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Chapter 1: Introduction

1.1 Overview

The S1682D system board--TAHOE 2 ATX, is a quality, high performance, dual processing motherboard designed for Intel's latest generation Pentium II microprocessors. This motherboard utilizes Intel's 440FX PCI series chipset and supports CPU speeds of 233MHz to 300MHz. The S1682D, designed for a dual system, will also support two Pentium Pro processors with Tyan riser cards.

The S1682D'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 and yet 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), DMA (Mode 2) IDE, on-board floppy controller, and on-board high speed I/O.

Flexibility and expandibility have been designed into the S1682D board . With I/O and drive controller support built on-board, the five PCI and three 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 S1682 D board. Here you will also find information on all of Tyan's products along with FAQ's, distributors, drivers and CMOS setting explanations.

1.2 Hardware Specifications/Features

The S1682D board is designed for the demanding end-user who wants to accomplish complicated tasks in a user-friendly environment. To achieve this purpose, the main board includes the following features:

CPU Information

- Intel Pentium II 233 MHz through 300 MHz (233MHz, 266 MHz, 300 MHz) CPUs.
- Two Pentium II Processor slots
- Supports Pentium Pro 150-200 MHz (150 MHz, 166MHz, 180MHz, 200MHz) processors
- Four on-board fan headers (2 CPU / 2 Case)

Chipset Information

- Intel 440 FX series (Natoma) chipset.
- 25/30/33 MHz PCI bus
- Two PCI Bus Mastering EIDE Channels (up to 22MB/sec DTR)
- PIO Mode 3 & 4 (up to 17MB/sec DTR)
- Support for up to 1GB (1024MB) of memory
- 2 USB headers (use with optional bracket : Tyan PN# S1606-001-01) Rev. 1.2 compliant

System RAM

- Eight-72 pin SIMMs (4 double banks)
- Supports 5V or 3.3V memory
- Supports EDO (Extended Data Out), FPM (Fast Page Mode), ECC (Error Correcting Code) or Parity checking

Drive & System I/O

- Two PCI Bus Mastering EIDE channels
- Supports EIDE CD-ROMs
- PIO Mode 3 & 4 (up to 17 MB/sec DTR)
- Bus Mastering Mode (up to 22MB/sec DTR)
- Two floppy drives (up to 2.88 MB)
- Two ATX serial ports support 16550 UART's
- One ATX ECP/EPP parallel port
- One IR (infra red) I/O interface port
- One ATX keyboard port
- One ATX PS/2 mouse port

Bus Slots	• Five 32-bit PCI Bus Master slots • Three ISA Bus Slots (One ISA and one PCI shared slots)

1.3 Software Specifications

BIOS	• Award or AMI Plug 'n' Play flash BIOS • Deep green and Energy Star compliant. • ATX CMOS setup, BIOS/CHIPSET setup and hard disk utility included. • Support for easy BIOS upgrades with flash chip.
Operating System	• Operates with MS-DOS, Windows 3.x, Win dows for Workgroups 3.x, Windows 95, Windows NT • OS/2, Novell Netware, and SCO Unix, Linux. *Tyan is also a Solaris certified manufacturer.*

1.4 Environment

Operating Temperature	0° to +55° C
Humidity	<80% @36C°
Altitude	@10,000 feet (operating)
Vibration	0 to 1,000 Hz
Voltage	230 Watt ATX power supply

1.5. Manual Organization

Chapter 1 "Introduction" describes the features and performance of the S1682D 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--Boxed and Passive CPU's.

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

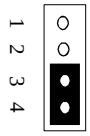
Refer to **Addendum A** (AMI BIOS CMOS Setup) or **Addendum B** (Award BIOS CMOS Setup) for the setup requirements and the CMOS Configuration information, including instructions to change the password, to format a hard disk, and to troubleshoot CMOS errors. Both AMI and Award BIOS Setup documents are also available in the Adobe Acrobat format. Please refer to the Web Page located at ftp://ftp.tyan.com/s1682da.pdf for AMI and ftp://ftp.tyan.com/s1682db.pdf for Award BIOS information.

