



# **G586VPB**

**Rev. 0**  
**System Board**  
**User's Manual**



**- D26850410 -**





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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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## ❖ *Introduction*

The G586VPB is an Energy Star Compliant system board that supports the Environmental Protection Agency's Green PC requirements. It reduces energy consumption by automatically turning off peripherals, or the entire system, when not in use.

The G586VPB system board offers several advanced features integrated into the system board. Its design is based on the Peripheral Component Interconnect (PCI) and Industry Standard Architecture (ISA) standards.

The G586VPB supports a 320-pin Zero Insertion Force (ZIF) CPU socket. The board supports Flash EPROM, a memory chip for the storage of BIOS which can be erased in bulk or modified using a software utility. The ZIF socket allows users to easily upgrade the CPU.

The G586VPB is equipped with three dedicated PCI slots, one shared PCI/ISA slot and three dedicated 16-bit ISA slots.

The G586VPB can be configured to several different sizes of memory up to 128MB using 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 SIM modules.



G586VPB

## ***Features and Specifications***

### **Processor**

- Intel Pentium™ (3.3V) 75/90/100/120MHz

### **Chipset**

- VIA - VT82C575MV: system and cache controller  
VT82C576MV: PCI bus controller  
VT82C416MV: integrated clock generator, real time clock, keyboard controller and PS/2 mouse  
VT82C577MV: data buffer

### **Architecture**

- PCI/ISA

### **Power Management**

- Normal, Doze, Sleep and Suspend modes
- System event monitoring with two event classes and two idle timers
- Predefined and user programmable I/O range
- Primary and secondary interrupt differentiation for individual channels
- Two extended peripheral timers and one general purpose timer
- Clock stretching, clock throttling and clock stop control
- Multiple internal and external SMI sources for flexible power management
- Microsoft APM 1.1 compliant

### **BIOS**

- Award Plug & Play BIOS
- Flash EPROM for easy BIOS upgrades



## Green PCI/ISA System Board

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### Enhanced PCI IDE Interface

- Supports fast Mode 3 and Mode 4 hard drivers
- Two IDE connectors to control four drives (e.g. two HDDs, one tape drive and one CD-ROM drive)

### Super I/O Interface

- Two NS16C550A-compatible enhanced serial ports
- One parallel port with ECP/EPP support
- Supports 360KB, 720KB, 1.2MB and 1.44MB floppy drives
- Software configurable
- Uses UMC UM8663AF super-I/O controller

### Cache Memory

- 256KB, 512KB, 1MB or 2MB direct map write-back cache
- Uses 32Kx8, 64Kx8 or 128Kx8 SRAM: pure 3.3V or 3.3/5V mixed voltage SRAM

### Memory

- Normal and EDO DRAM support
- Up to 128MB
- Four 72-pin SIMM sockets, two banks
- Supports single and/or double density SIMMs
- 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 or 8Mx36 SIMMs
- Supports 60ns or 70ns page mode DRAM

### Expansion Slots

- Three dedicated PCI slots
- One shared PCI/ISA slot
- Three dedicated 16-bit ISA slots





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**G586VPB**

**ZIF Socket**

- 320-pin ZIF socket (Intel Socket 5)

**Board Dimensions**

- 33cm (13") x 22cm (8.66")



**Introduction ◆ 1-4**





Green PC/ISA System Board

## ***Package Checklist***

The G586VPB package contains the following items:

- The G586VPB system board
- The G586VPB user's manual
- ... driver diskette(s)
- One 34-pin floppy disk drive cable
- Two 40-pin IDE hard disk cables
- One 25-pin printer port cable for chassis mounting
- One card-edge bracket with serial and mouse port cables

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



## ❖ *Installation Overview*

This chapter summarizes the steps in installing the G586VPB 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 2-4 and 2-5 for the number and type of HSIM 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. 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 soft surfaces such as beds and carpeted floors which can hinder air circulation. These areas also attract static electricity which can damage some circuits on your system board.

Be sure that 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 protection socket. This will protect the system board from damage that may result from a power surge on the 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 G586VPB 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) Do all preparation work on a static-free surface with components facing up.
- 3) 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.
- 4) 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 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***

### ***Memory Installation***

The G586VPB system board can support up to 128MB of memory using HSIM modules. HSIM is an acronym for High Density Single In-line Memory.

An HSIM module consists of several RAM chips soldered onto a small circuit board. An HSIM module connects to the system board via a 72-pin card-edge connector.

The SIMM sockets are divided into two banks. Bank 0 consists of SIM3 and SIM4 SIMM sockets, and Bank 1 consists of SIM1 and SIM2 SIMM sockets. Please note that you can use either Bank 0 or Bank 1 to boot your system.

The G586VPB system board uses 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 SIM modules.

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

**Note:**

*Make sure that the SIMM sockets belonging to the same Bank (e.g. SIM3 and SIM4 - Bank 0) contain the same type of DRAM. If you instal two different types of DRAM in one bank, the system will not boot.*



Green PC/ISA System Board

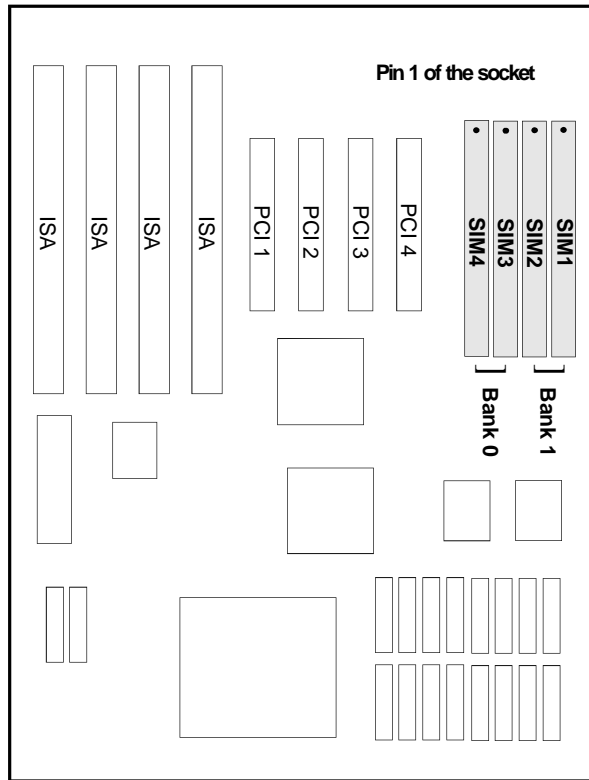
MemorySize	Bank0	Bank1
2MB	256Kx36	-
4MB	256Kx36	256Kx36
4MB	512Kx36	-
6MB	256Kx36	512Kx36
6MB	512Kx36	256Kx36
8MB	512Kx36	512Kx36
8MB	1Mx36	-
10MB	256Kx36	1Mx36
10MB	1Mx36	256Kx36
12MB	512Kx36	1Mx36
12MB	1Mx36	512Kx36
16MB	1Mx36	1Mx36
16MB	2Mx36	-
18MB	256Kx36	2Mx36
18MB	2Mx36	256Kx36
20MB	512Kx36	2Mx36
20MB	2Mx36	512Kx36
24MB	1Mx36	2Mx36
24MB	2Mx36	1Mx36
32MB	2Mx36	2Mx36
32MB	4Mx36	-
34MB	256Kx36	4Mx36
34MB	4Mx36	256Kx36
36MB	512Kx36	4Mx36
36MB	4Mx36	512Kx36
40MB	1Mx36	4Mx36
40MB	4Mx36	1Mx36
48MB	2Mx36	4Mx36
48MB	4Mx36	2Mx36
64MB	4Mx36	4Mx36
64MB	8Mx36	-
66MB	256Kx36	8Mx36
66MB	8Mx36	256Kx36
68MB	512Kx36	8Mx36
68MB	8Mx36	512Kx36
72MB	1Mx36	8Mx36
72MB	8Mx36	1Mx36

2-4 ♦ Installation Overview

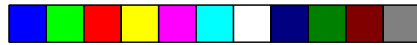


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MemorySize	Bank0	Bank1
80MB	2Mx36	8Mx36
80MB	8Mx36	2Mx36
96MB	4Mx36	8Mx36
96MB	8Mx36	4Mx36
128MB	8Mx36	8Mx36



