



G586PBW

Rev. A+
System Board
User's Manual



- D28960130 -





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FCC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. 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 to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

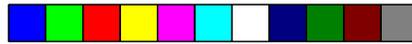


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Chapter 1 Introduction

The G586IPB/W system board offers several advanced features integrated into the system board. Its design is based on the new Peripheral Component Interconnect (PCI) local bus and Industry Standard Architecture (ISA) standards.

The G586IPB/W provides a 321-pin Zero Insertion Force (ZIF) CPU socket for Pentium™ processors running at 75MHz, 90MHz, 100MHz, 120MHz, 133MHz, 150MHz, or 166MHz frequencies. This ZIF socket allows users to easily upgrade their CPUs. It also provides a VRM (Voltage Regulation Module) header which lets you upgrade to future low-voltage CPUs.

The G586IPB/W is equipped with four PCI slots and three ISA slots.

The G586IPB/W board has two bus master PCI IDE connectors. Bus mastering reduces CPU use during disk transfer. The system board is also equipped with two NS16C550A-compatible serial ports, an SPP parallel port, a floppy disk drive controller, one PS/2 mouse port and one PS/2 or AT keyboard connector.

The G586IPB/W can support 8MB to 128MB of memory using 1Mx36, 2Mx36, 4Mx36 and 8Mx36 72-pin SIM modules.



Features and Specifications

Processor

- Intel Pentium™ Processor 75/90/100/120/133/150/166MHz
- Future Pentium OverDrive Processor

System Design

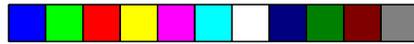
- Intel 430FX PCIsset
- Four 72-pin SIMM sockets
- 8MB to 128MB onboard memory
- Uses EDO or fast page mode x32 DRAM, 60 or 70ns, 5V
- 256KB or 512KB L2 cache, direct-map WB or WT
- Uses 3.3V pipelined burst or asynchronous cache SRAM on 160-pin cache module
- EDO DRAM and pipelined burst cache SRAM give optimal performance
- 4 PCI slots (all bus masters)
- 3 ISA slots (one shared with PCI slot)
- Award BIOS, Windows 95 Plug and Play compliant
- Flash EPROM for easy BIOS upgrades

Energy Efficient Design

- System power management supported
- CPU stopped clock control
- Hardware supports SMI green mode
- Microsoft/Intel APM 1.1 compliant
- External power management switch supported

Two Bus Master PCI IDE Connectors

- PIO Modes 3 & 4 Enhanced IDE (data transfer rate up to 16.6MB/sec.)
- DMA Mode 2 Bus Master IDE (data transfer rate up to 22.2MB/sec.)
- Bus mastering reduces CPU utilization during disk transfer
- ATAPI IDE CD-ROM supported



Integrated I/O

- Winbond super I/O controller
- One 720KB/1.2MB/1.44MB floppy controller
- Two NS 16C550A-compatible high speed UARTs
- One standard parallel port
- Plug and Play compliant

Connectors

- Serial ports: 2 connectors
- Parallel port: 1 connector
- IDE: 2 shrouded headers
- Floppy: 1 connector
- PS/2 mouse connector
- PS/2 keyboard connector or AT keyboard connector

VRM and ZIF Sockets

- VRM (Voltage Regulation Module) header allows upgrade to future low-voltage CPUs
- 321-pin ZIF socket (Intel Socket 7)

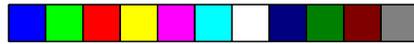
PCB

- 4 layers
- 28cm (11.02") x 22cm (8.66")

Slot Limitations

Due to the size of the CPU with its accompanying heatsink/fan component, the length of the add-in cards in PCI slots 2, 3 and 4 is limited to 205mm (measured from the bracket of the card).

The length of the add-in card in PCI slot 1 is limited to 205mm only if its components protrude more than 5mm from the components and/or solder side of the card.



Package Checklist

The G586IPB/W package contains the following items:

- The G586IPB/W system board
- The G586IPB/W user's manual
- One 34-pin floppy disk drive cable
- One 25-pin printer port cable for chassis mounting
- One 40-pin IDE hard disk cable
- One card-edge bracket with serial and mouse port cables
- One IDE driver diskette
- Cache module (optional)

If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.



Chapter 2 Installation Overview

This chapter summarizes the steps in installing the G586IPB/W system board into your system unit. It also includes a description of the area in which you must work and directions for memory installation. Before installing the system board, obtain the memory you plan to install. Please refer to the memory chart on page 9 for the number and type of SIM modules needed for the amount of memory you require.

Preparing the Area

Before unpacking the system board, make sure the location you have selected is relatively free of dust and static electricity. Excessive exposure to dust, static electricity, direct sunlight, excessive humidity, extreme cold, and water can damage the operational capabilities of your system board. Avoid placing the unit on the surfaces such as carpeted floors. These areas also attract static electricity which can damage some circuits on your system board.

Make sure the power source has a properly grounded, three-pronged socket. It is essential that the power connection be properly grounded for correct functioning of your system board. For further protection, we recommend that you use a surge suppressor. This will protect the system board from damage that may result from a power surge on the electrical line.

Move items that generate magnetic fields away from your system board since magnetic fields can also damage your system board. Once you have selected the ideal location, unpack the G586IPB/W system board carefully.



Handling the System Board

It is quite easy to inadvertently damage your system board even before installing it in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling the system board to ensure against electrostatic build-up.

Tips in Handling the System Board

1. To prevent electrostatic build-up, leave the board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface with components facing up.
4. Hold the system board by its edges only. Be careful not to touch any of the components, contacts or connections, especially gold contacts, on the board.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules and connectors by their ends.

Warning:

Electrostatic discharge (ESD) can damage your upgrade processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.



Hardware Installation

If you are installing the G586IPB/W system board, follow the instruction below. Before installing the system board into your system unit, you should prepare the tools you will need:

You will need:

- *One medium size, flat-bladed screwdriver*
- *One medium Phillips screwdriver*

Step 1

Unlock your system unit. Turn off the power and disconnect all power cords and cables.

Step 2

Remove the system unit cover. Refer to the manufacturer's instructions if necessary.

Step 3

Remove expansion cards seated in any of the expansion slots and detach all connectors from the old system board.

Step 4

Loosen the screws holding the original system board and remove the board from the system. Save the screws.

Step 5

Remove the G586IPB/W from its original packing box. Be careful to avoid touching all connectors and pins on the board. Please refer to the handling instructions on pages 6-8 for proper handling techniques.

Step 6

Insert the SIMMs into the SIMM banks on the G586IPB/W. The quantity and location of the SIMMs is dependent upon the memory configuration and type of modules you intend to use.



Step 7

Install the CPU. Be sure pin 1 of the CPU is aligned with pin 1 of the socket.

Step 8

Set the corresponding jumpers.

Step 9

Install the prepared G586IPBW system board into the case and replace the screws.

Step 10

Reinstall all cards and connectors and replace the system unit cover. Reconnect all power cords and cables.

Memory Installation

The G586IPBW system board can support 8MB to 128MB of memory using 72-pin SIMMs (Single In-line Memory Module).

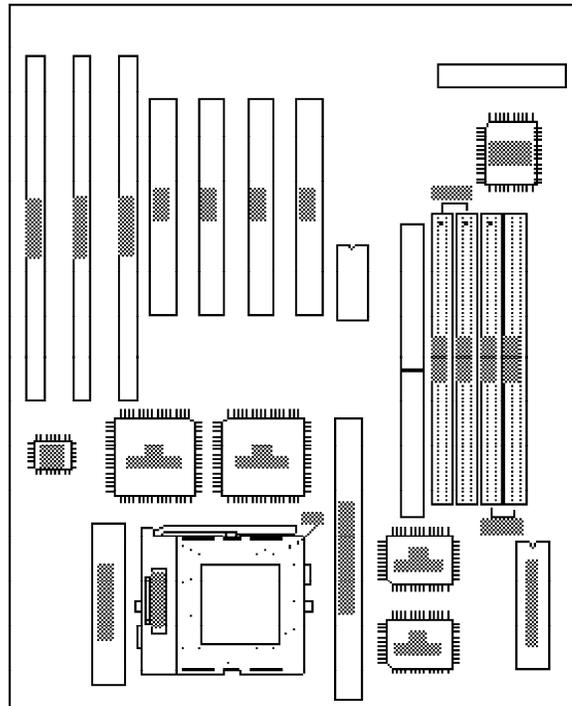
The SIM sockets are divided into two banks on the system board. Each bank consists of 2 SIMM sockets. The G586IPBW system board uses 1Mx36, 2Mx36, 4Mx36 and 8Mx36 SIMMs. You will need 2 or 4 pieces of SIM modules, depending on the amount of memory you intend to install.

The table on the next page summarizes the bank locations and modules needed for the corresponding memory sizes.





Memory Size	Bank0		Bank1	
	SIMM1	SIMM2	SIMM3	SIMM4
8MB	1Mx36	1Mx36	—	—
8MB	—	—	1Mx36	1Mx36
16MB	1Mx36	1Mx36	1Mx36	1Mx36
16MB	2Mx36	2Mx36	—	—
16MB	—	—	2Mx36	2Mx36
24MB	1Mx36	1Mx36	2Mx36	2Mx36
24MB	2Mx36	2Mx36	1Mx36	1Mx36
32MB	2Mx36	2Mx36	2Mx36	2Mx36
32MB	4Mx36	1Mx36	—	—
32MB	—	—	4Mx36	4Mx36
40MB	1Mx36	1Mx36	4Mx36	4Mx36
40MB	4Mx36	4Mx36	1Mx36	1Mx36
48MB	2Mx36	2Mx36	4Mx36	4Mx36
48MB	4Mx36	4Mx36	2Mx36	2Mx36
64MB	4Mx36	4Mx36	4Mx36	4Mx36
64MB	8Mx36	8Mx36	—	—
64MB	—	—	8Mx36	8Mx36
72MB	1Mx36	1Mx36	8Mx36	8Mx36
72MB	8Mx36	8Mx36	1Mx36	1Mx36
80MB	2Mx36	2Mx36	8Mx36	8Mx36
80MB	8Mx36	8Mx36	2Mx36	2Mx36
96MB	4Mx36	4Mx36	8Mx36	8Mx36
96MB	8Mx36	8Mx36	4Mx36	4Mx36
128MB	8Mx36	8Mx36	8Mx36	8Mx36



• Pin 1

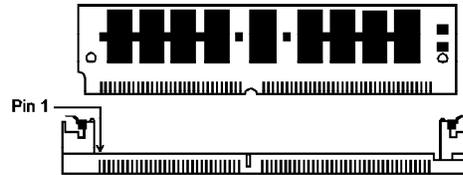
Locations of the SIMM sockets on the system board





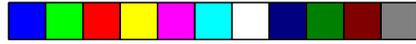
Modules Installation

A SIM module simply snaps into a socket on the system board. Pin 1 of the SIM module must correspond with Pin 1 of the socket.



