



G486ESV AIO

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



- D26550610 -





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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 G486ESV AIO is an Energy Star Compliant all-in-one 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 G486ESV AIO offers several advanced features integrated into the system board. It has a VESA VL-Bus Windows accelerated VGA controller with display resolutions of 640x480 with 16.8M colors, 800x600 with 65536 colors, and 1024x768 with 256 colors. If the video memory is 2MB, it can display 1280x1024 with 256 colors. It also has an enhanced IDE controller, an ECP/EPP parallel port, two serial ports, a PS/2 mouse port and a PS/2 keyboard connector.

The G486ESV AIO accommodates the full series of Intel 486™, AMD and Cyrix 5V CPUs.

The G486ESV AIO may also use 3.3V CPUs: Intel486™ DX4, running at 75MHz and 100MHz, AMD 486DX2-66/80NV8T and AMD 486DX4-75/100NV8T, Cyrix's Cx486DX2V, running at 50MHz and 66MHz or Cyrix's Cx486DX2V, running at 80MHz.

The G486ESV AIO is equipped with a riser card connector for ISA and VL-Bus expansion. The all-in-one system board design of the G486ESV AIO allows the user the ability to add expansion cards to the system while keeping deskpace required to a minimum. With a riser card, which is usually supplied by the computer chassis manufacturer, installed in the system, you can



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plug expansion boards in horizontally instead of vertically. The number of ISA and VL-Bus slots on the riser card will depend on the type of all-in-one case used.

The G486ESV AIO supports optional AUI, BNC and RJ-45 Ethernet ports and is NE2000/NE2000 Plus (widely used in Novell NetWare) and WD/SMC Ethercard Plus 16 (widely used in the UNIX environment) hardware compatible.

The system board can be configured to ten different memory sizes from 1MB to 64MB using 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 HSIM modules.

Note:

This board must be installed in an "all-in-one style computer chassis" with LPX/LPM form factor.





Features and Specifications

Microprocessor

- 5V CPUs
Intel 486SX/DX/DX2 (full series) and Pentium™
OverDrive Processor
AMD 486DX/DXL/DXL2 (full series)
Cyrix 486SX/DX/DX2 (full series)
- 3.3V CPUs
Intel 486DX4-75/100
AMD 486DX2-66/80NV8T, 486DX4-75/100NV8T
Cyrix 486DX2V-50/66, 486DX2V-80 (custom
version)

Energy Efficient Design

- Supports both 3.3V (optional) and 5V CPUs
- Supports system power management
- Supports CPU stopped clock
- Supports optional external power management
switch
- Supports power saving video mode
- Optional low power on-board Ethernet

Flexible Power Management Scheme

- Hardware supports auto-state transition mechanism
- System BIOS supports Microsoft's APM and
provides basic power management control for DPMS
compliant monitor and power saving peripherals
- Hardware provides flexible event-driven power
management scheme and easy CPU transition state
(Ready, Standby and Suspend)
- Optional advanced SMM power management utility
provided for sophisticated users



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High Performance VL-Bus Windows Accelerator

- Uses S3 Trio64 (standard) or Trio32 GUI graphic controller
- 2MB (Trio32) or 2MB (Trio64)
- Resolutions: 640x480, 16.8M colors, 75Hz
800x600, 65536 colors, 75Hz
1024x768, 256 colors, 75Hz
1280x1024, 256 colors, 75Hz (2MB)
- WinMark (1024x768, 256 colors, 70Hz, 486DX2-66/486DX4-100, 2MB, Trio64):
 - 486DX2-66 WinMark 3.11: 54 megapixels/sec
WinMark 4.0: 17 megapixels/sec
 - 486DX4-100 WinMark 3.11: 61 megapixels/sec
WinMark 4.0: 23 megapixels/sec

Super I/O Interface and Fast IDE

- Uses NS PC87332VF super I/O controller
- Two NS16C550 compatible serial ports
- One EPP/ECP parallel port
- Supports 360K, 720K, 1.2MB, 1.44MB and 2.88MB floppy drives
- Build-in fast IDE interface supports Mode 3 HDD

Industrial Standard Ethernet Controller (Optional)

- Uses NS DP83905 or compatible Ethernet controller
- NE2000, NE2000 Plus, SMC Ethercard Plus 16 hardware/software compatible
- Supports Novell 2.15, 3.11, 4.01 and SCO UNIX
- Supports 10Base-2 (COAX), 10Base-5 (AUI) and 10Base-T (Twisted-pair)
- Supports Remote Boot ROM socket

System Chip Set

- EC802GL: system and cache controller
- EC100G: data buffer



BIOS

- Award system BIOS
- Supports IDE HDDs larger than 528MB under DOS (LBA mode only)
- S3 VGA BIOS
- Remote boot ROM (optional)
- Flash EPROM and utility supported (optional)