1.6. Manual Conventions

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

1. When the term **"Close"** 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"** is used, the pin (pins) specified for the jumper should not be connected, and the circuit of the connecting pins will not be shorted.



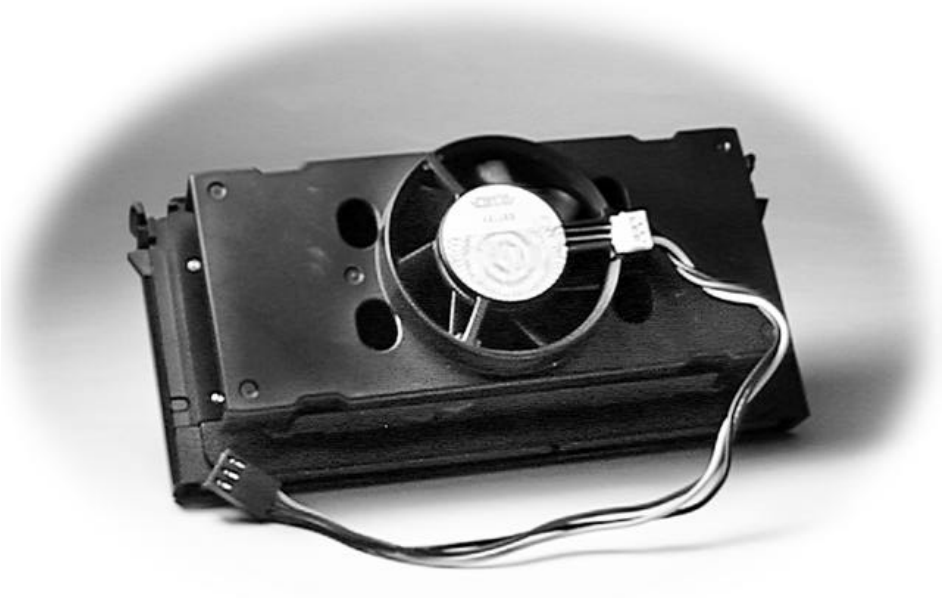
Pins 1&2: Open

Pins 3&4: Closed (Shorted)

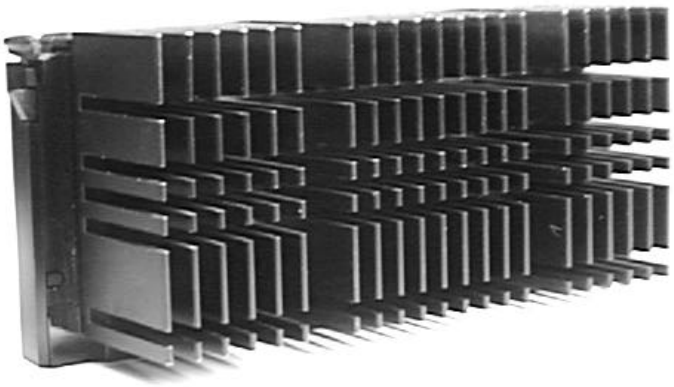
1.7. CPU Prototypes

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 built in with the CPU, and the Passive Processor is equipped with a heat sink. These two types of CPUs provide the user with the same function, and should be installed in the "Pentium II" slots on the S1682D board. (Refer to Chapter 3 for the installation and removal of Pentium II processors.)

Although the S1682D motherboard is designed for a dual system, it can also accommodate a single CPU. However, when a single CPU Configuration is chosen, the Pentium II CPU should be installed in the Pentium II Primary slot as mentioned in Chapter 3.



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



Pentium II (Passive) CPU
Shown with Heatsink

Chapter 2: Board Installation

2.1 Unpacking

2.1.1. Item Checklist

The motherboard package should contain the following:

- S1682D Motherboard
- One IDE 40 pin cable
- One 34 pin floppy cable
- User's manual
- BIOS manual
- 2 Retention modules (M2100F)

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 left in its original packaging until it is ready to be installed.

Before you open the carton of your computer, 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 repeat the above steps whenever you handle the motherboard or its components.