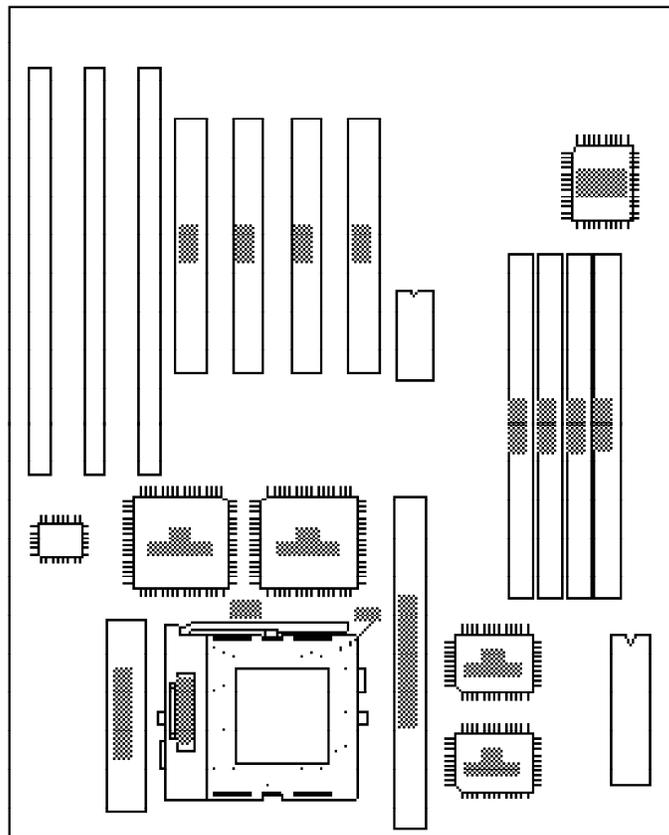
1. Position the SIMM above the socket with the “notch” in the module aligned with the “key” on the socket.
2. Seat the module at a 45° angle into the bank. Make sure it is completely seated. Tilt the module upright until it locks in place in the socket.

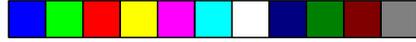




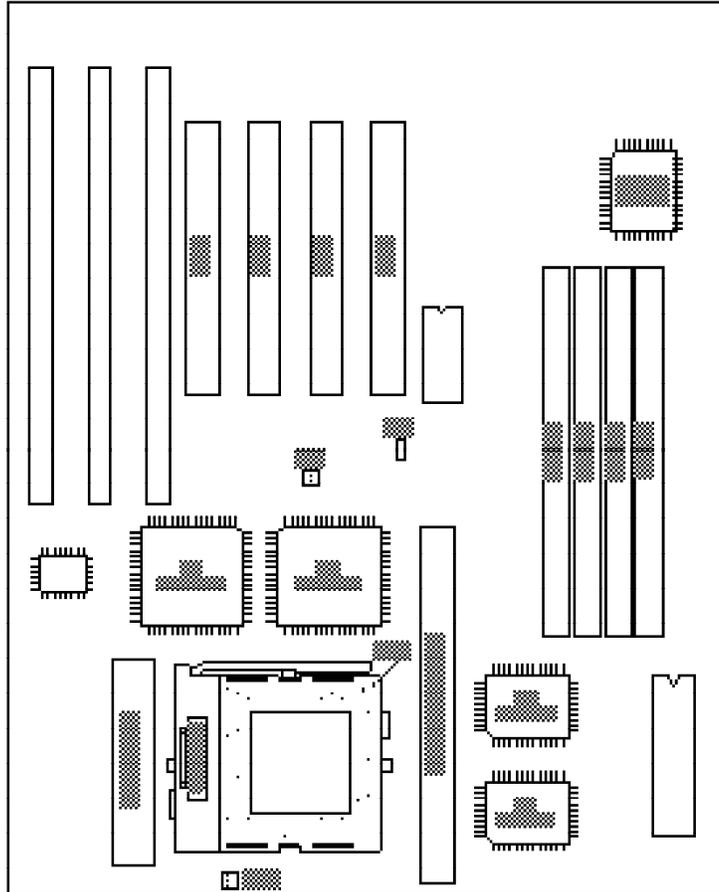
CPU Installation

The G586IPBAW is equipped with a 321-pin Zero Insertion Force (ZIF) socket at location U31 of the system board. The ZIF socket let you easily upgrade your CPU as your system needs grow. Make sure all jumpers are set correctly before applying power, or you may damage the CPU or system board.





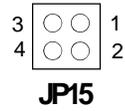
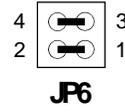
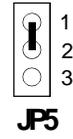
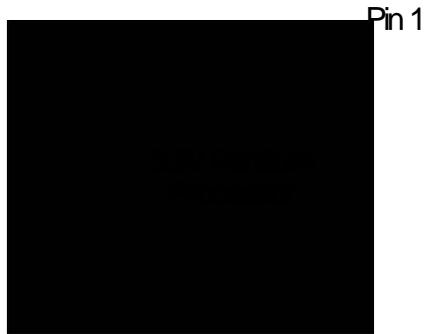
Jumper Settings for CPU



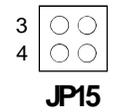
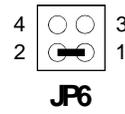
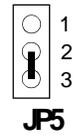
Locations of Jumpers JP5, JP6 and JP15
on the system board



75MHz Pentium Processor (3.3V) jumper setting
System (External) Bus Speed: 50MHz



3.3V Pentium Processor (90MHz)*
System (External) Bus Speed: 60MHz

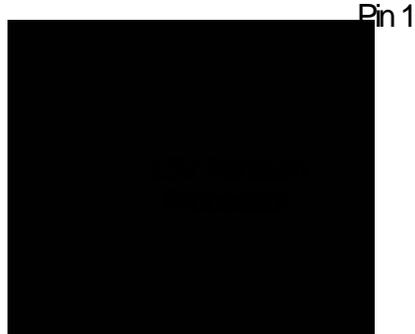


* Default Setting

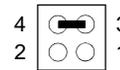




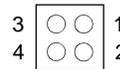
3.3V Pentium Processor (100MHz)
System (External) Bus Speed: 66MHz



JP5



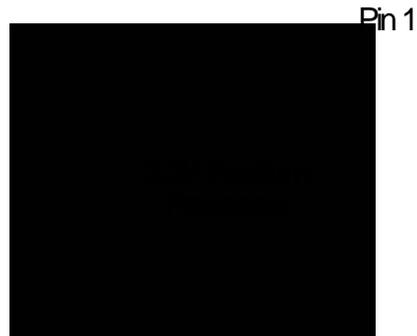
JP6



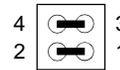
JP15



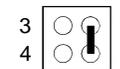
3.3V Pentium Processor (100MHz)
System (External) Bus Speed: 50MHz



JP5



JP6

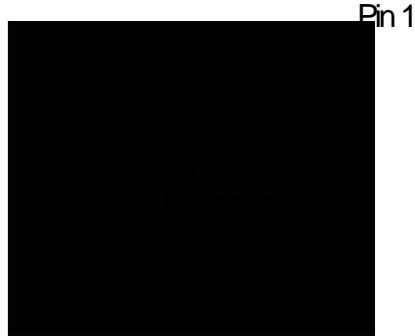


JP15

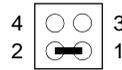




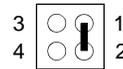
3.3V Pentium Processor (120MHz)
 System (External) Bus Speed: 60MHz



JP5

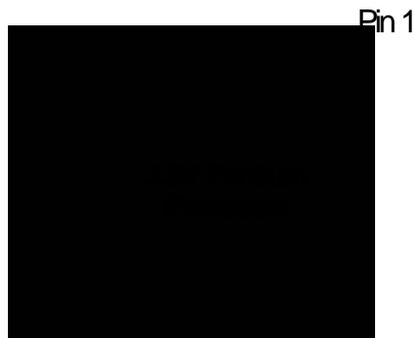


JP6

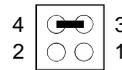


JP15

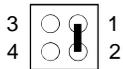
3.3V Pentium Processor (133MHz)
 System (External) Bus Speed: 66MHz



JP5



JP6

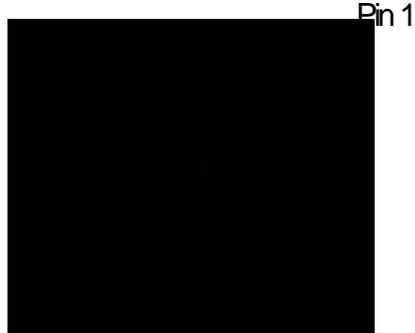


JP15

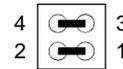




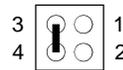
3.3V Pentium Processor (150MHz)
 System (External) Bus Speed: 50MHz



JP5

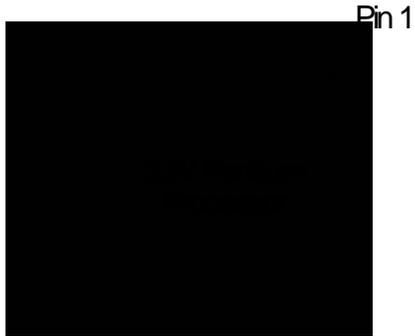


JP6

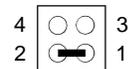


JP15

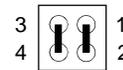
3.3V Pentium Processor (150MHz)
 System (External) Bus Speed: 60MHz



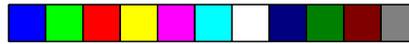
JP5



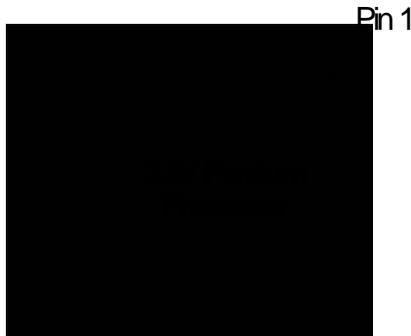
JP6



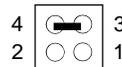
JP15



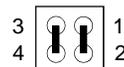
3.3V Pentium Processor (166MHz)
System (External) Bus Speed: 66MHz



JP5



JP6



JP15

Upgrade CPU Installation

The G586IPB/W is equipped with a 321-pin Zero Insertion Force (ZIF) socket at location U31 of the system board. This socket is designed for easy removal of an old CPU and easy insertion of an upgrade CPU. The socket allows you to carefully place the new CPU into its position. If you need to apply excessive force to insert the CPU, you are not installing the CPU correctly.