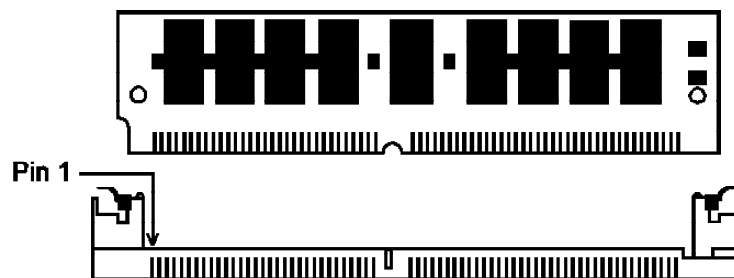
Locations of the SIMM Sockets on the System Board



## Green PC/ISA System Board

### *Installing the Modules*

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



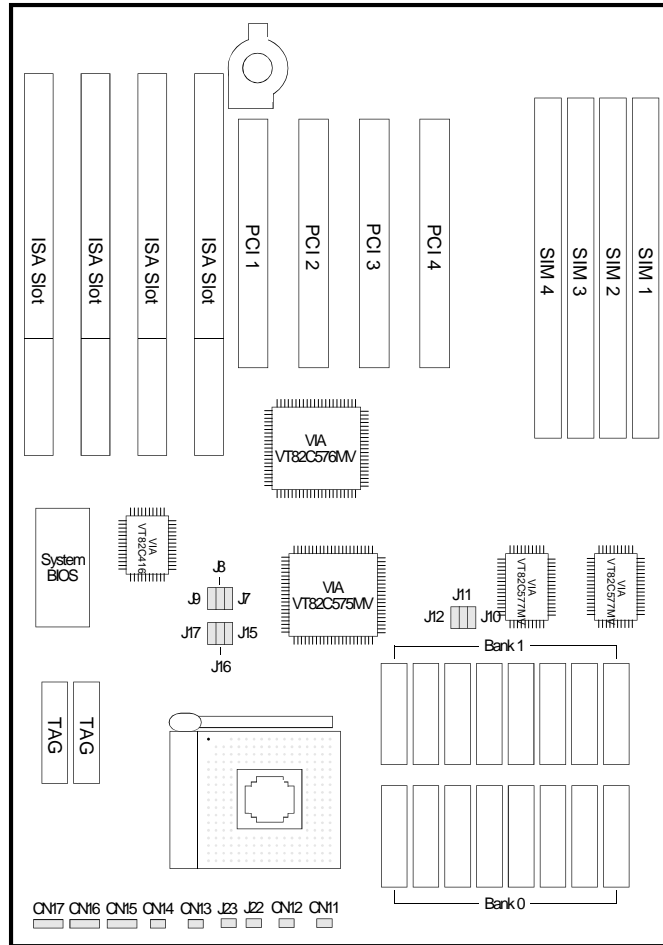
1. Position the HSIM module above the socket with the “notch” in the module aligned with the “key” on the socket.
2. Seat the module at a 45° angle into the bank. Make sure it is completely seated. Tilt the module upright until it locks in place in the socket.





G586VPB

## Board Configuration



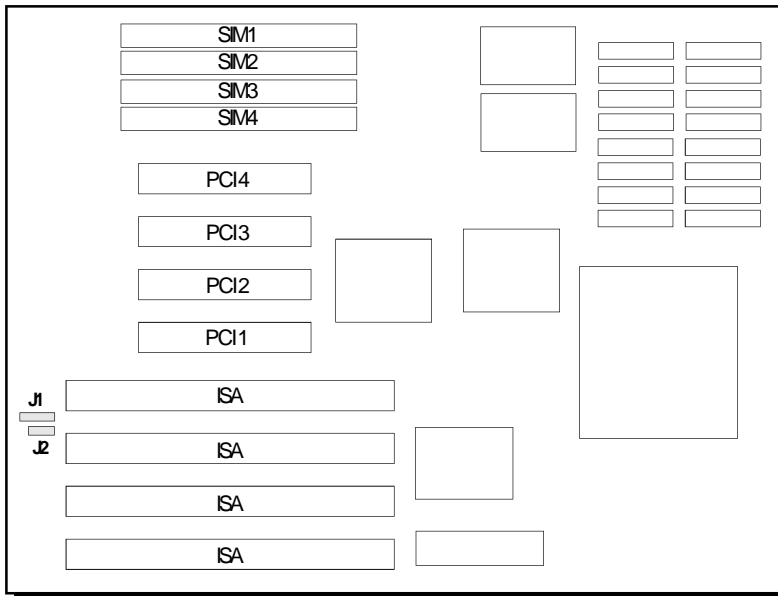
Locations of Jumpers and Connectors on the G586VPB System Board



Green PC/ISA System Board

### *Jumper Settings*

#### Jumper Settings for Internal Battery/CMOS Clean Select

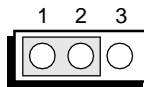


**Locations of Jumpers J1 and J2 on the G586VPB System Board**

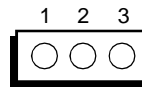


### Jumpers/Connectors J1 and J2 Internal Battery/CMOS Clean Select

The G586VPB comes with an internal battery. If you experience difficulty with the internal battery, or you prefer to connect an external battery, set Jumper J2 to Off and connect an external battery to Connector J1.



**J2**: Internal Battery Enabled (Default)

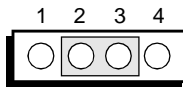


**J2 Off**: External Battery Enabled

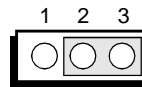
### Connector J1 External Battery Connector

Pin	Function
1	Ext. Bat. Input
2	N. C.
3	GND
4	GND

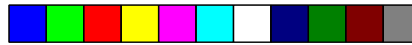
If the CMOS becomes corrupted, the system can be configured with the default values stored in the ROM chips. To load the default values, change the setting of Jumper J2 to pins 2-3 On. Set Jumper J1 pins 2-3 to On.



**J1 pins 2-3 On**: CMOS Clean



**J2 pins 2-3 On**: CMOS Clean



## Green PC/ISA System Board

### Note:

*After the CMOS has been reset, you must set Jumper J2 to Internal or External Battery Enable. If you set the jumper to External Battery Enable, make sure you connect an external battery to Connector J1.*

### Summary:

	J1	J2
Internal Battery	Off	1-2 On
External Battery	On*	Off
CMOS Clean	2-3 On	2-3 On

\* External battery must be connected to Connector J1.

### Caution:

*The G586VPB system board uses 3V Lithium internal battery. Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.*

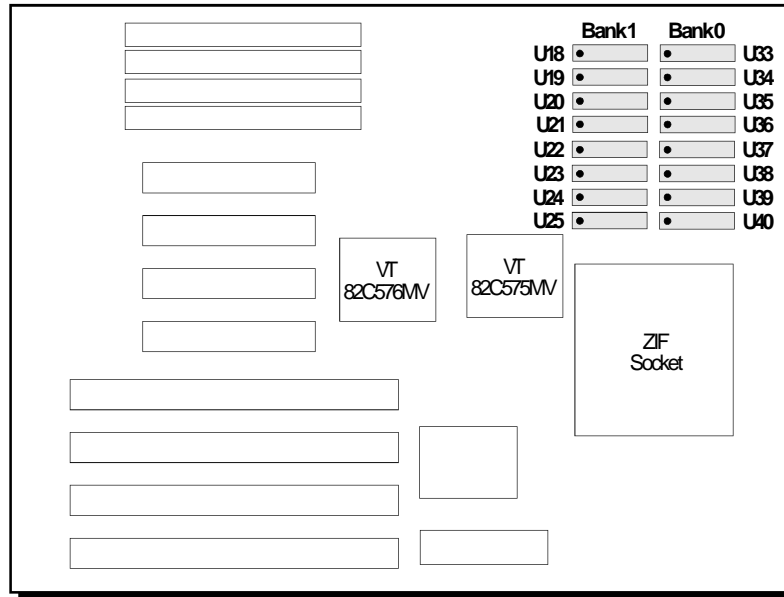
### Cache Configuration

The G586VPB system board can be configured to four different cache sizes: 256KB (Default size), 512KB, 1MB and 2MB. Either 32Kx8, 64Kx8 or 128Kx8 SRAM chips are used for cache depending on the size of cache desired. The G586VPB supports both pure 3.3V and 3.3/5V mixed voltage SRAM. The brands of SRAM that passed a factory testing are shown on the next page.