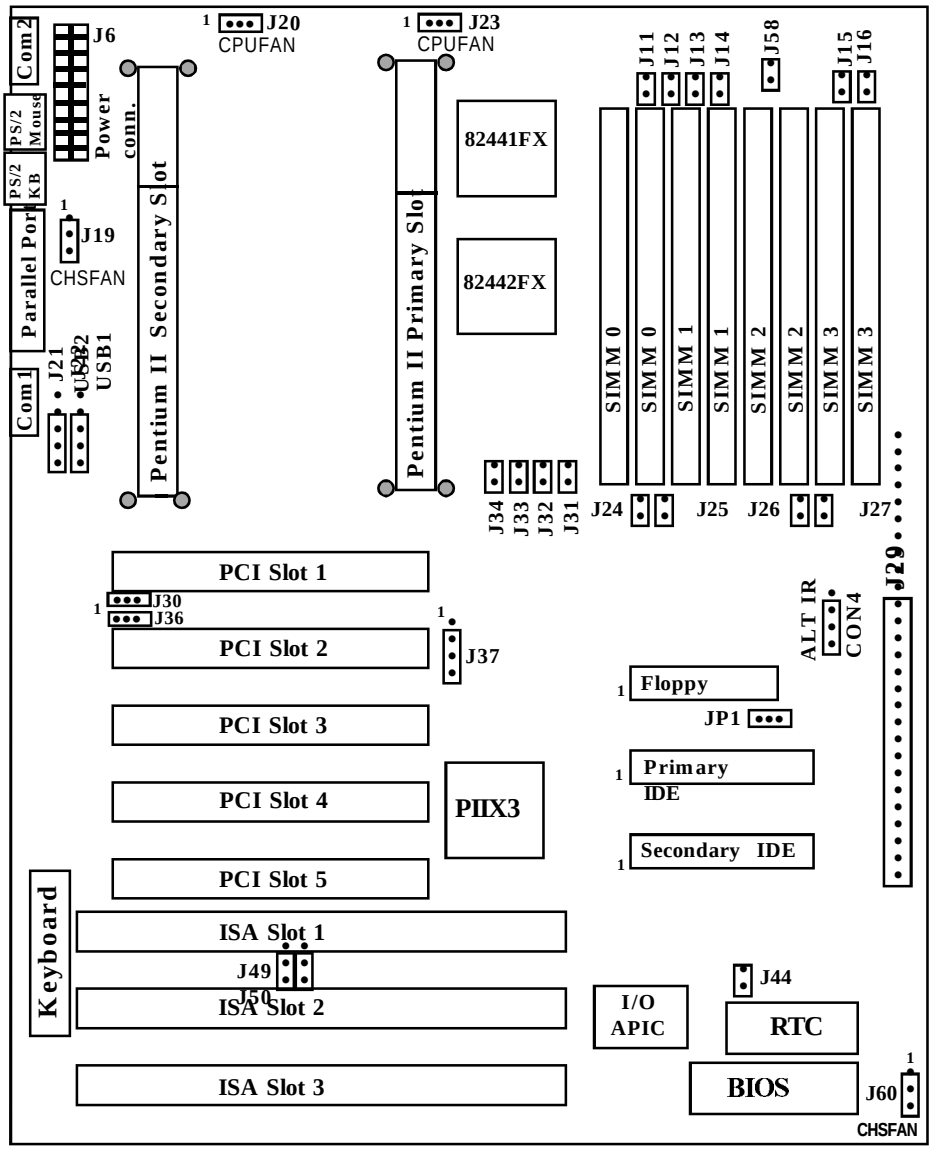
2.1.3. Proper handling of the motherboard

After opening the S1682D 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 S1682D matches the ATX system board specifications. Please install the board in the chassis designed for a standard ATX form factor board.