Warning:

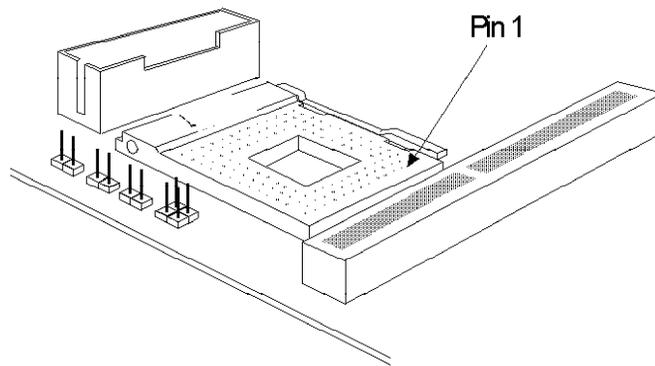
Open the socket only if you are actually installing a CPU. The warranty on the original CPU will be voided if the S/N seal is broken.

Do not change any factory CPU speed jumper settings. You do not need to change any jumpers to properly install the 3.3V Pentium Upgrade Processor.

Before proceeding with the upgrade, take note of the following. The microprocessor and heat sink may be hot if the system has been running. To avoid the possibility of a burn, power the system off and let the processor and heat sink cool for 10 minutes.



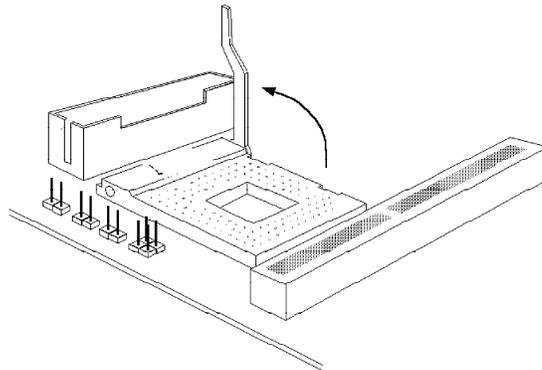
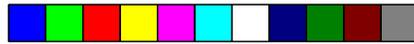
The 321-pin ZIF socket consists of five rows of pin holes on each side. To prevent improper OverDrive Processor installation, the ZIF socket has a Plug/Keying mechanism. Several holes in the socket are plugged so OverDrive Processors will go in only one way. If you cannot easily insert the OverDrive Processor, verify that pin 1 of the CPU is aligned with pin 1 of the socket. A warning note — be extremely careful to match pin 1 of the CPU with pin 1 of the socket. Only Intel's OverDrive Processor is keyed to prevent improper placement in the ZIF socket. Other Intel CPUs, as well as CPUs from other vendors, can be placed incorrectly and will be permanently damaged if incorrectly placed.



Zero Insertion Force (ZIF) Socket

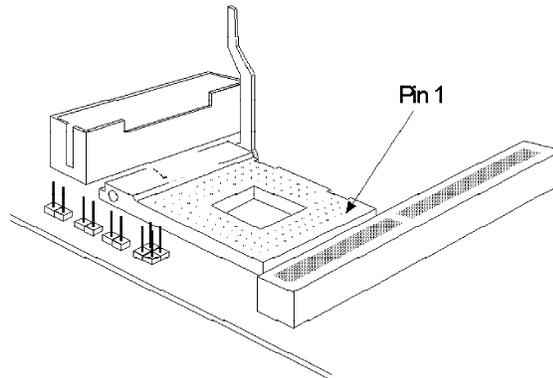
To install an upgrade CPU, do the following.

1. Make sure the handle on the side of the ZIF socket is up. To raise the handle, push it down, slightly pull it out to the side, then raise it as far as it will go. The top plate will slide back. Do not use screwdrivers or other tools to open the socket, or you may damage the system or socket. It may be necessary to initially apply a small amount of sideways force to free the handle from its retaining "tab." Once clear of the "tab," the handle will open relatively easily.

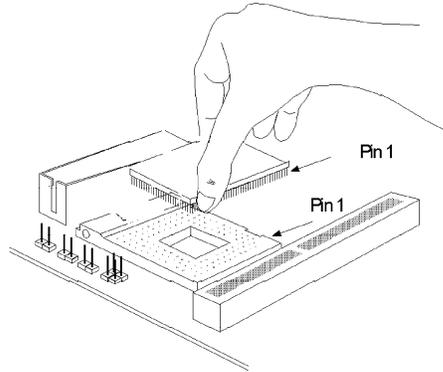


Lifting the Handle

2. Once the lever is completely up, remove the old CPU carefully by lifting it straight out of the socket. You are now ready to insert the new CPU.



3. Position the CPU above the ZIF socket. Make sure pin 1 of the CPU is aligned with pin 1 of the socket. Lower the chip until the pins are inserted properly in their corresponding holes. Remember that very little force is needed to install the CPU. If the CPU is not easily inserted, verify whether or not pin 1 of the CPU is aligned with pin 1 of the socket. Applying too much pressure can damage the CPU or the socket.



Positioning the CPU Above the ZIF Socket

4. Push the handle down until the handle locks into place. The top plate will slide forward. You will feel some resistance as the pressure starts to secure the CPU in the socket. This is normal and will not damage the CPU. However, if the handle is not completely closed, damage to the CPU and/or system board may result.

Clearance Requirements

The 3.3V Pentium Upgrade Processor comes with a heat sink mounted on top. To maintain proper airflow once the upgrade is installed on the system board, the processor and heatsink require certain space clearances.

The clearance above 3.3V Pentium Upgrade Processor's fan/heat-sink must be at least 0.4 inches. The clearance on at least 3 of 4 sides of the processor must be at least 0.2 inches. The cables (for floppy drive, hard drive, CD-ROM, etc.) must be routed clear of the CPU and its airspace.



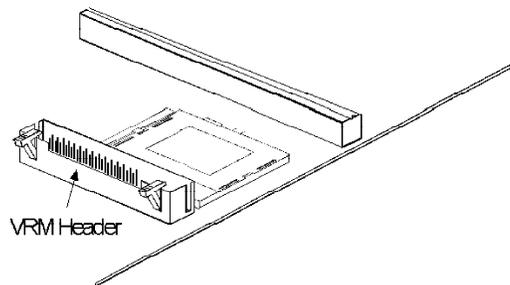
Fan Exhaust

The CPU must be kept cool by using a fan exhaust configuration in connection with the heatsink. The temperature of the air entering the fan/heatsink cannot exceed 45°C (113°F). The ambient or room temperature must be below 37°C (99°F) for a system installed with the 3.3V Pentium Upgrade Processor.

In order to provide proper airflow to the CPU, all movable obstructions (power supply cables, cards, floppy disk cables) must be clear of the CPU fan/heatsink component in accordance with the space clearance discussed in the CPU installation section of this manual.

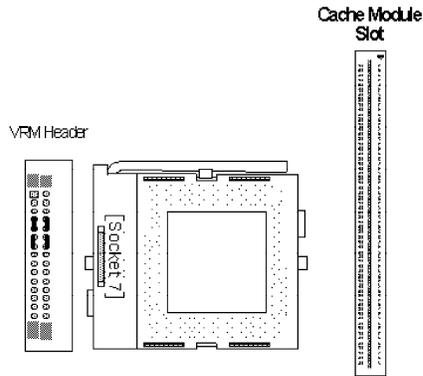
VRM Header

Your G586IPB/W system board is equipped with a VRM (Voltage Regulation Module) header shown below. It allows you to upgrade to future low-voltage CPUs by installing a Voltage Regulation Module.



VRM Header and 3.3V Pentium Processor

When using a 3.3V Pentium processor, pins A4-A5, A6-A7, B4-B5 and B6-B7 must be set to On. These settings are presented on the next page.

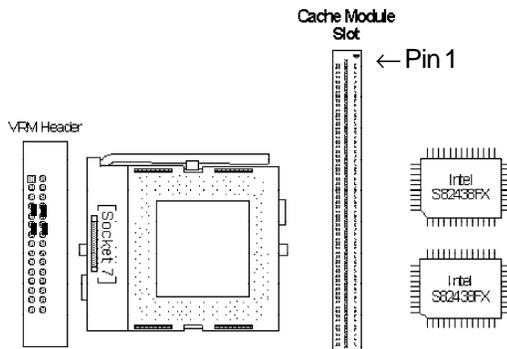


Pins A4-A5, A6-A7, B4-B5 and B6-B7 are set to On

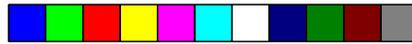
Cache Configuration

The G586IPB/W system board supports 3.3V pipelined burst or asynchronous cache SRAM installed in the 160-pin cache module slot. The board can be configured to the following cache sizes: 256KB and 512KB.

Installing the Cache Module



Cache Module Slot

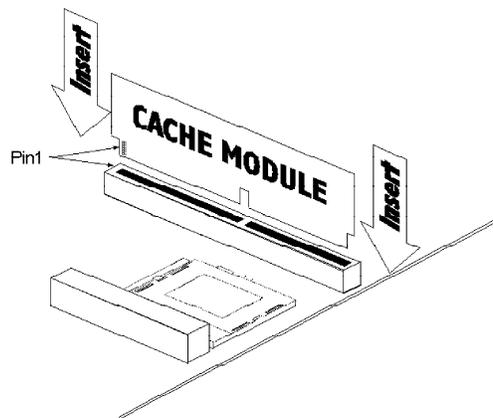


1. Locate the 160-pin cache module slot on the system board.
Position the cache module above the slot. Make sure pin 1 of the cache module is aligned with pin 1 of the slot. Carefully slide the module into the slot. Press firmly on the top of it to seat it properly.

Note:

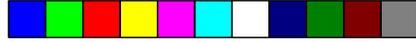
You do not need to modify any jumpers when you install the cache module.

2. Once the cache module has been installed, make sure the “External Cache” option in the “BIOS Features Setup” menu of the Award BIOS CMOS Setup Utility is set to “Enabled”.

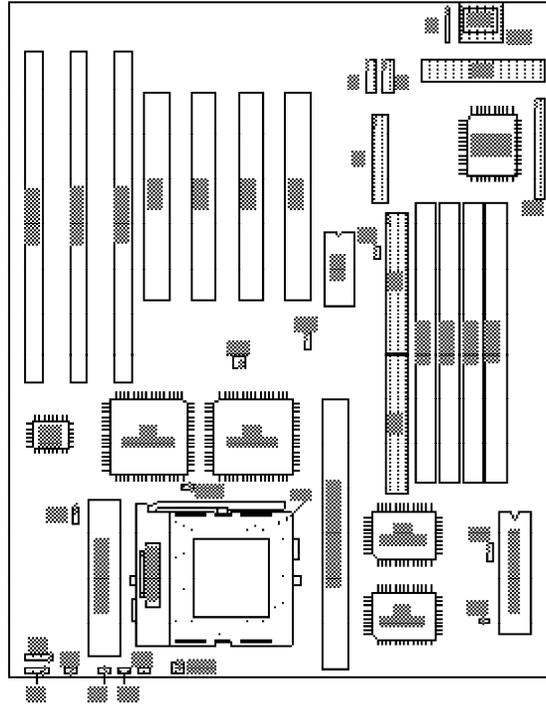


Note:

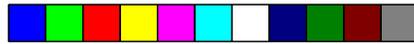
With the cache module installed in the cache module slot, the length of the add-on card in PCI Slot 1 is limited to 205mm only if its components protrude more than 5mm from the components and/or solder side of the card.