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Brand/Model	CacheSize	TypeofSRAM
Winbond: W24M257AK-15	(32Kx8)	Mixed voltage SRAM
UMC: UM61M256K-15	(32Kx8)	Mixed voltage SRAM
ISSI: IS61LV256-15	(32Kx8)	Pure3.3VSRAM
Alliance: ASTC3256-15	(32Kx8)	Pure3.3VSRAM

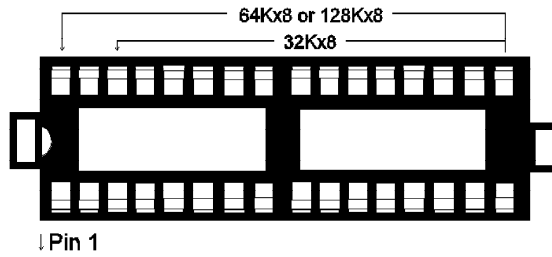


• Pin 1 of the SRAM socket

### Locations of SRAM sockets on the G586VPB System Board

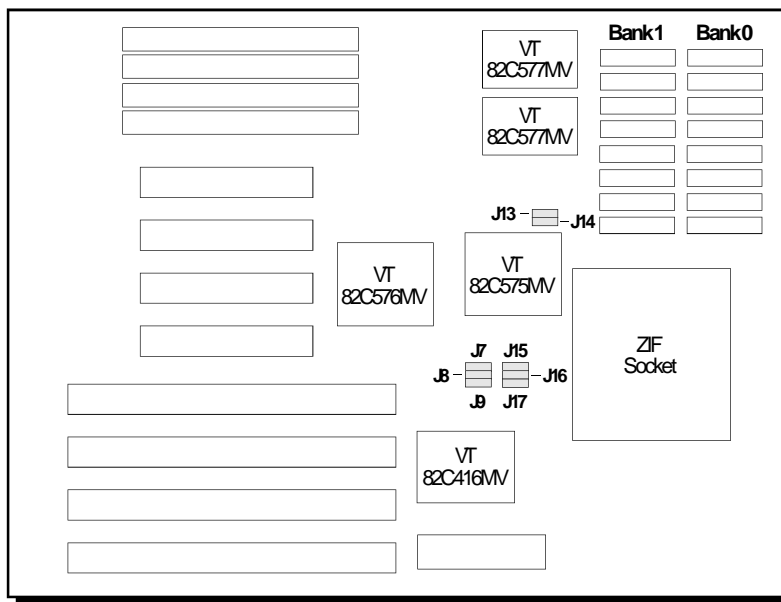


**Green PC/ISA System Board**



**SRAM Socket**

**Jumper Settings for Cache Memory**



**Locations of Jumpers J7-J9 and J13-J17 on the G586VPB System Board**





### Jumpers J7-J9 and J15-J17 Cache Size Setting

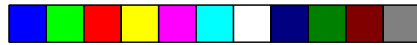
These jumpers should be set according to the cache size shown below.

Cache Size	256KB* Bank0	512KB Bank0	512KB Bank0/1	1MB Bank0	1MB Bank0/1	2MB Bank0/1
<b>DataSRAM</b> U33-U40 U18-U25	32Kx8 None	64Kx8 None	32Kx8 32Kx8	128Kx8 None	64Kx8 64Kx8	128Kx8 128Kx8
<b>TagSRAM</b> U30,U31	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	128Kx8
<b>J7</b>	2-3On	1-2On	1-2On	1-2On	1-2On	1-2On
<b>J8</b>	1-2On	2-3On	1-2On	1-2On	1-2On	1-2On
<b>J9</b>	1-2On	1-2On	1-2On	2-3On	1-2On	1-2On
<b>J15</b>	1-2On	1-2On	1-2On	1-2On	1-2On	2-3On
<b>J16</b>	1-2On	1-2On	1-2On	2-3On	2-3On	2-3On
<b>J17</b>	1-2On	2-3On	2-3On	2-3On	2-3On	2-3On

\* Default setting

**Warning:**

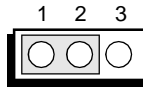
*Please note that you need to populate Bank 0 first and then Bank 1. Failure to do so will cause the system board to work improperly.*



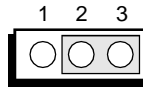
## Green PC/ISA System Board

### Jumpers J13 and J14 SRAM Type Selection

The G586VPB can support two types of SRAM, 3.3V SRAM and 3.3/5V mixed voltage SRAM. Settings for Jumpers J13 and J14 should match the voltage of the SRAM on the system board.



**J13, J14** pins 1-2 On:  
3.3/5V Mixed SRAM  
(Default)



**J13, J14** pins 2-3 On:  
Pure 3.3V SRAM

	J13	J14
3.3V SRAM	2-3 On	2-3 On
3.3/5V SRAM*	1-2 On	1-2 On

\*Default setting

#### **Note:**

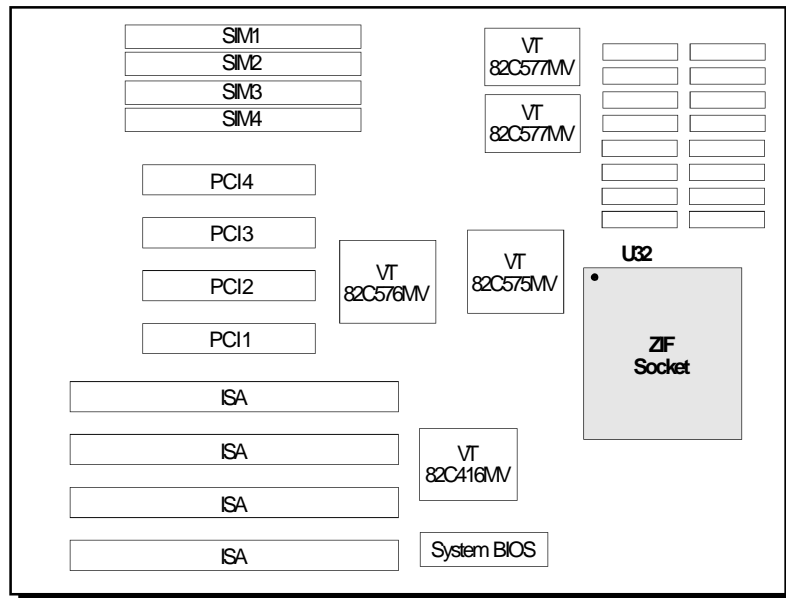
*We recommend that you do not change the settings of these jumpers because the settings have already been determined according to the voltage of the SRAM chips before their installation on the system board.*





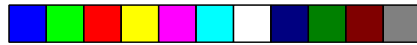
### CPU Installation

The G586VPB is equipped with a 320-pin Zero Insertion Force (ZIF) socket at location U32 of the system board. The ZIF socket allows for easy installation of upgrade CPUs as your system needs grow. Make sure all jumpers are set correctly before applying power, or you may damage the CPU or system board.



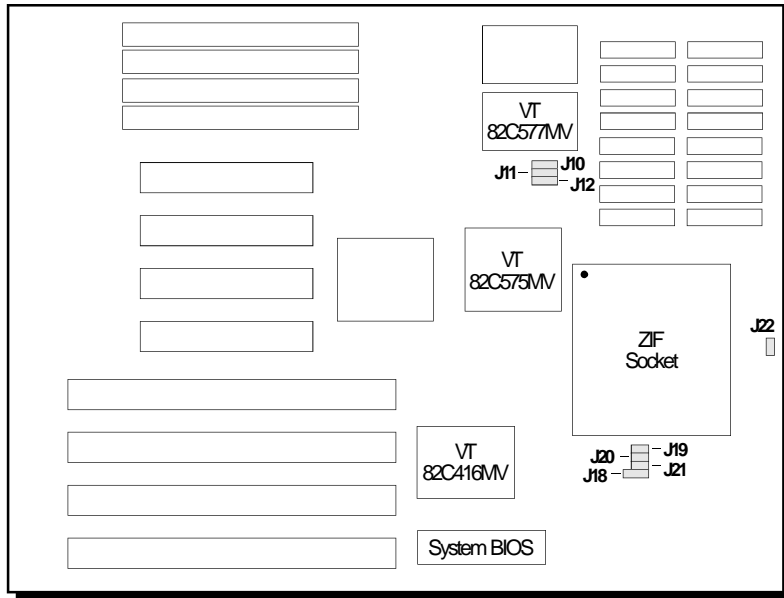
• Pin 1 of the ZIF socket

**Location of the ZIF Socket on the G586VPB System Board**



## Green PC/ISA System Board

### Jumper Settings for CPU



### Locations of Jumpers J10-J12, J18, J19-J21 and J22 on the G586VPB System Board

#### Jumpers J10, J11 and J12 System Base Clock Setting

The G586VPB supports System Base Clock external frequency of 50MHz, 60MHz or 66MHz. Set the jumpers J10-J12 according to the type of CPU installed in the CPU socket.