2.3.1 Motherboard Layout



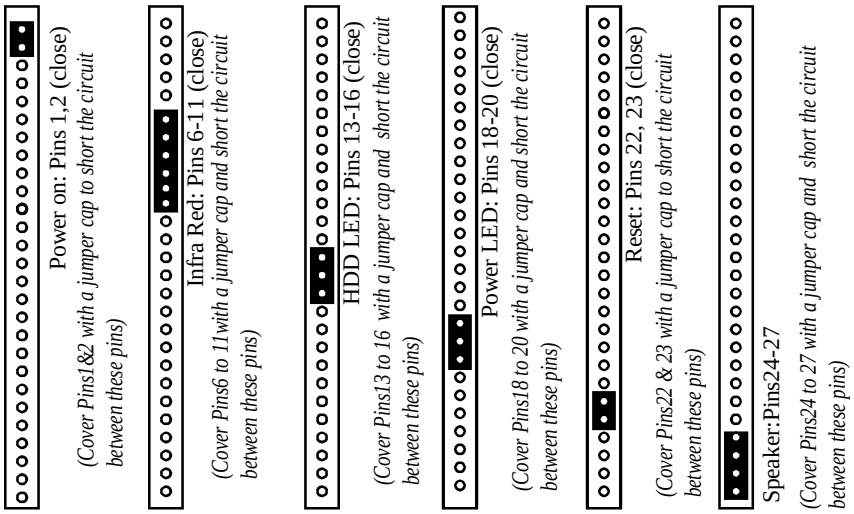
(For more information about this mainboard, please visit our Web Page and Clickable motherboards at http://www.tyan.com/html/faq.html.)

2.3.2 Summary of Jumper Settings

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

Jumper #	Assignments	Pg. #
J8, J10	Voltage ID: J10: Primary CPU, J8: Secondary CPU	P.13
J20, J23	CPU Fan	P10, P21
J19	CHS Fan (Chassis Fan)	P10
J11, J12, J37	Bus Speed	P12
J13-J16, J24-27	DRAM Voltage Select	P12
J21, J22	Universal Serial Bus (J21:USB2, J22:USB1)	P14
J29	Pins 1,2:Power on, Pins6-11:Infra Red, Pins13-16:HDD LED, Pins18-20:Power LED Pins22,23:Reset, Pins24-27: Speaker	P14,15,16
J30, J36	I/O Select P12	
J31-34	CPU Speed Settings	P12
J39	Super I/O Clock Select (***Do not** Change)	P13 P13
J44	CMOS Reset	P12,17
J56	BIOS EEPROM Voltage (***Do not** Change)	P14
J1-J5,J9,J35, J38,J45-55,J57	Reserved	P14

Block J29 Pin Assignments



2.3.3 Jumper Settings

CPU Speed Settings for Pentium II and Pentium Pro Processors:

MHz	J31	J32	J33	J34	J37	J11	J12
150	open	close	close	close	3-4	open	open
166	open	close	close	close	1-2	close	open
180	close	open	close	close	3-4	open	open
200	close	open	close	close	1-2	close	open
233	open	open	close	close	1-2	close	open
266	close	close	open	close	1-2	close	open
300	open	close	open	close	1-2	close	open

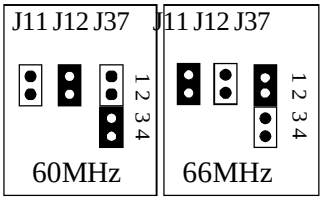
CMOS Reset (Always reset after changing BIOS)

J44
Closed momentarily to reset (Cover Pins 1 & 2 momentarily with a jumper cap and short the circuit **between these 2 pins)**

J44

Bus Speed

HOST	PCI	J11	J12	J37
60MHz	30MHz	open	close	3-4
66MHz	33MHz	close	open	1-2

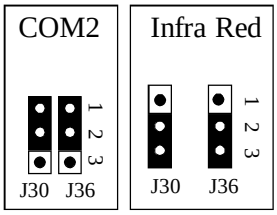


DRAM Voltage Select

	J15	J16	J26	J27	J13	J14	J24	J25
5V	Close	Close	Close	Close	Open	Open	Open	Open
3.3V	Open	Open	Open	Open	Close	Close	Close	Close

I/O Select

	J30		J36	
	1-2	2-3	1-2	2-3
COM2	Close	Open	Close	Open
Infra Red	Open	Close	Open	Close



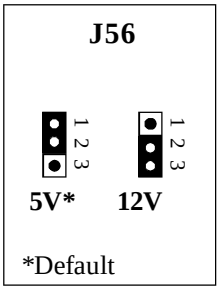
Super I/O Clock Select (Set at factory--Do not change!!)**

J39		
	1-2	2-3
669IR	Open	Close

J39

BIOS EEPROM Voltage (Set at factory--DO NOT change!!)