Board Configuration



Locations of Jumpers and Connectors on the system board



Jumper Settings

Jumper JP2 Password Clear

If you set a password in the "Password Setting" option and forget your password, power off your system and set Jumper JP2 to On to clear the password stored in your CMOS. Now power on your system. After your system has detected the floppy or hard drive, turn it off again and set JP2 to Off.



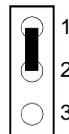
JP2 Off: Normal
(Default)



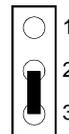
JP2 On: Password
Clear

Jumper JP3 Display Type Select

Jumper JP3 sets the display adapter to color or mono. This jumper must match the type of display adapter installed. If you change your video adapter, make sure this jumper is changed accordingly.



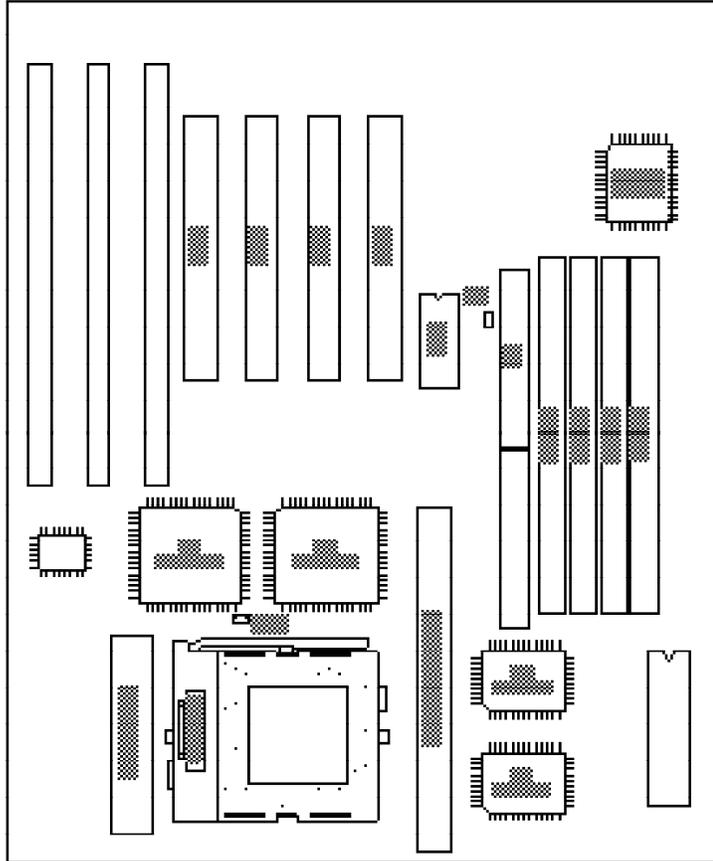
JP3, Pins 1-2 On :
Color (Default)



JP3, Pins 2-3 On:
Mono

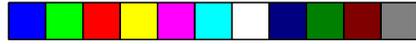


Jumpers JP11 and J50



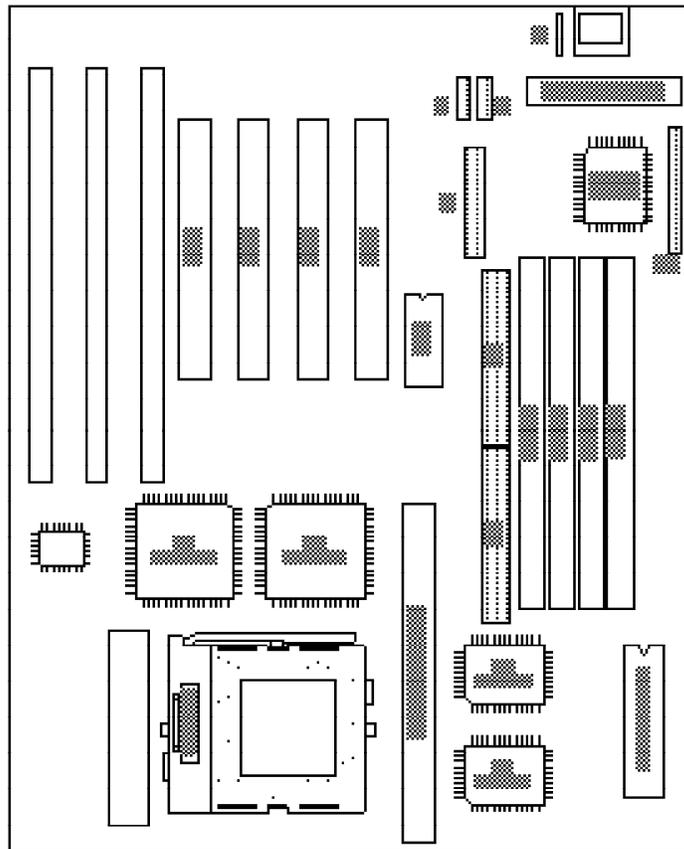
The following jumpers are for factory testing only and should always be set to their default configurations. Reconfiguring these jumpers will cause problems with your system board.

JP11, J50: Off

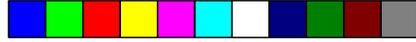


Built-in Ports

The G586IPB/W system board is equipped with two serial ports, one SPP parallel printer port, one FDD connector, one PS/2 mouse connector and two IDE hard disk shrouded headers.



Locations of the Built-In Ports on the system board



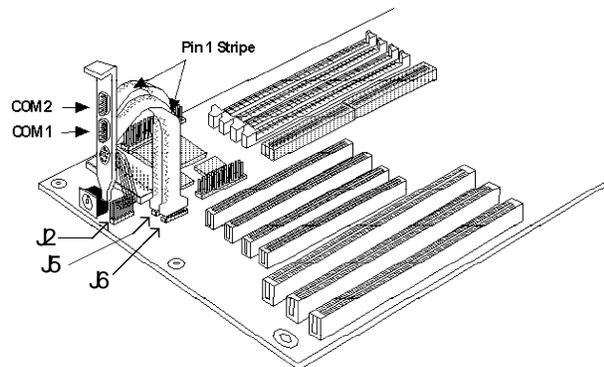
Serial Ports

The built-in serial ports are RS-232C asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices. They use the following system I/O addresses:

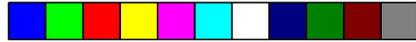
Port Configuration	I/O Address
COM1	3F8h
COM2	2F8h

Connecting the Serial Ports

Two DB-9P serial port cables are provided with the motherboard. They are mounted on a card-edge bracket along with the PS/2 mouse cable. The upper serial port cable should be used for the COM 1 primary serial port; connect it to connector J6 on the motherboard. The lower serial port cable should be used for the COM 2 secondary serial port; connect it to connector J5 on the motherboard. Make sure the colored stripes on the ribbon cables align with pin 1 of connectors J6 and J5. Mount the card-edge bracket to the system chassis.

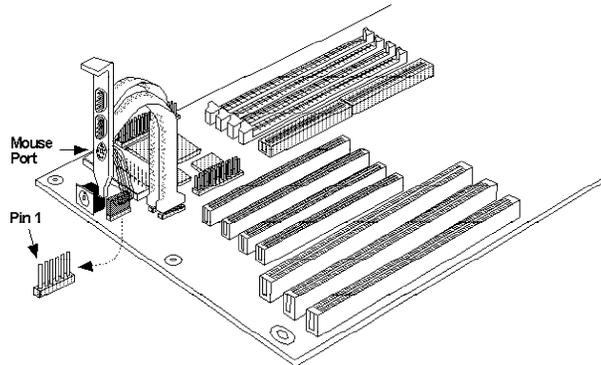


The Primary and Secondary Serial Ports



PS/2 Mouse Port

The PS/2 mouse port is a 6-pin connector on the system board. Attach the 6-pin mouse port cable, which came in the G586IPBW box, to connector J2. Make sure the brown wire on the PS/2 mouse connector aligns with pin 1 of connector J2.



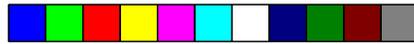
The PS/2 Mouse Port on the G586IPBW System Board

Parallel Port

The G586IPBW system board has a standard connector for interfacing your PC to a parallel printer. The parallel port on your system board can be set to any of the following system I/O addresses:

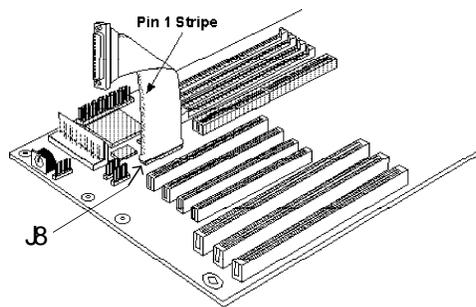
I/O Address: 3BC-3BE Hex
378-37A Hex *
278-27A Hex

* Default setting



Connecting the Parallel Printer Port

Attach the DB-25S printer port cable, which came with the motherboard, to Connector J8 on the G586IPB/W system board. Make sure the colored stripe on the ribbon cable aligns with pin 1 of connector J8. Use a small nutdriver to mount the cable into a DB-25 cutout in the system chassis.

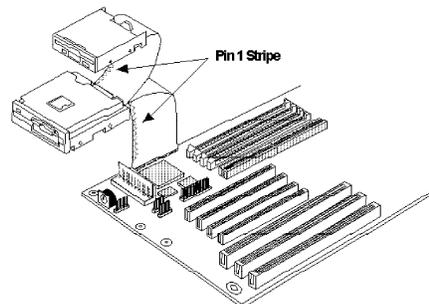


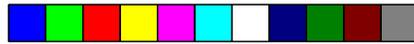
The Parallel Printer Port on the G586IPB/W system board

Floppy Disk Drive Controller

The G586IPB/W system board has a built-in floppy disk controller that supports two standard floppy disk drives. You can install any 720KB/1.2MB/1.44MB floppy disk drives.

Connecting the Floppy Disk Cable





Step 1

Install the 34-pin header connector into the floppy disk connector (J10) on the system board. The colored edge of the ribbon should be aligned to pin 1 of the J10 connector.

Step 2

Install the other 34-pin header connector(s) into the disk drive(s) with the colored edge of the daisy chained ribbon cable aligned with pin 1 of the drive edge connector(s). The end-most connector should be attached to the drive you want to designate as Drive A.