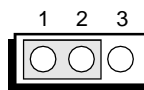


G586VPB

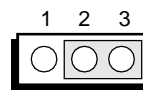
	J10	J11	J12
50MHz	2-3On	1-2On	2-3On
60MHz	1-2On	1-2On	1-2On
66MHz*	1-2On	2-3On	2-3On

\* Default setting

Default settings:



J10: 66MHz

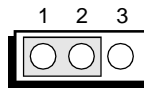


J11, J12: 66MHz

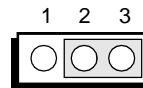
### Jumper J18

CPU Write Back/Through Mode Control

Jumper J18 is used to select write back or write through mode for CPU. Normally the write back mode is selected.



Pins 1-2 On: Write Back Mode (Default)



Pins 2-3 On: Write Through Mode

### Jumpers J19, J20 and J21

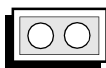
CPU Power Setting

The G586VPB supports 3.3V, 3.45V and 3.8V CPUs. Set jumpers J19, J20 and J21 according to the voltage of the CPU installed on your system board.



**Green PC/ISA System Board**

Default Settings:



**J19 On: 3.3V**



**J20 Off: 3.3V**



**J21 Off: 3.3V**

Voltage	J19	J20	J21
3.3V*	On	Off	Off
3.45V	Off	On	Off
3.8V	Off	Off	On

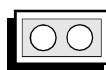
\* Default setting

**Jumper J22**  
CPU Mode Setting

Jumper J22 is used to select CPU internal frequency. You should not change the default setting of this jumper unless the CPU installed on the system board is 3.3V Pentium Processor, System Base Clock frequency 50MHz.

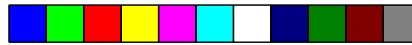


Off: Fx1.5 (50MHz/  
75MHz, 60MHz/90MHz  
or 66MHz/100MHz CPU)  
(Default)



On: Fx2  
(50MHz/100MHz)





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### ***Installing Upgrade CPUs***

The G586VPB is equipped with a 320-pin Zero Insertion Force (ZIF) socket at location U32 of the system board. This socket enables you to remove the old CPU and insert the upgrade CPU easily. If you need to apply excessive force to insert the CPU, the installation is being done incorrectly.

#### **Warning:**

*Open the socket only if actually installing a CPU. The warranty on the original CPU will be voided if the S/N seal is broken. Installation of a processor will not affect the original system warranty.*

The 320-pin ZIF socket consists of the four rows of pin holes on each side. To avoid improper installation, the ZIF socket is designed with a Plug/Keying mechanism. There are several holes in the socket that are plugged so the CPU will only go in one way. If you are unable to easily insert the CPU, please verify that pin 1 of the CPU is being plugged into pin 1 of the socket. Pin one is located as shown on the next page.

#### **Caution:**

*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.*



## Green PC/ISA System Board

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### Clearance Requirements

The 3.3V Pentium 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 heat sink require certain space clearances.

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

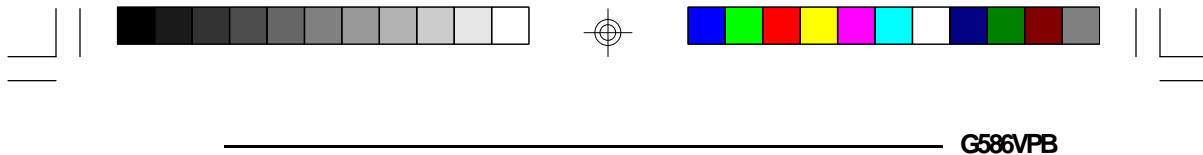
### *Fan Exhaust*

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.

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 heatsink/fan component. Please see the clearance requirements above for more information.

### Temperature Rating

The ambient or room temperature must be below 37°C (99°F) for a system installed with the 3.3V Pentium Processor.



## 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 down, pull it out to the side a little and raise it as far as it will go. The top plate will slide back. Do not use screw drivers or other tools to open the socket, or damage may occur to 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.

**Installation Overview ◆ 2-21**



Green PC/ISA System Board

### Lifting the Handle

2. Once the lever is completely up, remove the old CPU by carefully lifting it straight out of the socket. Insert the new CPU.

### Pin 1 of the ZIF Socket





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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 will not easily insert, please verify you have pin 1 of the CPU 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.

Installation Overview ◆ 2-23

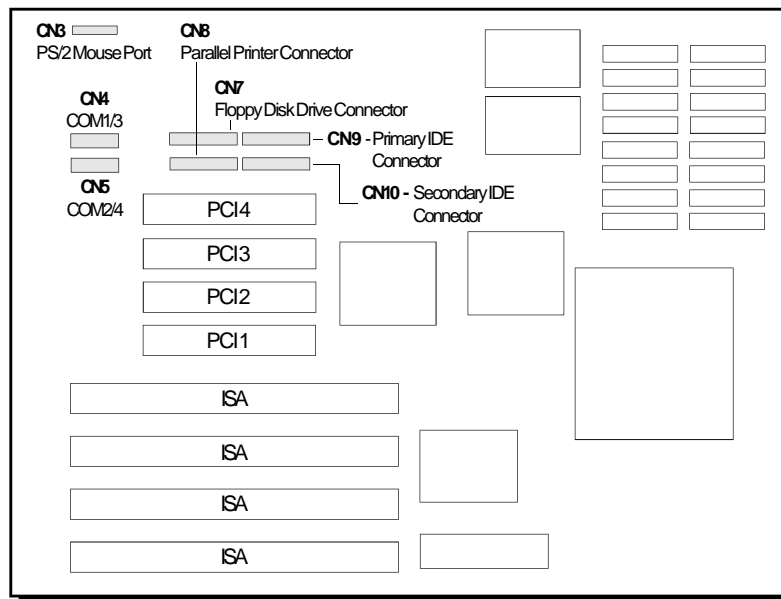




## Green PC/ISA System Board

### ***Built-in Ports***

The G586VPB system board is equipped with two serial ports, one ECP/EPP parallel printer port, one FDD connector, two IDE hard disk connectors and one PS/2 mouse port.



**Locations of the Built-in Ports on the System Board**



## Serial Ports

The built-in serial ports are RS-232C asynchronous communication ports with 16C550-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices. The G586VPB system board supports IRQ4 and IRQ5 for the primary serial port and IRQ3 and IRQ9 for the secondary serial port. These serial ports use the following system I/O addresses:

Port Configuration	I/O Address
COM1	3F8h
COM2	2F8h
COM3/COM4	220h/228h, 2E8h/2E0h, 3E8h/2E8h or 338h/238h

## 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 COM1/3 primary serial port; connect it to Connector CN4 on the motherboard. The lower serial port cable should be used for the COM2/4 secondary serial port; connect it to Connector CN5 on the motherboard. Make sure the colored stripes on the ribbon cables align with pin 1 of Connectors CN4 and CN5. Mount the card-edge bracket to the system chassis.



Green PC/ISA System Board

### The Primary and Secondary Serial Ports on the G586VPB System Board

#### *Parallel Port*

The G586VPB system board has a standard connector for interfacing your PC to a parallel printer. This port is compatible with both IBM AT printer ports and the new, high speed, bi-directional Extended Capabilities Port standard. The parallel port on your system board can be set to any of the following system I/O addresses:

Port Configuration	I/O Address
LPT1	3BC-3BE Hex
LPT2*	378-37A Hex
LPT3	278-27A Hex

\* Default setting



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### ***Connecting the Parallel Printer Port***

Attach the DB-25S printer port cable, which came with the motherboard, to Connector CN8 on the G586VPB system board. Make sure the colored stripe on the ribbon cable aligns with pin 1 of Connector CN8. Use a small nutdriver to mount the cable into a DB-25 cutout in the system chassis.



### **The Parallel Printer Port on the G586VPB System Board**

Installation Overview ◆ 2-27





Green PC/ISA System Board

### ***Floppy Disk Drive Controller***

The G586VPB system board has a built-in floppy disk controller that supports two standard floppy disk drives. You can install any 360KB/720KB/1.2MB/1.44MB floppy disk drives.

### ***Connecting the Floppy Disk Cable***



### **The Floppy Disk Connector on the G586VPB System Board**

#### **Step 1**

Install the 34-pin header connector into the floppy disk connector (CN7) on the system board. The colored edge of the ribbon should be aligned to pin 1 of the CN7 connector.

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### 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 to pin 1 of the drive edge connector(s). The end-most connector should be attached to the drive you want to be Drive A.