Cache Memory

- 128K, 256K, 512K or 1MB
- Supports direct map write-back or write-through cache

Memory Onboard

- 1MB to 64MB

DRAM Type

- 256Kx36, 512x36K, 1Mx36, 2Mx36, 4Mx36 and 8Mx36
- Supports single and/or double density SIMMs
- Four 72-pin SIMM sockets

CPU Socket

- 237-pin ZIF socket (Intel Socket 3)

Slot

- One riser card connector for ISA and VL-Bus expansion

Connectors

- Two DB-9P serial ports
- One DB-25S parallel port
- One IDE disk connector
- One floppy drive connector
- One DB-15 analog VGA connector



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- One VGA feature connector
- Two mini-DIN-6 connectors for the PS/2 keyboard and PS/2 mouse
- One AUI, BNC and RJ-45 Ethernet port (optional)

Tooling Holes

- LPX form factor

PCB

- 4 layers, 33cm (12.9") x 22.8cm (8.9")





G486ESV AIO

Package Checklist

The G486ESV AIO package contains the following items:

- The G486ESV AIO system board
- The G486ESV AIO user's manual
- Four Trio32/64 utility/driver diskettes
- Two NET700-EC/ET/ECT driver diskettes (optional)
- One 34-pin floppy disk drive cable
- One 40-pin IDE hard disk cable
- One 15-pin AUI connector cable for chassis mounting (optional)
- One ECT-100: a card-edge bracket holding the AUI, BNC and RJ-45 connectors (optional)

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 G486ESV AIO 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 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 G486ESV AIO 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 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.



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Hardware Installation

Memory Installation

The G486ESV AIO system board can support 1MB to 64MB of memory using HSIMMs. HSIMM is an acronym for High Density Single In-line Memory Module.

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

The HSIMM sockets are divided into four banks. Each bank consists of one HSIMM socket. The G486ESV AIO system board uses 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 HSIM modules. 256Kx36, 1Mx36 and 4Mx36 are single density HSIM modules. 512Kx36, 2Mx36 and 8Mx36 are double density HSIM modules. Install the double density HSIM modules in Banks 1 and/or 3 only.

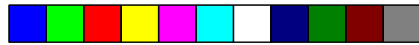
A list of approved memory brands and speeds is given in Appendix A.

You will need 1 to 4 pieces of HSIM modules, depending on the amount of memory you intend to install. Your system board can be configured with 1MB, 2MB, 3MB, 4MB, 8MB, 12MB, 16MB, 32MB, 48MB or 64MB of onboard memory.

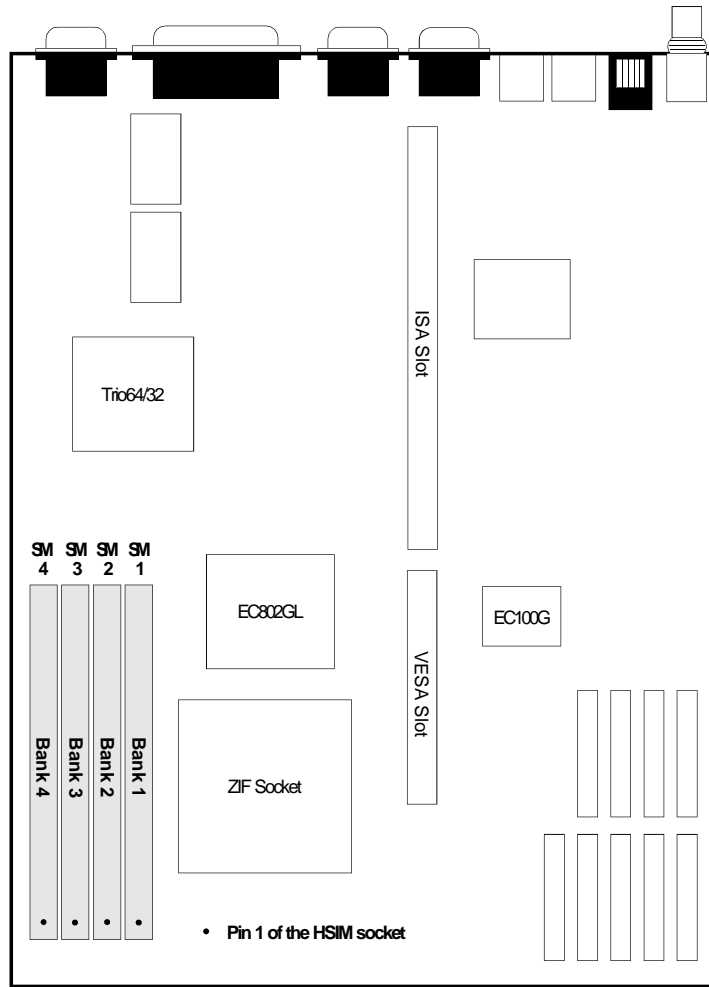


The following table summarizes the bank locations and modules needed for the corresponding memory sizes.