IDE Hard Disk Interface

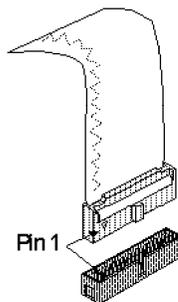
The G586IPB/W system board is equipped with two PCI IDE shrouded headers that will interface four IDE (Integrated Drive Electronics) hard disk drives.

Note:

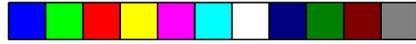
Only IDE drives can be connected to the IDE interface.

Connecting the IDE Hard Disk Interface

To prevent improper IDE cable installation, each PCI IDE shrouded header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

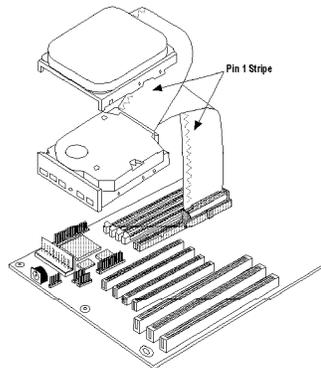


PCI IDE Shrouded Header



Note:

The IDE cable with a standard 40-pin connector can be installed in the PCI IDE shrouded header. Be extremely careful to match the colored edge of the ribbon with pin 1 of the header.



**The IDE Hard Disk Connector on the
G586IPBW system board**

Step 1

If you are connecting two hard drives, install the 40-pin connector of the IDE cable into the primary IDE shrouded header (connector J12). If you are adding a third or fourth IDE device, install the 40-pin connector of the other IDE cable into the secondary IDE shrouded header (connector J11).

Step 2

Install the other 40-pin header connector(s) into the device with the colored edge of the ribbon cable aligned to pin 1 of the drive edge connector(s).

Note:

Refer to your disk drive user's manual for information about selecting proper drive switch settings.



Adding a Second IDE Hard Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives. No changes are needed on the G586IPBW system board when adding a second hard drive.

We recommend that the IDE hard drives be from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the G586IPBW system board.

Preparing an IDE Drive for Use

IDE disk drives are already low-level formatted, with any bad-track errors entered, when shipped by the drive manufacturer. Do not attempt to do a low-level format or you may cause serious damage to the drive.

To use an IDE drive, you need to enter the drive type (this information is provided by the drive manufacturer) into the system's CMOS setup table. Then run FDISK and FORMAT provided with DOS.

Warning:

Do not run FDISK and FORMAT programs on a drive that has already been formatted, or you will lose all programs and data stored on the drive

Expansion Cards Installation

The G586IPBW is equipped with four PCI and three ISA slots. All four PCI slots are bus masters. One PCI slot and one ISA slot are shared. You can only install one card in one or the other of the shared slots at a time; you cannot install devices in both slots.



Due to the size of the CPU with its accompanying heatsink/fan component, the length of the add-on cards in PCI slot 2, 3 and 4 is limited to 205mm (measured from the bracket of the card).

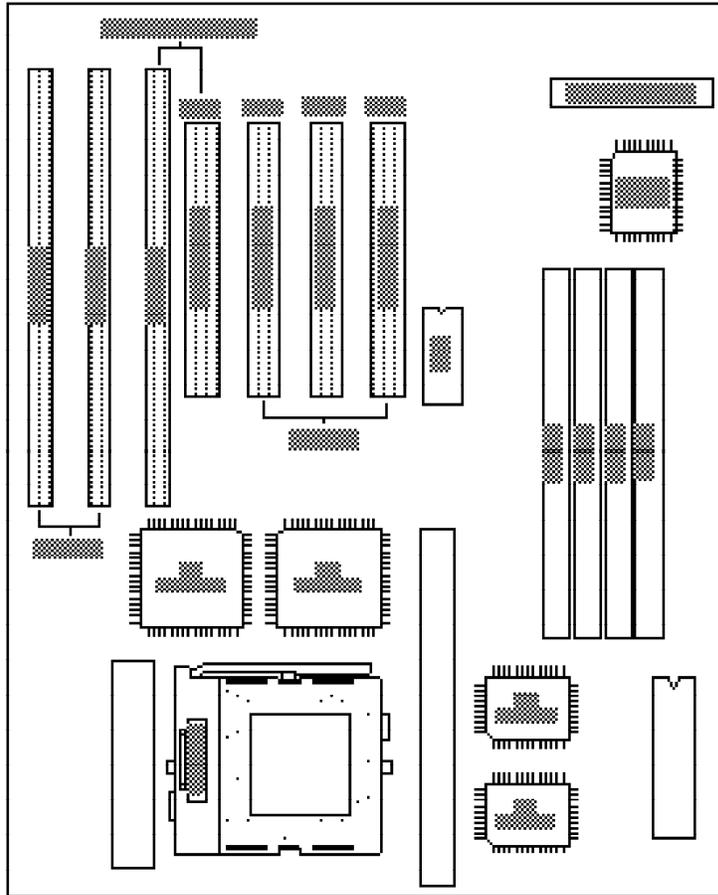
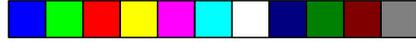
The length of the add-in card in PCI slot 1 is limited to 205mm only if its components protrude more than 5mm from the components and/or solder side of the card.

The locations of the expansion slots are shown on the next page

Note:

The BIOS needs to be configured for the PCI add-on cards installed in the PCI slots. Refer to the "PCI Configuration Setup" chapter presented in the "Initial Setup Program" section of the manual.





Expansion Slots on the G586IPB/W system board



Chapter 3 Initial Setup Program

After you power up your system, the BIOS message appears on your screen and the memory count begins.

After the memory test, the following message will appear on the screen:

Press DEL to enter setup

If the message disappears before you respond, restart your system or press the “Reset” button on the front of your computer. You may also restart the system by pressing the <Ctrl> <Alt> and keys at the same time. If you do not press these keys at the correct time and the system does not boot, the following error message will appear:

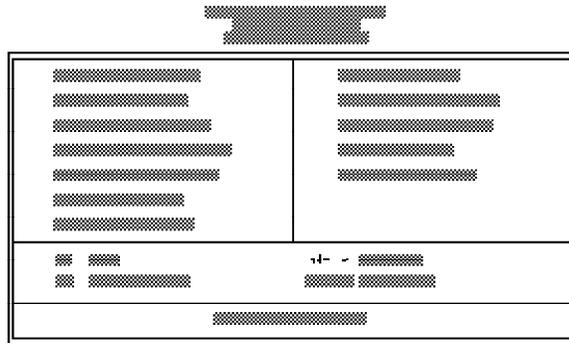
Press Del to enter Setup

If you have set a password and selected “System” in the Security Option of the BIOS Feature Setup menu, you will be prompted for the password everytime the system is rebooted or any time you try to enter Setup. Type in the correct password and press <Enter>.

If you selected “Setup” in the Security Option, you will be prompted for the password only when you try to enter Setup. Refer to the “BIOS Features Setup” section for more information.

Award BIOS CMOS Setup Utility

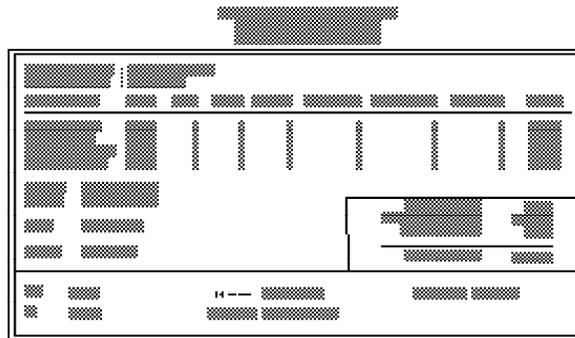
Press <Ctrl> <Alt> <Esc> simultaneously or to enter the Setup utility. A screen similar to the one on the next page will appear.



Use the arrow keys to highlight the option you want and press <Enter>.

Standard CMOS Setup

Use the arrow keys to highlight "Standard CMOS Setup" and press <Enter>, a screen similar to the one below will appear.



Date and Time

This selection sets the time and date for the system. Press <F3> for the calendar. These items cannot be altered; they are detected and displayed automatically.





Hard Drive Type

This allows you to enter the appropriate specifications for the type of hard disk drive(s) installed in your system. Under the “Type” category, you can select Auto, User, one of 46 predefined drive specifications or None.

Auto

This option indicates that the parameters for your hard disk drive(s) will be automatically detected and displayed when you boot your system.

By default, the LBA mode is selected for a hard disk drive larger than 528 Megabytes. If you decide not to accept the LBA mode, you can either specify your selection in the “IDE HDD Auto Detection” menu, or use the User option described below.

User

This type is user definable and allows you to enter the specifications yourself directly from the keyboard. Six categories of information are required: Size, Cylinders, Heads, Precomp, LandZone and Sectors. This information should be provided by your hard disk vendor or system manufacturer. However, we recommend you use the “IDE HDD Auto Detection” which provides a more efficient way to setup your hard drive.

46 Predefined Drive Specifications

The tables on pages 76 and 77 give complete listings of the available drive types. Any given hard drive must be set to one specific drive type number. Please refer to your hard disk documentation for the appropriate type number.

None

Select <None> and press <Enter> if a hard drive is not installed.



Drive A and Drive B

These options are used to select the type of floppy disk drives installed in your system. If neither drive is present, select "None". Make sure you choose the correct drive type; otherwise, your system might format the device improperly.

Video

This is used to select the type of video adapter installed in your system.

Halt on

This category controls whether the system will halt in case an error is detected during power up.

No Errors: The system boot will not stop for any detected errors.

All Errors: The system will stop whenever the BIOS detects a non-fatal error.

All, But Keyboard: The system will stop for any error except a keyboard error.

All, But Diskette: The system will stop for any error except a disk error.

All, But Disk/Key: The system will stop for any error except a keyboard or disk error.

Memory

The lower right hand corner shows the base memory size, extended memory size, and the other memory size of your system. You cannot alter these items; your computer automatically detects and displays them.

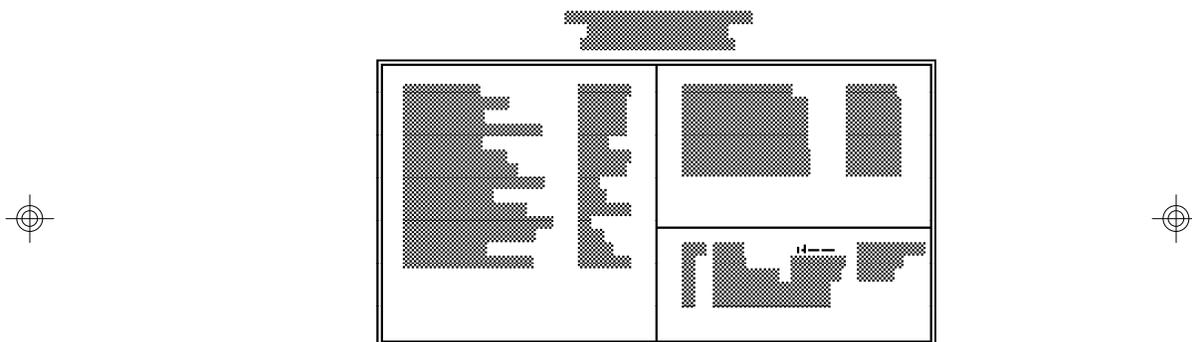


The Other Memory size refers to the memory located in the 640K to 1024K address space. This is the memory used for different applications. DOS uses this area to load device drivers to free base memory for application programs.