### ***IDE Hard Disk Interface***

The G586VPB system board is equipped with two PCI IDE connectors that will interface four IDE (Integrated Drive Electronics) hard disk drives. An IDE drive is a hard drive with the controller electronics built into the disk assembly. The integration of the controller and the drive as a single unit increases both the reliability and performance by eliminating redundant circuitry.

#### **Note:**

*Only IDE drives can be connected to the IDE interface.*



Green PC/ISA System Board

### ***Connecting the IDE Hard Disk Interface***



#### **The IDE Hard Disk Connector on the G586VPB System Board**

##### **Step 1**

If you are connecting two hard drives, install the 40-pin connector of the IDE cable into the primary disk connector (CN9). If you are adding a third or fourth IDE device, install the 40-pin connector of the other IDE cable into the secondary connector (CN10). Make sure the colored edge of the ribbon is aligned to pin 1.

##### **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).

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**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 G586VPB 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 manufacturers will not function properly when used together. The problem lies in the hard drives, not the G586VPB 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.

**Note:**

*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.*



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### ***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 G586VPB box, to Connector CN3. Make sure the brown wire on the PS/2 mouse connector aligns with pin 1 of connector CN3. The other end of the wires are attached to the card-edge bracket that also holds the two serial port cables.



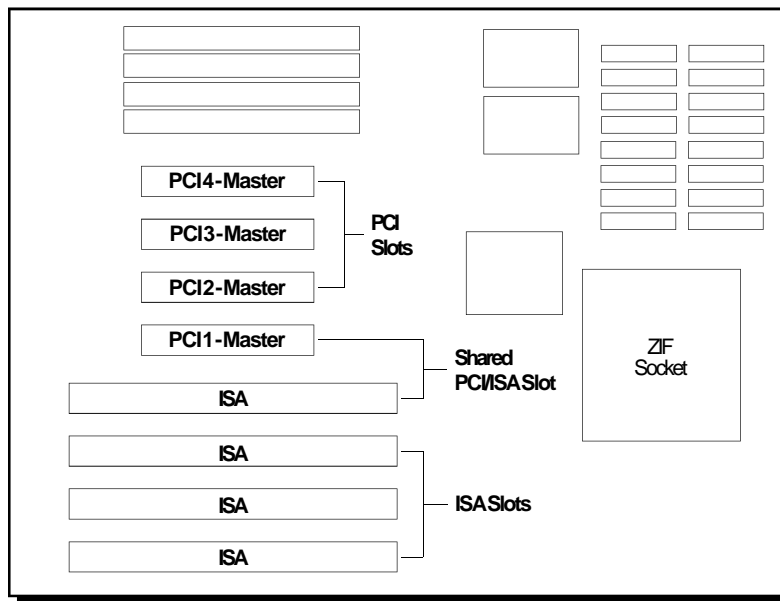
### **The PS/2 Mouse Port on the G586VPB System Board**





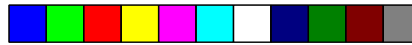
## Installing Expansion Cards

The G586VPB is equipped with three dedicated PCI slots, three dedicated 16-bit ISA slots and one shared PCI/ISA slot. The location of the expansion slots are shown below.



### Notes:

*The BIOS needs to be configured for the PCI add-on cards installed in the PCI slots. Refer to the PCI Configuration Setup on page ... for more information.*



Green PC/ISA System Board

## ***Installing the System Board***

Before installing the system board into your system unit, you should prepare the tools you will use:

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***

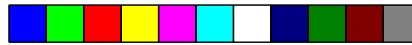
Remove the system unit cover. Refer to the manufacturer's instructions if necessary.

### ***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.



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### **Step 5**

Remove the G586VPB 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 2-1 and 2-2 for proper handling techniques.

### **Step 6**

Insert the HSIM modules into the SIMM banks on the G586VPB. The quantity and location of the SIM modules is dependent upon the memory configuration and type of modules you intend to use.

### **Step 7**

Set the corresponding jumpers.

### **Step 8**

Install the prepared G586VPB system board into the case and replace the screws.

### **Step 9**

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



**Green PC/ISA System Board** \_\_\_\_\_



**2-31** ◆ **Installation Overview**





## ❖ *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. You may also restart the system by pressing the <Ctrl> <Alt> <Del> keys. If you do not press these keys at the correct time and the system does not boot, the following error message will appear:

**Press F1 to continue or Del to enter Setup**

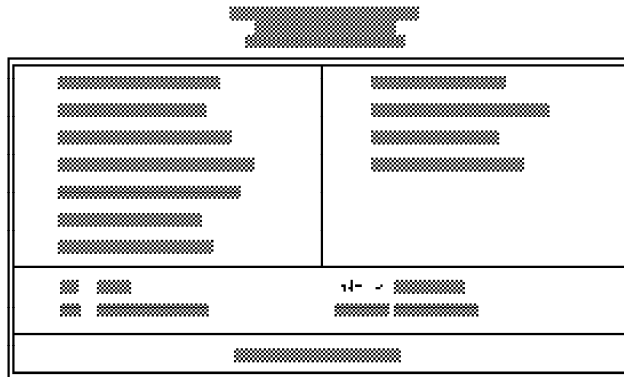
If you have set a password and selected “System” in the Security Option of the BIOS Feature Setup menu, you will be prompted for the password everytime the system is rebooted or any time you try to enter Setup. Type in the correct password and press <Enter>.

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.

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## ***Award BIOS CMOS Setup Utility***

Press <Del> to enter the Setup utility. A screen similar to the one below will appear.

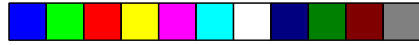


Use the arrow keys to highlight the option you want and press <Enter>.

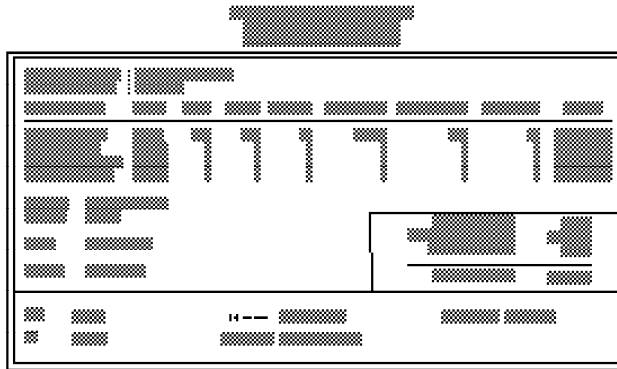
### ***Standard CMOS Setup***

Use the arrow keys to highlight the “Standard CMOS Setup” and press <Enter>, a screen similar to the one on the next page will appear.





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### **Date and Time**

Sets the time and date for the system. Press <F3> for the calendar.

### **Primary Master, Primary Slave, Secondary Master and Secondary Slave**

If you have added an IDE hard drive, you must select the appropriate type for the drive. You may use the "IDE HDD Auto Detection" from the main CMOS setup menu or you can set it manually. The G586VPA has 46 pre-set types and one user-definable type. Use the <Page Up> or <Page Down> keys to select the appropriate type for the drive.

The table in Appendix H gives a complete listing of the available drive types. Any given hard drive must be set to one specific drive-type number. Please refer to your hard drive documentation to find the appropriate type number.



## Green PC/ISA System Board

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If none of the pre-set types is appropriate for your hard drive, choose “User”, which is the user-definable type. To use this type, highlight the hard disk Primary Master, Primary Slave, Secondary Master or Secondary Slave, depending on your hard drive configuration. Use the arrow keys until type “User” is showing. Fill in all the parameters as specified by the drive manufacturer. If either of the drives is not present, select “None” and press <Enter>.

### Drive A and Drive B

These options are used to select the type of floppy disk drives installed in your system. If either of the drives is not 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

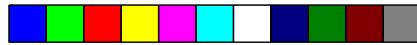
This option selects when the system will halt if an error is detected during power up.

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

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

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

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



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

### **Memory**

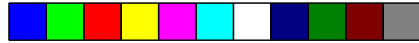
The lower right hand corner shows the base memory size, extended memory size, expanded memory size and the other memory size of your system. You cannot alter these items; your computer automatically detects and displays them.

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 keep as much base memory free for application programs. Most program use this address space for the Shadow RAM.