J56		
	1-2	2-3
5V (*default)	Close	Open
12V	Open	Close



Wake on LAN connector: JP1

Pin#	Signal
1	SB 5V
2	Ground
3	Wake up LAN

Reserved Jumpers:

J1-J5,J9, J35, J38, J42-43, J45-55, J57

Connectors:

Block J29: (Refer to Page 10 for more information.)

Pin#	Signal
1 & 2	Power On
6-11	Infra Red
13-16	HDD LED
18-20	Power LED
22 & 23	Reset
24-27	Speaker

J21/J22: Universal Serial Bus Ports
(J21: USB2, J22: USB1)

CON 5: FDD CON

CON 6: Primary IDE

CON 7: Secondary IDE

Speaker Connector: J29 pins 24-27

Pin	Signal
24	+5V
25	ground
27	Speaker data

(Refer to Page 10 for more information.)

HDD LED: J29 pins13-16

Pin	Signal
13	+5V
15	HD Active#
16	HD_PWR

(Refer to Page 10 for more information.)

Infra Red Interface: J29 pins 6-11

Pin	Signal
6	+5V
8	IR in
9	Ground
10	IR out
11	+5V

(Refer to Page 10 for more information.)

2.4 CMOS RTC

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 (J29)

Your S1682D board provides a 4-Pin header to connect the speaker. The speaker is connected to pins 24-27 of J29. (Refer to Page 9 and Page 10 for detailed information.)

2.5.2 Hardware Reset Switch Connector Installation (J29)

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 J29. (Refer to Page 9 and Page 10 for detailed information.)

2.5.3 HDD LED Connector Installation (J29)

Your S1682D board provides a 4-Pin header to connect the HDDLED cable. When connected, the HDDLED light on the panel of the case flashes if a HDD activity is detected. The cable is connected to pins 13-16 of J29. (Refer to Page 9 and Page 10 for detailed information.)

2.5.4 Power LED Connector Installation (J29)

The S1682D board 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 J29. (Refer to Page 9 and Page 10 for detailed information.)

2.5.5 Infra Red Connector Installation (J29)

The S1682D board provides a 6-Pin connector (Pins 6-11 of J29) 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 9 and Page 10 for detailed information.)

2.5.6 Flash ROM-Jumper J56

The S1682D 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.**

J56 determines which type of Flash EPROM is used. This jumper has been set to match the onboard BIOS chip. The factory default for the S1682D is on pins 1-2(5V). Depending on the type of EPROM used, some boards will have J56 on pins 2-3(12V). (Refer to Page 13 for more information.)

****
Warning!!
***Do not change J56**--(It has been pre-configured at the factory.)

2.5.7 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. Short J44 by covering Pin 1 and Pin 2 of J44 with a jumper cap and short the circuit between these two pins.

c. Wait for 5 seconds, and, then, remove the jumper cap from J44.

d. Apply power to the system.

By following the above procedures, the password and CMOS will be reset to BIOS defaults.

2.6 DRAM Installation

The S1682D uses a 64-bit data path from memory to the CPU which will accommodate up to 512MB 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	Bank 3	Total
4MBx2	none	none	none	8MB
8MBx2	none	none	none	16MB
4MBx2	4MBx2	none	none	16MB
8MBx2	8MBx2	none	none	32MB
4MBx2	4MBx2	4MBx2	4MBx2	32MB
16MBx2	none	none	none	32MB
16MBx2	16MBx2	none	none	64MB
32MBx2	none	none	none	64MB
64MBx2	none	none	none	128MB
16MBx2	16MBx2	16MBx2	16MBx2	128MB
32MBx2	32MBx2	none	none	128MB
32MBx2	32MBx2	32MBx2	none	192MB
32MBx2	32MBx2	32MBx2	32MBx2	256MB
64MBx2	64MBx2	none	none	256MB
128MBx2	none	none	none	256MB
64MBx2	64MBx2	64MBx2	none	384MB
64MBx2	64MBx2	64MBx2	64MBx2	512MB
128MBx2	128MBx2	none	none	512MB

2.7 Level 2 Cache Memory/SRAM Memory

The S1682D's L2 Cache Memory is built into the Intel Pentium II CPU. There are no L2 Cache Memory slots or SRAM slots on the motherboard.