When you are through making changes in the Standard CMOS Setup, press <Esc> to return to the main menu.

BIOS Features Setup

Use the arrow keys to highlight “BIOS Features Setup” and press <Enter>, a screen similar to the one below will appear.



The Virus Warning option may be set to “Enabled” or “Disabled”. When enabled, the BIOS issues a warning when any program or virus sends a Disk Format command or attempts to write to the boot sector of the hard disk drive. If you are installing or running certain operating systems such as Windows 95, please disable the Virus Warning or the operating system may not install nor work.

If you choose “System” in the Security Option, you will be prompted for a password every time you cold boot your system or access setup. If you choose “Setup”, you will be prompted for a password only when trying to access setup.





Use the arrow keys to move the highlight bar to the option you wish to change or modify. Use the <Page Up>, <Page Down>, <+> or <-> keys to make the corresponding changes. Press <Esc> after making the changes to return to the main menu.

Chipset Features Setup

The G586IPB/W uses the Intel Triton chipset. The Chipset Features Setup allows you to modify some functions to optimize system performance. It also allows you to enable, disable or select the port address of the built-in serial ports, parallel port, floppy disk controller and hard disk controller.

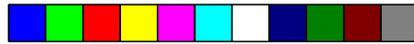
If you press <Enter>, a screen similar to the one below will appear.



Use the arrow keys to move the highlight bar to the option you wish to change or modify. Use the <Page Up>, <Page Down>, <+> or <-> keys to make the corresponding changes.

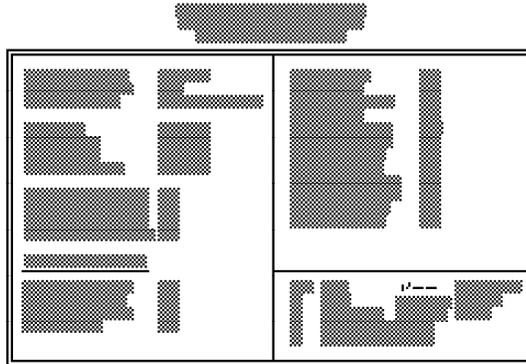
If the changes you made are incorrect or you change your mind, press <F6> or <F7> to return to the default settings. Press <Esc> after making the changes to return to the main menu.





Power Management Setup

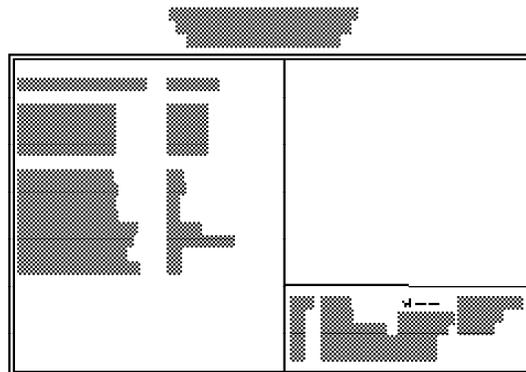
Use the arrow keys to highlight “Power Management Setup” and press <Enter>. A screen similar to the one below will appear.



Choosing “Enabled” in the Power Management option will allow you to set Doze Mode, Standby Mode and Suspend Mode. Choose “Disabled” if you do not want your system to enter the power saving mode.

PCI Configuration Setup

Use the arrow keys to highlight “PCI Configuration Setup” and press <Enter>; a screen similar to the one below will appear.





The G586IPBAW system board supports four PCI slots. Each slot may be assigned INT A, B, C, D if the card installed in the slot requires an interrupt. Each INT may then be assigned an IRQ value. This is done automatically if the “PnP BIOS Auto-Config” option is enabled.

Load BIOS Defaults

The “Load BIOS Defaults” option loads the troubleshooting default values permanently stored in the ROM chips. These settings are non-optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main screen and press <Enter>. The message below will appear.

Load BIOS Defaults (Y/N)? N

If you want to proceed, press <Y> and the default settings will be loaded.



Load Setup Defaults



The “Load Setup Defaults” option loads optimized settings from the BIOS ROM. Use the Setup default values as standard values for your system.

Highlight this option on the main menu and press <Enter>. The message below will appear.

Load Setup Defaults (Y/N)? N

Type <Y> and press <Enter> to load the Setup default values.

Password Setting

If you want to set a password, make sure that the Security Option under the BIOS Features Setup is set to “System” or “Setup”. Refer to the BIOS Features Setup option for more information.





Use the arrow keys to highlight the Password Setting option and press <Enter>. The message below will appear.

Enter Password:

Type in the password. You are limited to eight characters. Type in a password that is eight characters long or shorter. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. Otherwise, enter a new password.

To delete or disable the password function, simply press <Enter> instead of typing in a new password. Press the <Esc> key to return to the main menu.



IDE HDD Auto Detection

This option detects the hard disk parameters for the hard disk drives installed in your system. Highlight this option and press <Enter>. A screen similar to the one below will appear.





Enter your choice, and press <Enter> to accept the parameters or press <Esc> to abort. The parameters of the hard disk will be displayed in the Standard CMOS Setup.

Hard Drive Mode

The G586IPB/W supports three HDD modes: Normal, LBA and Large. If your hard disk drive does not support LBA mode, the "LBA" option will not be displayed. If your HDD has 1024 or fewer cylinders, the "Large" option will not be displayed.

Normal Mode

The Normal mode is the generic access mode in which neither the BIOS nor the IDE controller will make any transformations during hard-drive access.

The maximum number of cylinders, heads and sectors for Normal mode are 1024, 16 and 63, respectively.

	no. Cylinders	(1024)
x	no. Heads	(16)
x	no. Sectors	(63)
x	bytes per sector	(512)

528 Megabyte

If you set your HDD to Normal mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) Mode

The LBA mode is a new HDD accessing method to overcome the 528 Megabyte limitation. The number of cylinders, heads and sectors shown on the screen may not be the actual number for the HDD.



During the HDD accessing, the IDE controller will transform the logical address described by the sector, head and cylinder number into its own physical address inside the HDD.

The maximum HDD size supported by the LBA mode is 8.4 Gigabytes. It is obtained by the following formula.

$$\begin{array}{r}
 \text{no. Cylinders} \quad (1024) \\
 \times \text{no. Heads} \quad (225) \\
 \times \text{no. Sectors} \quad (63) \\
 \times \text{bytes per sector} \quad (512) \\
 \hline
 8.4 \text{ Gigabyte}
 \end{array}$$

Large Mode

The Large mode is the extended HDD access mode supported by the G586IPBW system board. Some IDE HDDs have more than 1024 cylinders without LBA support (in some cases, you may not want the LBA mode). The system board provides another alternative to support these kinds of HDD.

The BIOS tells the operating system that the number of cylinders is 1/2 of actual and that the number of heads is double the actual. During the disk access, the reverse conversion is done by the INT13h routine.

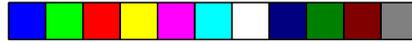
Example of Large mode:

CYLS.	HEADS	SECTORS	MODE
1120	16	59	NORMAL
560	32	59	LARGE

Maximum HDD size:

$$\begin{array}{r}
 \text{no. Cylinders} \quad (1024) \\
 \times \text{no. Heads} \quad (32) \\
 \times \text{no. Sectors} \quad (63) \\
 \times \text{bytes per sector} \quad (512) \\
 \hline
 1 \text{ Gigabyte}
 \end{array}$$



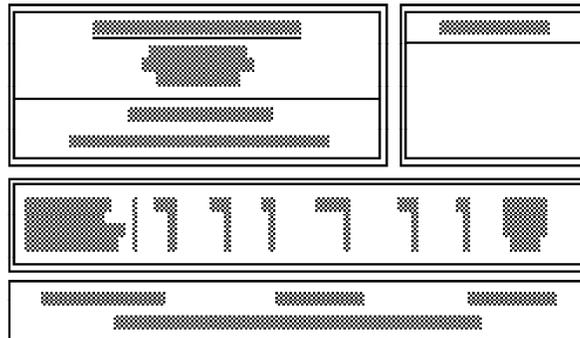


Note:

To support LBA or Large mode, address translation software is included in the Award BIOS HDD Service Routine (INT13h). If you are running an operating system that bypasses the BIOS Int13 Service Routine, LBA and Large Mode may fail.

HDD Low Level Format

This option will format, set the interleave mode and do a media analysis of your hard drives. Highlight this option and press <Enter>. A screen similar to the one below will appear.



Warning:

Do not attempt to do a low-level format, or you may cause serious damage to the drive. IDE disk drives are already low-level formatted, with any bad-track errors entered, when shipped by the drive manufacturer.

Use the arrow keys to select an option and press <Enter> to accept the option. Press <Esc> when done.



Save & Exit Setup

When all the changes have been made, highlight “Save & Exit Setup” and press <Enter>. The message below will appear:

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

Type “Y” and press <Enter>. The following message will appear:

Reboot System (Y/N)? N

Type “Y” and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or after memory testing is done.

Exit Without Saving



When you do not want to save the changes you have made, highlight this option and press <Enter>. The message below will appear:

Quit Without Saving (Y/N)? N

Type “Y” and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or after memory testing is done.





System Error Report

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and a message PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP will be shown in the information box at the bottom.

POST Beep

There is one beep code in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. Insert a system disk into Drive A and press <Enter>. If the system normally boots from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.



DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also, be sure the correct hard drive type is selected in Setup (refer to page 76).

ERROR INITIALIZING HARD DISK CONTROLLER

Cannot initialize controller. Make sure the card is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also, check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If no floppy drive is installed, be sure the Diskette Drive selection in Setup is set to NONE.

KEYBOARD ERROR OR NO KEYBOARD PRESENT

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

MEMORY ADDRESS ERROR AT...

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.



MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Memory has been added or removed since the last boot. Enter Setup and enter the new memory size in the memory fields.

MEMORY VERIFY ERROR AT...

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT

This will be displayed at the bottom screen when an error occurs that requires a reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT

When BIOS detects a Non-Maskable Interrupt condition during boot, this will allow NMI to be disabled and continue to boot. You can also reboot the system with the NMI enabled.

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT...

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL simultaneously.



Chapter 4 IDE Device Driver

To install the IDE device driver supported by the G586IPB/W board, please refer to the "Readme" file contained in the provided diskette.