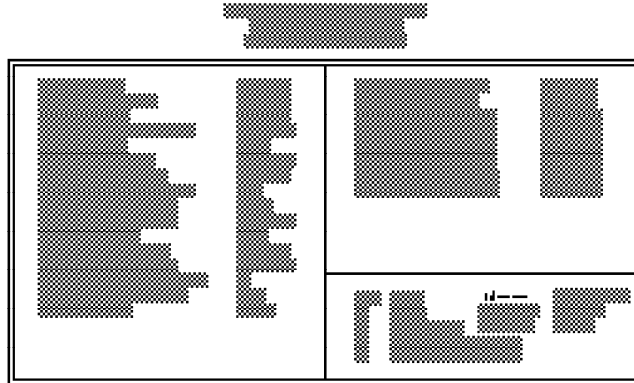
When you are through making changes in the Standard CMOS Setup, press <Esc> to return to the main menu.

### ***BIOS Features Setup***

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



## Green PC/ISA System Board

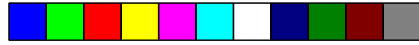


The Virus Warning option may be set to “enabled” or “disabled.” When enabled, the BIOS issues a warning when any program or virus sends a Disk Format command or attempts to write to the boot sector of the hard disk drive.

If you 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.

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.

### 3-6 ◆ Initial Setup Program

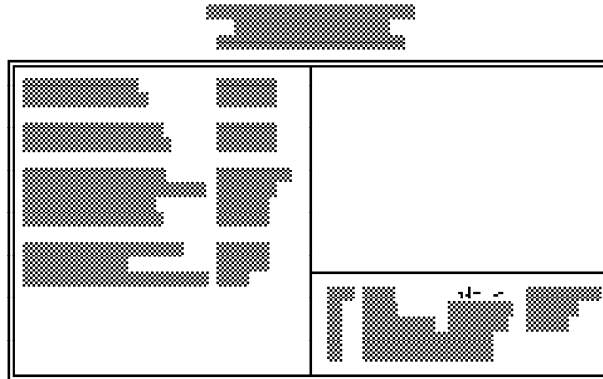


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## ***Chipset Features Setup***

The G586VPA uses the VIA (VT82C535MV, VT82C505, VT82C406MV and VT82C531) chipset. The Chipset Features Setup allows you to modify some functions to optimize system performance.

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.

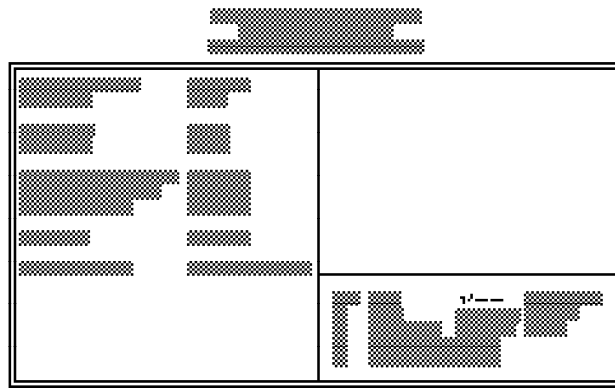
If the changes you made are incorrect or you change your mind, press <F6> or <F7> to return to the default settings. Press <Esc> after making the changes to return to the main menu.



Green PC/ISA System Board

## ***Power Management Setup***

Use the arrow keys to highlight the “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 the Doze Timer, Sleep Timer, Sleep Mode, HDD Power Management, VGA Activity Wakeup, INTR Enabled PMI, IO Activity and Video Off Method. Choose “Disabled” if you do not wish your system to enter the Standby mode.

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.

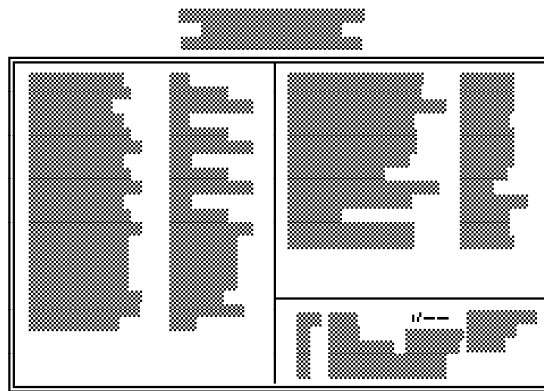
### **3-8 ◆ Initial Setup Program**



G586VPB

## ***PCI Configuration Setup***

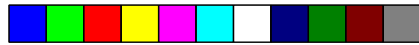
Use the arrow keys to highlight the “PCI Configuration Setup” and press <Enter>, a screen similar to the one below will appear.



The G586VPA supports three PCI master cards. The master cards may be inserted in either PCI Slot 1 or 2, Slot 3 and Slot 4.

PCI Slots 1, 2, 3 and 4 are mapped to PIRQ 0, 1, 2 and 3 respectively. The IRQ of each PCI slot must correspond to the IRQ of its associated PIRQ.

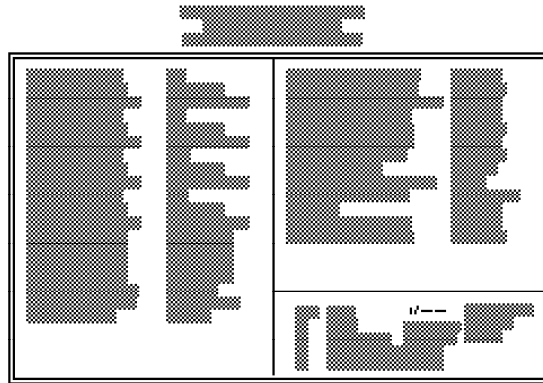
The latency timer controls the duration a PCI bus-master card can control the bus. A larger value may be faster; a smaller value will give greatest compatibility with other PCI devices.



Green PCI/ISA System Board

**Example 1:**

	<b>DFI SHA-1000P (NCR 53C810)</b>	<b>DFI NET-800P</b>
PCI Slot	PCI3	PCI4
System IRQ	IRQ11	IRQ9
INT on Adapter	INT A	INT A

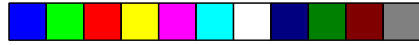


**Example 2:**

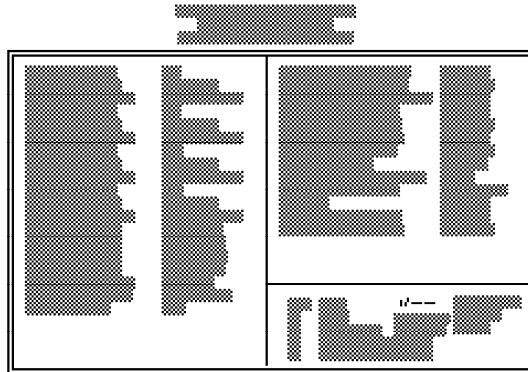
	<b>Adaptec AHA-2940</b>	<b>DFI NET-800P</b>
PCI Slot	PCI1	PCI3
System IRQ	IRQ5	IRQ11
INT on Adapter	INT A	INT A

**3-10 ♦ Initial Setup Program**



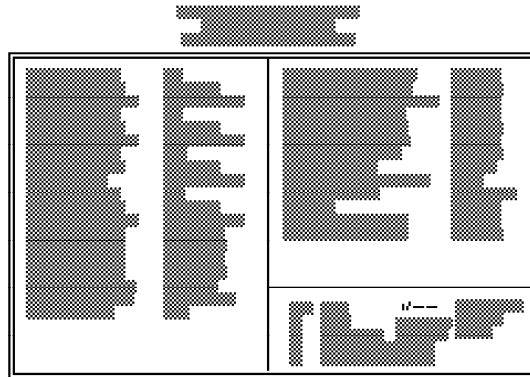


G586VPB



**Example 3:**

	Buslogic BT-946C	DFI NET-800P
PCI Slot	PCI2	PCI4
System IRQ	IRQ10	IRQ11
INT on Adapter	INT A	INT A





**Green PCI/ISA System Board**

**Example 4:**

	<b>DFI SHA-1000P (NCR 53C810)</b>	<b>DFI NET-800P</b>
PCI Slot	PCI3	PCI4
System IRQ	IRQ11	IRQ9
INT on Adapter	INT B	INT C



**Example 5:**

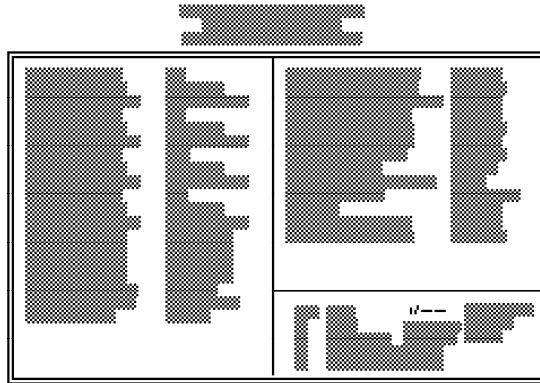
	<b>WG-3000P (S3 82C864P)</b>	<b>DFI NET-800P (AMD79C970)</b>	<b>DFI NET-800P (AMD79C970)</b>
PCI Slot	PCI1	PCI2	PCI3
System IRQ	None	11	9
INT on Adapter	None	INT A	INT A
Card Type (Master/Slave)	Slave	Master	Master



