 hours.

c. Check the system clock to see if it has accurate timing.

If the system timing is off, it is very possible that the RTC battery is bad.)

3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repair.

4.2 Technical Support Procedures

Be sure to go through the "Troubleshooting Procedures" section in this Chapter, and visit our Web Site for additional information before calling Technical Support. (Tyan's Web Site address is: http://www.tyan.com.)

If the problem is still not resolved, have the following information ready before you call for technical support:

1. System Board Serial Number
2. CPU Serial Number
3. Invoice Number, Date
4. Purchase Form
5. Sale's Person's name
6. Product Configurations

4.3 Returning Merchandise for Service

During the warranty period, contact your Distributor or Dealer first for any product problems.

A receipt or a copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can 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 mailed prepaid, or hand-carried to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse, or improper maintenance of products.

Chapter 5: Declaration of Compliance

Compliance Information Statement
(Declaration of Conformity Procedure-DOC)

Notice for the USA

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 receiver.
- Connect the equipment into an outlet on a circuit different from that of the receiver connected.
- Consult the dealer or an experienced radio/TV 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 Interfer ence Regulations.

Cet appareil est conforme aux normes de CLASSE "B" d' interference radio tel que spec' cifie' par le Ministe're Canadien des Communications dans les re'glements d'interfe'rence radio.

Notice for Europe (CE Mark)

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

Acknowledgement

Information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

Chapter 6: Speaker Beep codes

All Tyan motherboards come with a BIOS feature called "beep codes". What these do is inform you (the user) about potential problems in your configuration.
These errors can occur during POST (Power On Self Test), which is performed every time the system is powered on. Fatal errors are communicated through a series of audible beeps from your computers' speaker. Should an error of this sort occur, listen carefully to these beeps and match the description from the table below to determine the source of the problem.

Beeps	Error message	Description
1	Refresh Failure	The memory refresh circuitry on the motherboard is faulty.
2	Parity Error	Parity error in the first 64KB of memory.
3	Base 64KB Memory Failure	Memory failure in first 64KB of memory.
4	Timer Not Operational	Memory failure in the first 64KB of memory, or Timer 1 on the motherboard is not functioning.
5	Processor Error	The CPU on the motherboard generated an error.
6	8042 - Gate A20 Failure	The keyboard controller may be bad.
7	Processor Exemption Interrupt Error	The CPU generated an exeption interrupt.
8	Display Memory Read/Write Error	The system video adapter is either missing or its memory is faulty.
9	ROM Checksum error	The ROM checksum value does not match the value encoded in the BIOS.
10	CMOS Shutdown Register R/W Error	The shutdown register for CMOS RAM failed.
11	Cache Error / External Cache Bad	The external cache is faulty.