Chapter 5 Troubleshooting Checklist

If you experience difficulty with the G586IPBW system board, please refer to the checklist below. If you still cannot identify the problem, please contact your dealer.

1. Check the jumper settings to ensure that the jumpers are properly set. If in doubt, refer to the “Board Configuration” section.
2. Verify that all SIMMs are seated securely into the bank sockets.
3. Make sure the SIMMs are in the correct locations.
4. Check that all populated memory banks are filled with correctly sized SIMMs.
5. If your board fails to function, place the board on a flat surface and seat all socketed components (gently press each component into the socket).
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.



Appendix A Types of Modules

The G586IPB/W system board allows you to populate memory with 1Mx36, 2Mx36, 4Mx36 and 8Mx36 SIMMs. The following modules have been tested with this board. Most untested brands will work but a few may fail to do so.

For 1Mx36 SIMMs

Brand	ChipNumber
OKI	M514400A-70SJ

For 2Mx36 SIMMs

Brand	ChipNumber
NEC	4218160-60
Micron	MT4C4001JDJ-60
Micron	MT4C4007JDJ-70(EDO)

For 4Mx36 SIMMs

Brand	ChipNumber
NEC	4217400-60
Mitsubishi	M51M417400BJ-70



Appendix B Memory & I/O Maps

Memory Address Map

Address	Name	Function
0000000 to 009FFFF	640KB System Board RAM	System Board Memory
00A0000 to 00BFFFF	128KB Video Display Memory	Reserved for Graphics Display Memory
00C0000 to 00E7FFF	160KB I/O Expansion ROM	Reserved for ROM on I/O Adapter Card
00E8000 to 00FFFFFF	96KB ROM on the System Board	System Board BIOS
0100000 to 3FFFFFF	Maximum Memory 128MB	System Board Memory

IO Address Map

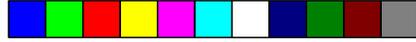
IO Address	Function
000-01F	DMA Controller 1, 8237A-5
020-03F	Interrupt Controller 1, 8259A, Master
040-05F	Timer, 8254-2
060-06F	8742 (Keyboard Controller)
070-07F	Real-time Clock, NMI (Non-maskable Interrupt) Mask
080-09F	DMA Page Memory, 74LS612
0A0-08F	Interrupt Controller 2, 8259A
0C0-0DF	DMA Controller 2, 8237A-5
0E8	Shadow RAM and Cache Control Bit
0F0	Clear Numeric Processor Extension Busy
0F1	Reset Numeric Processor Extension
0F8-0FF	Numeric Processor Extension
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1
380-38F	SDLC, Bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BF	Monochrome Display and Printer Adapter
3C0-3CF	Reserved
3D0-3DF	Color/Graphics Monitor Adapter
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1

Note:

The I/O address hex 000 to 0FF are reserved for the system board I/O.
Hex 100 to 3FF are available on the I/O channels.

Appendix C PCI I/O Pin Assignments

Component Side B		Solder Side A
-12V	-01 -	TRST#
TCK	-02 -	+12V
Ground	-03 -	TMS
TDO	-04 -	TDI
+5V	-05 -	+5V
+5V	-06 -	INTA#
INTB#	-07 -	INTC#
INTD#	-08 -	+5V
PRSENT1#	-09 -	Reserved
Reserved	-10 -	+5V (I/O)
PRSENT2#	-11 -	Reserved
Ground	-12 -	Ground
Ground	-13 -	Ground
Reserved	-14 -	Reserved
Ground	-15 -	RST#
CLK	-16 -	+5V (I/O)
Ground	-17 -	GNT#
REQ#	-18 -	Ground
+5V (I/O)	-19 -	Reserved
AD[31]	-20 -	AD[30]
AD[29]	-21 -	+3.3V
Ground	-22 -	AD[28]
AD[27]	-23 -	AD[26]
AD[25]	-24 -	Ground
+3.3V	-25 -	AD[24]
C/BE[3]#	-26 -	IDSEL
AD[23]	-27 -	+3.3V
Ground	-28 -	AD[22]
AD[21]	-29 -	AD[20]
AD[19]	-30 -	Ground
+3.3V	-31 -	AD[18]
AD[17]	-32 -	AD[16]
C/BE[2]#	-33 -	+3.3V
Ground	-34 -	FRAME#
IRDY#	-35 -	Ground
+3.3V	-36 -	TRDY#
DEVSEL#	-37 -	Ground
Ground	-38 -	STOP#
LOCK#	-39 -	+3.3V
PERR#	-40 -	SDONE
+3.3V	-41 -	SBO#
SERR#	-42 -	Ground
+3.3V	-43 -	PAR
C/BE[1]#	-44 -	AD[15]
AD[14]	-45 -	+3.3V
Ground	-46 -	AD[13]
AD[12]	-47 -	AD[11]
AD[10]	-48 -	Ground
Ground	-49 -	AD[09]
AD[08]	-52 -	C/BE[0]#
AD[07]	-53 -	+3.3V
+3.3V	-54 -	AD[06]
AD[05]	-55 -	AD[04]
AD[03]	-56 -	Ground
Ground	-57 -	AD[02]
AD[01]	-58 -	AD[00]
+5V (I/O)	-59 -	+5V (I/O)
ACK64#	-60 -	REQ64#
+5V	-61 -	+5V
+5V	-62 -	+5V



Appendix D ISA IO Pin Assignments

B		A
Grnd	- 01 -	-I/OChck
ResetDrv	- 02 -	SD7
+5VDC	- 03 -	SD6
IRQ9	- 04 -	SD5
-5VDC	- 05 -	SD4
DRQ2	- 06 -	SD3
-12VDC	- 07 -	SD2
OVS	- 08 -	SD1
+12VDC	- 09 -	SD0
Grnd	- 10 -	-I/OChrdy
-SEMEMV	- 11 -	AEN
-SEMEMR	- 12 -	SA19
-IOW	- 13 -	SA18
-IOR	- 14 -	SA17
-Dack3	- 15 -	SA16
-DRQ3	- 16 -	SA15
-Dack1	- 17 -	SA14
DRQ1	- 18 -	SA13
-Refresh	- 19 -	SA12
CLK	- 20 -	SA11
IRQ7	- 21 -	SA10
IRQ6	- 22 -	SA9
IRQ5	- 23 -	SA8
IRQ4	- 24 -	SA7
IRQ3	- 25 -	SA6
-Dack2	- 26 -	SA5
TTC	- 27 -	SA4
Bale	- 28 -	SA3
+5VDC	- 29 -	SA2
OSC	- 30 -	SA1
Grnd	- 31 -	SA0

D		C
-MemCS16	- 01 -	SB-E
-I/OCS16	- 02 -	LA23
IRQ10	- 03 -	LA22
IRQ11	- 04 -	LA21
IRQ12	- 05 -	LA20
IRQ13	- 06 -	LA19
IRQ14	- 07 -	LA18
-Dack0	- 08 -	LA17
DRQ0	- 09 -	-Memr
-Dack5	- 10 -	-Memw
DRQ5	- 11 -	SD08
-Dack6	- 12 -	SD09
DRQ6	- 13 -	SD10
-Dack7	- 14 -	SD11
DRQ7	- 15 -	SD12
+5VDC	- 16 -	SD13
-Master	- 17 -	SD14
Grnd	- 18 -	SD15

Appendix E System Overview

DMA Channels

DMA Controller 1	DMA Controller 2
Ch0-Reserved for User	Ch4-Cascade for CTRL 1
Ch1-Reserved for User	Ch5-Reserved for User
Ch2-Diskette	Ch6-Reserved for User
Ch3-Reserved for User	Ch7-Reserved for User

Note:

*DMA controller 1 supports 8-bit data transfer.
DMA controller 2 supports 16-bit data transfer.*

Address Generation for DMA Channels 3 to 0

Source	DMA Page Memory	DMA Controller 1
Address	A23 ↔ A16	A15 ↔ A0

Address Generation for DMA Channels 7 to 5

Source	DMA Page Memory	DMA Controller 2
Address	A23 ↔ A17	A16 ↔ A1

Page Memory Address

I/O Port Address	Page Memory
0081H	DMA Channel 2
0082H	DMA Channel 3
0083H	DMA Channel 1
0087H	DMA Channel 0
0089H	DMA Channel 6
008AH	DMA Channel 7
008BH	DMA Channel 5

System Interrupts

Interrupt Controller 1	Interrupt Controller 2
IRQ0-Timer Output (Out 0)	IRQ8-Realtime Clock INT
IRQ1-Keybaord (Output Buffer Full)	IRQ9-Software Redirected to INT 0AH (IRQ2)
IRQ2-Interrupt from INTR2	IRQ10-Reserved
IRQ3-Serial Port 2	IRQ11-Reserved
IRQ4-Serial Port 1	IRQ12-PS/2 Mouse
IRQ5-Parallel Port 2 or 3 *	IRQ13-Coprocessor
IRQ6-Diskette Controller	IRQ14-Primary Fixed Disk Controller (1F0)
IRQ7-Parallel Port 1 or 2 *	IRQ15-Secondary Fixed Disk Controller (170)

* The one on-board parallel port can be configured to either Parallel Port 1, 2 or 3. Parallel Port 1 uses I/O address 3BCh, Parallel Port 2 I/O address 378h, and Parallel Port 3 uses I/O address 278H.

Note:

The 16 levels of system interrupts have the following priority:
 IRQ0>IRQ1>IRQ8>IRQ9>IRQ10>IRQ11> IRQ12>IRQ13>IRQ14>
 IRQ15>IRQ3>IRQ4>IRQ5> IRQ6>IRQ7.