G586VPB

**SHA-1000P  
(NCR 53C810)**

PCI Slot	PCI4
System IRQ	10
INT on Adapter	INT A
Card Type (Master/Slave)	Master



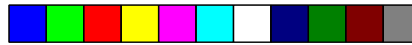
**Note:**

*If either DFI NET-800P or SHA-1000P PCI Bus Master card is inserted into PCI Slot 2, PCI Slot 1 can support Slave PCI cards only.*

**Example 6:**

	<b>SHA-1X00P (NCR 53C81X)</b>	<b>WG-3000P (S3 82C860-P)</b>	<b>SHA-1X00P (NCR 53C81X)</b>
PCI Slot	PCI1	PCI2	PCI3
System IRQ	9	None	11
INT on Adapter	INT A	None	INT A
Card Type (Master/Slave)	Master	Slave	Master

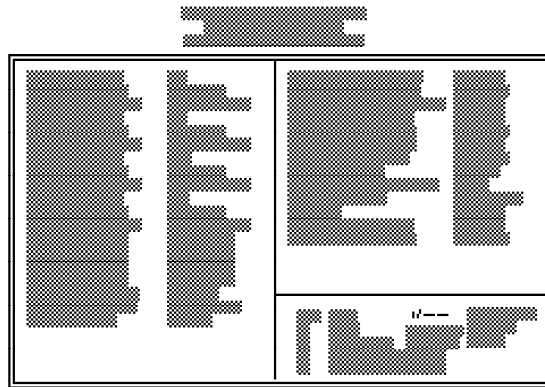
Initial Setup Program ◆ 3-13



### Green PCI/ISA System Board

#### NET-800P (AMD79C970)

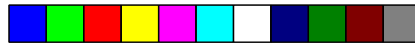
PCI Slot	PCI4
System IRQ	10
INT on Adapter	INT A
Card Type (Master/Slave)	Master

**Note:**

*If either DFI NET-800P or SHA-1X00P Bus PCI Master card is inserted into PCI Slot 1, PCI Slot 2 can support PCI Slave cards only.*

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.



G586VPB

### ***Load BIOS Defaults***

If, for some reason, the CMOS becomes corrupted, the system can be reconfigured with the default values stored in the ROM chips. The BIOS Setup default values should provide optimum performance for the system. You should use these values unless you are having hardware problems.

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

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

Type “Y” and press <Enter> to return to the BIOS setup default values. After pressing <Enter>, you will be returned to the main menu.

### ***Load Setup Defaults***

The Setup defaults are similar to the BIOS Setup defaults. These defaults are the most stable values for the system and should be used if you are having hardware problems.

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 return to the Setup default values. After pressing <Enter>, you will be returned to the main menu.



Green PC/ISA System Board

### ***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:

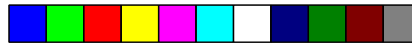
#### **Confirm Password:**

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.

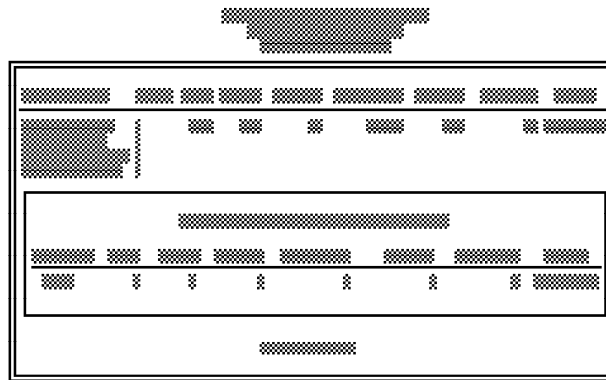




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### ***IDE HDD Auto Detection***

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.



The screen displays the parameters detected and allows you to accept or reject the parameters. Type “Y” and press <Enter> to accept the parameters or press <Esc> to abort. If you select “Y”, the parameters of the hard disk will be displayed in the Standard CMOS Setup.

### ***Save and 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**



### Green PC/ISA System Board

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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> or <Del> 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> or <Del> after memory testing is done.

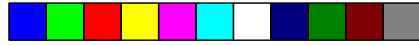




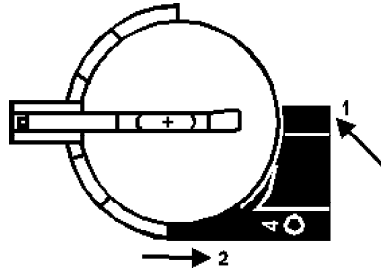
## ❖ *Troubleshooting Checklist*

If you experience difficulty with the G586VPB system board, please refer to the checklist below. If you still cannot isolate 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 HSIM modules are seated securely into the bank sockets.
- 3) Make sure that the HSIM modules are in the correct locations.
- 4) Check that all populated memory banks are filled with valid size HSIM modules.
- 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) Check if the internal battery needs to be replaced. The internal battery is located beside the slot PCI1. To remove the battery, push the black button downward (1) and the battery to the right (2).



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### The 3V Lithium internal battery

Replace the old battery with the type of Lithium battery already used on your system board.

**Caution:**

*Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.*

#### 4-2 ◆ Troubleshooting Checklist



## ❖ *Appendix A: Types of Modules*

The G586VPA system board allows you to populate memory with 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 HSIM modules. The following modules have been tested with this board. Most untested brands will work but a few may fail to do so.

### *For HSIM 256Kx36 Modules*

Brand	Chip Number
OKI	M51C256A-70

### *For HSIM 512Kx36 Modules*

Brand	Chip Number
OKI	M514256B-70J

### *For HSIM 1Mx36 Modules*

Brand	Chip Number
Toshiba	TC511000AJL
OKI	GT-1M*36B
Fujitsu	81C1000A-70



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*For HSIM 2Mx36 Modules*

Brand	Chip Number
OKI	M511000B

*For HSIM 4Mx36 Modules*

Brand	Chip Number
OKI	M514100A-70S

*For HSIM 8Mx36 Modules*

Brand	Chip Number
OKI	M514100AL-70K





## ❖ **Appendix B: 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**

Currently, there is only 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.

#### **CMOS BATTERY HAS FAILED**

CMOS battery is no longer functional. It should be replaced. The replacement battery is ... Replacing the battery will clear the CMOS. To reset the CMOS, refer to Jumpers J1 and J2 on pages 2-9 and 2-10 of the manual. Location of the battery and replacement procedure are given on pages .....of the manual.

#### **CMOS CHECKSUM ERROR**

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

**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 you assumed the system would boot 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 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.

**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 there are no floppy drives 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...**

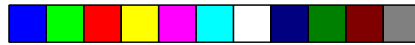
Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

**MEMORY PARITY ERROR AT...**

Indicates a memory parity 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 to read the new memory size into the memory fields.



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### **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 you to 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 you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

### **RAM PARITY ERROR - CHECKING FOR SEGMENT**

Indicates a parity error in Random Access Memory.