2.8 VRM (Voltage Regulator Module)

The CPU will program the VRM for the correct voltage needed. No jumper settings are required. The S1682D has two built-in VRM's 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 thoroughly and 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 five 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 S1682D. Please refer to section 2.3 for the correct CPU jumper settings for your board. Although the S1682D motherboard is designed as a dual CPU system, it will also function with a single CPU.

The S1682D board provides two slots for Pentium II Processors--(Pentium II Primary and Secondary Slots). If only one CPU is used, the CPU should be plugged into the Primary Slot. However, when two CPUs are used, these CPUs should be of the same speed and type.

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

3.1 Installation of Pentium II Boxed (Active) Processors

(Note: Active Processors are equipped with cooling fans. When installing an Active CPU, you also need to connect the cooling fan cable to its connector.)

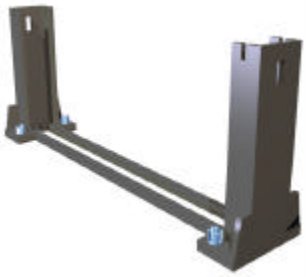
Installing CPU Retention Modules

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 CPUs

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 CPU Cooling Fans

8. Locate the Cooling Fan Connectors (2 Connectors: J20 and J23--1 for each CPU) on the motherboard.

9. Plug the CPU's Cooling Fan Cable into the Cooling Fan Connector on the board. Make sure that the black wire of the cable is plugged into Pin 1 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.)

3.4 Installation and Removal of Pentium II Passive Processors

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

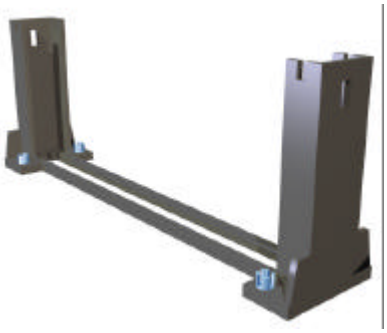
Pentium II Passive CPU Module

Each CPU package should 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 Installing CPU Retention Modules

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 Installing Heat-sink Mounting Brackets

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. A correctly installed bracket can be verified by noting the 4 pins on the top. These 4 pins should be closest to the Pentium II CPU slot.

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 mainboard. There will be a click when the locks are securely fastened.

Mounting Locks

3.4.3 Installing Pentium II Passive Processors

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 into the module.

3.4.4 Installing Heat-sink Locks

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 Removing Pentium II Passive Processors and CPU Retention Modules

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: Removing Heat-Sink Locks

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 at the standard speed of 8 MHz.

5. Use the speaker to determine if any beep codes exist. Refer to Addendum A and Addendum B 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.