System Timers

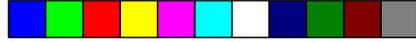
Channel 0	Channel 1	Channel 2
System Timer (IRQ0)	Refresh Request Generator (15us Rate Generator Period Signal)	Tone Generation for Speaker



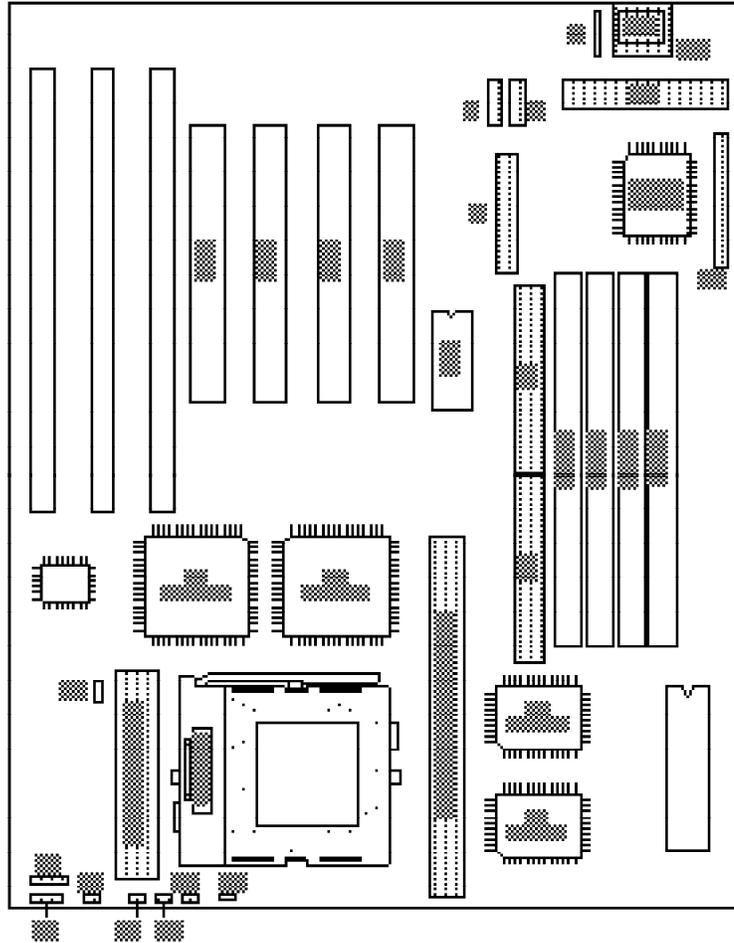
Real-Time Clock

Address	Function
00	Seconds
01	Second Alarm
02	Minutes
03	Minute Alarm
04	Hours
05	Hour Alarm
06	Day of Week
07	Date of Month
08	Month
09	Year
0A	Register A
0B	Register B
0C	Register C
0D	Register D





Appendix F Connector Pin Assignments



Locations of Connectors on the system board



Connector J2
PS/2 Mouse Connector

Pin	Function
1	Mouse Data
2	Reserved
3	Ground
4	+5V
5	Mouse Clock
6	Reserved

J5 (COM2) and J6 (COM1)
Secondary (COM2) and Primary (COM1) Serial Ports

Pin	Function
1	DCD (Data Carrier Detect)
2	RX (Receive Data)
3	TX (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground (Signal Ground)
6	DSR (Data Set Ready)
7	RTS (Request to Send)
8	CTS (Clear to Send)
9	RI (Ring Indicator)



Connector J8
Parallel Printer Port

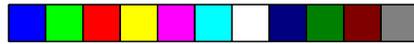
Pin	Function
1	-Strobe
2	Data 0
3	Data 1
4	Data 2
5	Data 3
6	Data 4
7	Data 5
8	Data 6
9	Data 7
10	-Ack
11	Busy
12	Paper Empty
13	Select
14	-Autofd
15	-Error
16	-Init
17	-Sctin
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	Ground
24	Ground
25	Ground





Connector J10
 Floppy Disk Drive Connector

Pin	Function
1	Ground
2	DENSEL
3	Ground
4	Re-
5	served
6	Ground
7	Drate0
8	Ground
9	Index
10	Ground
11	MTR0
12	Ground
13	DR1
14	Ground
15	DR0
16	Ground
17	MTR1
18	Drate1
19	Dir
20	Ground
21	Step
22	Ground
23	Write
24	Data
25	Ground
26	Write
27	Gate
28	Ground
29	Track 0
30	MSEN
31	Wr
32	Protect
33	Ground



Connectors J11 and J12 Secondary/Primary IDE Hard Disk Drive Connectors

Pin	Function
1	-Reset
2	Ground
3	D7
4	D8
5	D6
6	D9
7	D5
8	D10
9	D4
10	D11
11	D3
12	D12
13	D2
14	D13
15	D1
16	D14
17	D0
18	D15
19	Ground
20	Reserved
21	Reserved
22	Ground
23	-IOV
24	Ground
25	-IOR
26	Ground
27	Reserved
28	BALE
29	Reserved
30	Ground
31	IRQ
32	IOCS16
33	SA1
34	Reserved
35	SA0
36	SA2
37	HCS0
38	HCS1
39	LED
40	Ground



Connector J13
VRM Header

Pin	Function
A1	Ground
A2	Ground
A3	Not
A4	Connected
A5	VIO
A6	3.3V
A7	3.3V
A8	VCORE
A9	VCORE
A10	Ground
A11	VCORE
A12	PWDGO
A13	Sense
A14	Ground
A15	5V
B1	5V
B2	Ground
B3	Ground
B4	VIO
B5	VIO
B6	3.3V
B7	3.3V
B8	VCORE
B9	VCORE
B10	VCORE
B11	VCORE
B12	UPVRM#
B13	Disabled
B14	Ground
B15	5V





Connector J14
Fan Connector

Pin	Function
1	Ground
2	+12V
3	Ground

Connector J15
Power LED/Keylock Connector

Pin	Function
1	LED Signal
2	Reserved
3	Ground
4	Keylock Signal
5	Ground

Connector J16
Primary/Secondary IDE LED Connector

Pin	Function
1	Signal
2	VCC

Connector J17
Green LED Connector

Pin	Function
1	Signal
2	VCC



Connector J18
Reset Switch Connector

Pin	Function
1	Ground
2	Reset

Connector J19
Green Button Connector

Pin	Function
1	Ground
2	Signal

Connector J20
Speaker Connector

Pin	Function
1	Signal
2	Ground
3	Signal
4	Ground

Connector CN1
PS/2 Keyboard Connector

Pin	Function
1	Keyboard Data
2	Reserved
3	Ground
4	+5V
5	Keyboard Clock
6	Reserved





Connector CN2
AT Keyboard Connector

Pin	Function
1	Keyboard Clock
2	Keyboard Data
3	Reserved
4	Ground
5	+5V

Connector PL1
Power Connector

Pin	Function
1	Power Good
2	+5V
3	+12V
4	-12V
5	Ground
6	Ground
7	Ground
8	Ground
9	-5V
10	+5V
11	+5V
12	+5V



Connector SSM1
Cache Module Slot

Pin	Function
1	Ground
2	T100
3	T102
4	T106
5	T104
6	RSVD
7	VCC3
8	TWE#
9	CADS#/CAA3
10	Ground
11	CWE4#
12	CWE6#
13	CWE0#
14	CWE2#
15	VCC3
16	CCS#/CAB4
17	GWE#
18	BWE#
19	Ground
20	A3
21	A7
22	A5
23	A11
24	A16
25	VCC3
26	A18
27	Ground
28	A12
29	A13
30	ADSP#
31	ECS1#/(CS#)
32	ECS2#
33	PD1
34	PD3
35	Ground
36	CLK1
37	Ground
38	D62
39	VCC3
40	D60
41	D68
42	D66

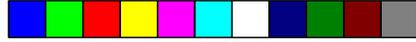




Pin	Function
43	Ground
44	D54
45	D52
46	D50
47	D48
48	Ground
49	D46
50	D44
51	D42
52	VCC3
53	D40
54	D38
55	D36
56	Ground
57	D34
58	D32
59	D30
60	VCC3
61	D28
62	D26
63	D24
64	Ground
65	D22
66	D20
67	D18
68	VCC3
69	D16
70	D14
71	D12
72	Ground
73	D10
74	D8
75	D6
76	VCC3
77	D4
78	D2
79	D0
80	Ground
81	Ground
82	TI01
83	TI07
84	TI05
85	TI03
86	RSVD
87	VCC5



Pin	Function
88	RSVD
89	CADV#/CAA4
90	Ground
91	COE#
92	CWE5#
93	CWE7#
94	CWE1#
95	VCC5
96	CWE3#
97	CAB3
98	CALE
99	Ground
100	RSVD
101	A4
102	A6
103	A8
104	A10
105	VCC5
106	A17
107	Ground
108	A9
109	A14
110	A15
111	RSVD
112	PD0
113	PD2
114	PD4
115	Ground
116	CLK0
117	Ground
118	F63
119	VCC5
120	D61
121	D59
122	D57
123	Ground
124	D55
125	D53
126	D51
127	D49
128	Ground
129	D47
130	D45
131	D43
132	VCC5



Pin	Function
133	D41
134	D39
135	D37
136	Ground
137	D35
138	D33
139	D31
140	VCC5
141	D29
142	D27
143	D25
144	Ground
145	D23
146	D21
147	D19
148	VCC5
149	D17
150	D15
151	D13
152	Ground
153	D11
154	D9
155	D7
156	VCC5
157	D5
158	D3
159	D1
160	Ground



Appendix G Award BIOS Hard Disk Table

Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
1	10	306	4	17	128	305	TEAC SD510, MMI 112, 5412
2	20	615	4	17	300	615	Seagate ST225, ST4026
3	30	615	6	17	300	615	
4	62	940	8	17	512	940	
5	46	940	6	17	512	940	
6	20	615	4	17	None	615	Seagate ST125, Tandon TM262
7	30	462	8	17	256	511	
8	30	733	5	17	None	733	Tandon TM 703
9	112	900	15	17	None	901	
10	20	820	3	17	None	820	
11	35	855	5	17	None	855	
12	49	855	7	17	None	855	
13	20	306	8	17	128	319	Disctron 526, MMI M125
14	42	733	7	17	None	733	
15				(Reserved)			
16	20	612	4	17	0	663	Microscience HH725, Syquest 3250, 3425
17	40	977	5	17	300	977	
18	56	977	7	17	None	977	
19	59	1024	7	17	512	1023	
20	30	733	5	17	300	732	
21	42	733	7	17	300	732	
22	30	306	5	17	300	733	Seagate ST4038
23	10	977	4	17	0	336	
24	40	1024	5	17	None	976	Seagate ST4051
25	76	1224	9	17	None	1023	Seagate ST4096
26	71	1224	7	17	None	1223	Maxtor 2085
27	111	1224	11	17	None	1223	Maxtor 2140, Priam S14
28	152	1024	15	17	None	1223	Maxtor 2190, Priam S19



Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
29	68	1024	8	17	None	1023	Maxtor 1085, Micropolis 1325
30	93	918	11	17	None	1023	Maxtor 1105 1120, 4780
31	83	925	11	17	None	1023	Maxtor 1170
32	69	1024	9	17	None	926	CDC 9415
33	85	1024	10	17	None	1023	
34	102	1024	12	17	None	1023	
35	110	1024	13	17	None	1023	
36	119	1024	14	17	None	1023	
37	17	1024	2	17	None	1023	
38	136	1024	16	17	None	1023	
39	114	918	15	17	None	1023	Maxtor 1140, 4380
40	40	820	6	17	None	820	Seagate ST251
41	42	1024	5	17	None	1023	Seagate 4053
42	65	1024	5	26	None	1023	Miniscribe 3053/6053 RLL
43	40	809	6	17	None	852	Miniscribe 3650
44	61	809	6	26	None	852	Miniscribe 3675 RLL
45	100	776	8	33	None	775	Conner CP3104
46	203	684	16	38	None	685	Conner CP3204
User Defined							