### **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.





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## ❖ *Appendix C: Memory & I/O Maps*

### *Memory Address Map*

Address	Name	Function
0000000 to 009FFFF	640K System Board RAM	System Board Memory
00A0000 to 00BFFFF	128K Video Display Memory	Reserved for Graphics Display Memory
00C0000 to 00DFFFF	128K I/O Expansion ROM	Reserved for ROM on I/O Adapter Card
00E0000 to 00FFFFFF	128K ROM on the System Board	System Board BIOS
0100000 to 7FFFFFFF	Maximum Memory 128M	System Board Memory



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### ***I/O Address Map***

I/O 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
0A0-0BF	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 D: PCI I/O Pin Assignments

Component Side	B	A	Solder Side
	-12V	-01 -	TRST#
	TCK	-02 -	+12V
	Ground	-03 -	TMS
	TDO	-04 -	TDI
	+5V	-05 -	+5V
	+5V	-06 -	INTA#
	INTB#	-07 -	INTC#
	INTD#	-08 -	+5V
	PRSNT1#	-09 -	Reserved
	Reserved	-10 -	+5V (I/O)
	PRSNT2#	-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 F: 16-Bit ISA I/O Pin Assignments

B	A
Grnd	- 01 -
ResetDrv	- 02 -
+5VDC	- 03 -
IRQ9	- 04 -
-5VDC	- 05 -
DRQ2	- 06 -
-12VDC	- 07 -
OAS	- 08 -
+12VDC	- 09 -
Grnd	- 10 -
-SEMEMW	- 11 -
-SEMEMR	- 12 -
-IOW	- 13 -
-IOR	- 14 -
-Dack3	- 15 -
-DRQ3	- 16 -
-Dack1	- 17 -
-DRQ1	- 18 -
-Refresh	- 19 -
CLK	- 20 -
IRQ7	- 21 -
IRQ6	- 22 -
IRQ5	- 23 -
IRQ4	- 24 -
IRQ3	- 25 -
-Dack2	- 26 -
TC	- 27 -
Bale	- 28 -
+5VDC	- 29 -
OCS	- 30 -
Grnd	- 31 -

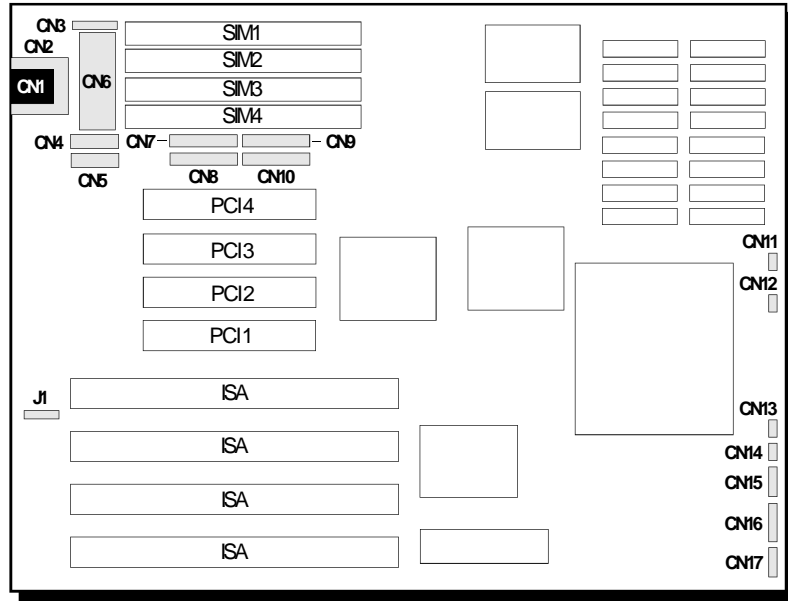
D	C
-MemCS16	- 01 -
-I/OCS16	- 02 -
IRQ10	- 03 -
IRQ11	- 04 -
IRQ12	- 05 -
IRQ13	- 06 -
IRQ14	- 07 -
-Dack0	- 08 -
DRQ0	- 09 -
-Dack5	- 10 -
DRQ5	- 11 -
-Dack6	- 12 -
DRQ6	- 13 -
-Dack7	- 14 -
DRQ7	- 15 -
+5VDC	- 16 -
-Master	- 17 -
Grnd	- 18 -

-I/OChck  
SD7  
SD6  
SD5  
SD4  
SD3  
SD2  
SD1  
SD0  
-I/OChrdy  
AEN  
SA19  
SA18  
SA17  
SA16  
SA15  
SA14  
SA13  
SA12  
SA11  
SA10  
SA9  
SA8  
SA7  
SA6  
SA5  
SA4  
SA3  
SA2  
SA1  
SA0

SBHE  
LA23  
LA22  
LA21  
LA20  
LA19  
LA18  
LA17  
-Memr  
-Memw  
SD08  
SD09  
SD10  
SD11  
SD12  
SD13  
SD14  
SD15



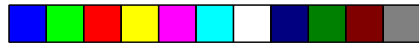
## ❖ Appendix G: Connector Pin Assignments



Locations of Connectors on the G586VPB System Board

### Connector J1 External Battery Connector

Pin	Function
1	External Battery Input +
2	N.C.
3	GND
4	GND



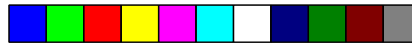
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**Connector CN1**  
PS/2 Keyboard Connector

Pin	Function
1	Keyboard Data
2	N.C.
3	GND
4	VCC
5	Keyboard Clock
6	N.C.

**Connector CN2**  
AT Keyboard Connector

Pin	Function
1	Keyboard Clock
2	Keyboard Data
3	N.C.
4	GND
5	VCC



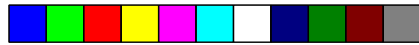
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**Connector CN3**  
PS/2 Mouse Connector

Pin	Function
1	Mouse Data
2	N.C.
3	GND
4	VCC
5	Mouse Clock
6	N.C.

**Connectors CN4 and CN5**  
Primary (COM1/3) and Secondary (COM2/4) Serial Ports Connectors

Pin	Function
1	Data Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	GND
6	Data Set Ready
7	Request To Send
8	Clear To Send
9	Ring Indicator
10	N.C.



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**Connector CN6**

Main Power Input Connector

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

**Connector CN7**

Floppy Disk Drive Connector

Pin	Function
1	GND
2	Densel
3	GND
4	Reserved
5	GND
6	Reserved
7	GND
8	Index
9	GND
10	MTRO





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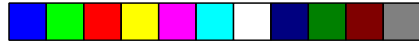
Pin	Function
11	GND
12	DR1
13	GND
14	DRO
15	GND
16	MTR1
17	GND
18	DIR
19	GND
20	Step
21	GND
22	Write Data
23	GND
24	Write Gate
25	GND
26	Track 0
27	GND
28	Write Protect
29	GND
30	Read Data
31	GND
32	Head Select
33	GND
34	Disk Change



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**Connector CN8**  
Printer Port Connector

Pin	Function
1	Strobe
2	Autofd
3	Data 0
4	Error
5	Data 1
6	INIT
7	Data 2
8	SLTIN
9	Data 3
10	GND
11	Data 4
12	GND
13	Data 5
14	GND
15	Data 6
16	GND
17	Data 7
18	GND
19	ACK
20	GND
21	Data 3
22	GND
23	Page Empty
24	GND
25	Slect.
26	N.C.

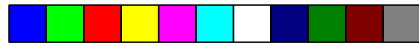


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**Connector CN9**  
Primary IDE Connector

Pin	Function
1	Reset
2	GND
3	Data 7
4	Data 8
5	Data 6
6	Data 9
7	Data 5
8	Data 10
9	Data 4
10	Data 11
11	Data 3
12	Data 12
13	Data 2
14	Data 13
15	Data 1
16	Data 14
17	Data 0
18	Data 15
19	GND
20	Reserved
21	DMA_REQ_A
22	GND
23	IOW
24	GND
25	IOR
26	GND
27	Reserved
28	N.C.
29	DMA_ACK_A
30	GND

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Pin	Function
31	IRQ 14
32	IOCS 16
33	SA 1
34	Reserved
35	SA 0
36	SA 2
37	HCSA_0
38	HCSA_1
39	Primary IDE Active LED
40	GND

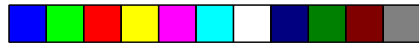
**Connector CN10**  
Secondary IDE Connector

Pin	Function
1	Reset
2	GND
3	Data 7
4	Data 8
5	Data 6
6	Data 9
7	Data 5
8	Data 10
9	Data 4
10	Data 11
11	Data 3
12	Data 12
13	Data 2
14	Data 13
15	Data 1



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Pin	Function
16	Data 14
17	Data 0
18	Data 15
19	GND
20	Reserved
21	DMA_REQ_B
22	GND
23	IOW
24	GND
25	IOR
26	GND
27	Reserved
28	N.C.
29	DMA_ACK_B
30	GND
31	IRQ 15
32	IOCS 16
33	SA 1
34	Reserved
35	SA 0
36	SA 2
37	HCSB_0
38	HCSB_1
39	Secondary IDE Active LED
40	GND



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**Connector CN11**

Primary IDE Active LED Connector

Pin	Function
1	LED + Input
2	LED - Input

**Connector CN12**

Secondary IDE Active LED Connector

Pin	Function
1	LED + Input
2	LED - Input

**Connector CN14**

Hardware Reset Jumper

Pin	Function
1	Normal Operation
2	Hardware Reset



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**Connector CN15**  
Speaker Connector

Pin	Function
1	Data
2	N.C.
3	GND
4	+5V



## ❖ Appendix H: 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, MIMI 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, MIMI 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





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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	88	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							



Appendix H ♦ H-2





# G586VPB

Rev. 0  
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# **G586VPA**

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