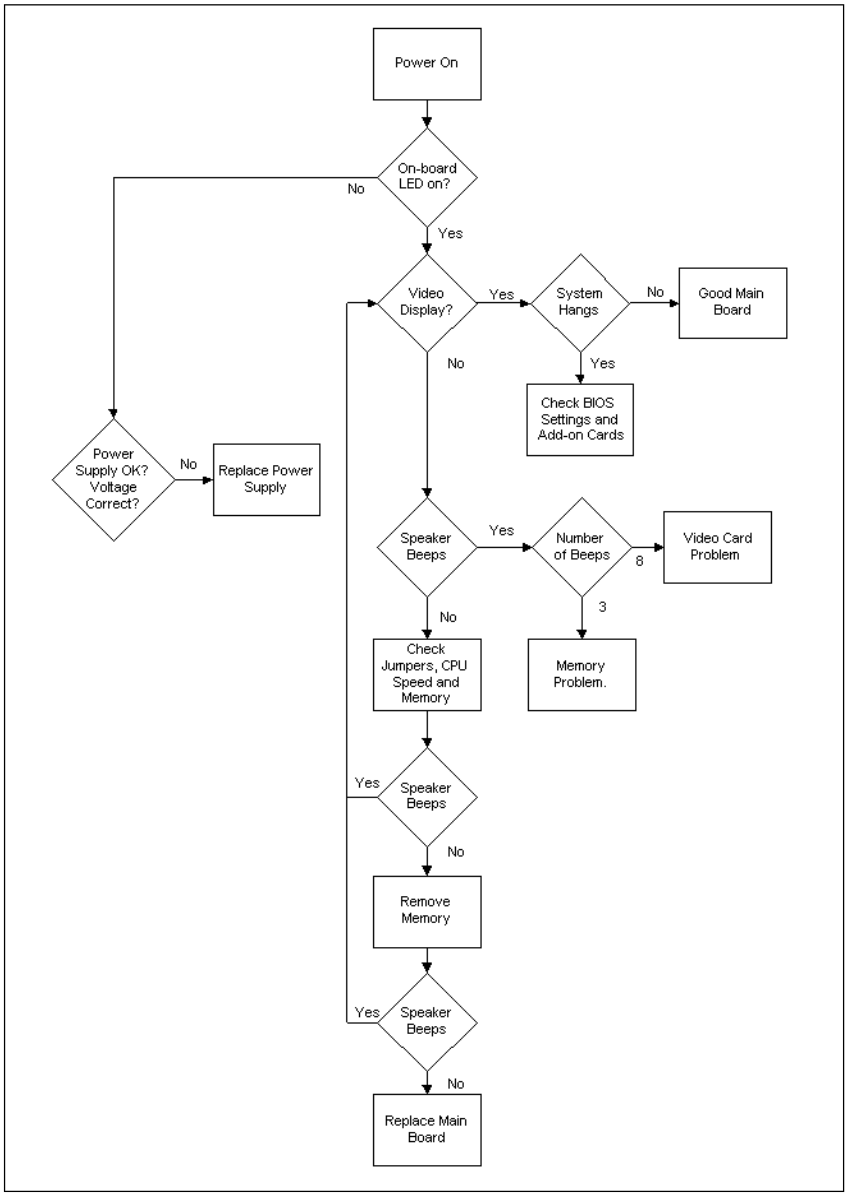
1. Check to determine if SIMM modules are improperly installed.

2. Make sure that different types of SIMMs have not been installed in the same bank. (eg. 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 likely 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

For technical support be sure to contact your Dealer or Distributor FIRST in the event your product is not working properly.

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. During the warranty period, contact your distributor first for any product problems.

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.

Appendix: LM78 System Hardware Monitor and LANDesk Client Manager (LDCM)

To enhance the performance of your computer system, Tyan has incorporated National Semiconductor's LM78 Microprocessor System Hardware Monitor and LANDesk Client Manager (LDCM) into the S1682 D board design. The LM78 is an Integrated Data Acquisition system, designed to monitor power supply voltages, temperatures, and fan speeds.

To achieve this purpose, the LM78, a hardware monitor component, has an on-chip temperature sensor, 5 positive analog inputs, two inverting inputs and an 8-bit ADC. In addition, the LM78 also provides ISA and Serial Bus Interfaces. A 32-byte auto-increment RAM is provided for POST (Power On Self Test) code storage.

Features

The LM78 includes the following features:

* Temperature sensoring
* 5 positive voltage inputs
* 2 op amps for negative voltage monitoring
* 3 fan speed monitoring inputs
* Input for additional temperature sensors
* Chassis Intrusion Detector Input

The software program-- LDCM (LANDesk Client Manager) is used as the LM78's drivers to accomplish monitoring computers' temperatures and voltages. The LDCM Drivers use the LM78 to monitor critical hardware components and enable remote sensing and diagnostics of your S1682D Board. Thus, by implementing both National Semiconductor's LM78 and LDCM in the S1682D system, Tyan provides you with the best quality board possible on the market.

For more information, please refer to the Web Page at:

http://www.tyan.com

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)

Acknowledgment

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.

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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 64KB of memory, the first or Timer 1 on the motherboard is not function-ing.
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 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.