Memory Size	Bank 1	Bank 2	Bank 3	Bank 4
1MB	256Kx36	-	-	-
2MB	256Kx36	256Kx36	-	-
2MB	512Kx36	-	-	-
3MB	256Kx36	256Kx36	256Kx36	-
4MB	256Kx36	256Kx36	256Kx36	256Kx36
4MB	1Mx36	-	-	-
4MB	512Kx36	-	512Kx36	-
8MB	1Mx36	1Mx36	-	-
8MB	2Mx36	-	-	-
12MB	1Mx36	1Mx36	1Mx36	-
16MB	1Mx36	1Mx36	1Mx36	1Mx36
16MB	4Mx36	-	-	-
16MB	2Mx36	-	2Mx36	-
32MB	4Mx36	4Mx36	-	-
32MB	8Mx36	-	-	-
48MB	4Mx36	4Mx36	4Mx36	-
64MB	4Mx36	4Mx36	4Mx36	4Mx36
64MB	8Mx36	-	8Mx36	-



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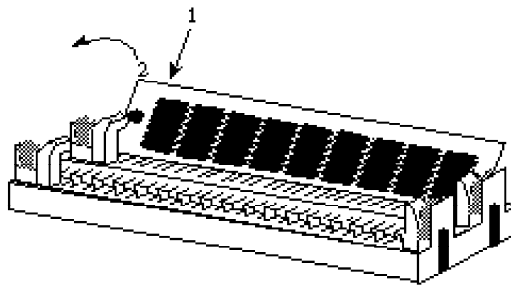
**Locations of the HSIMM Sockets
on the G486ESV AIO System Board**

2-5 ♦ Installation Overview



Installing the Modules

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



1. Position the HSIM module above the HSIMM socket, with the chips of the module facing the center of the system board.
2. Seat the module at an angle into the bank. Make sure it is completely seated. Tilt the module upright until it locks in place in the socket.

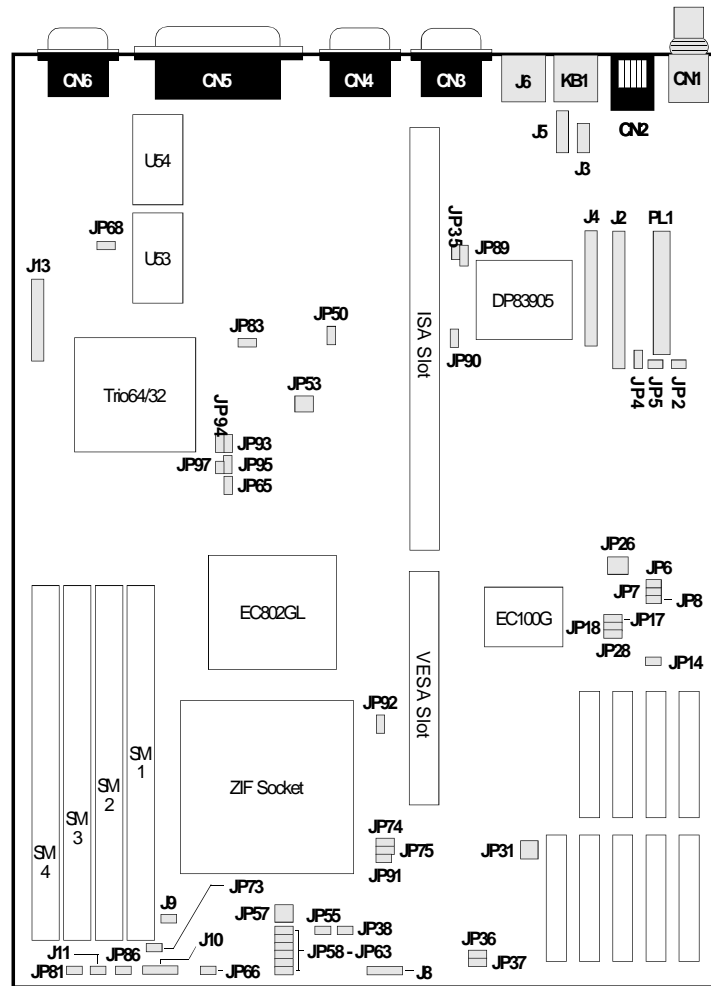
Board Configuration

Note:

If you are using a DX2 or DX4 CPU, the corresponding jumpers must be set according to the CPU's base speed. Divide the speed of a DX2 CPU by two and the speed of a DX4 CPU by three to come up with the CPU's base speed. For example, if you are using a DX2-66 CPU, dividing 66 by 2 will give you 33. If you are using a DX4-75 CPU, dividing 75 by 3 will give you 25.



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Locations of Jumpers and Connectors on the G486ESV AIO System Board

2-7 ♦ Installation Overview

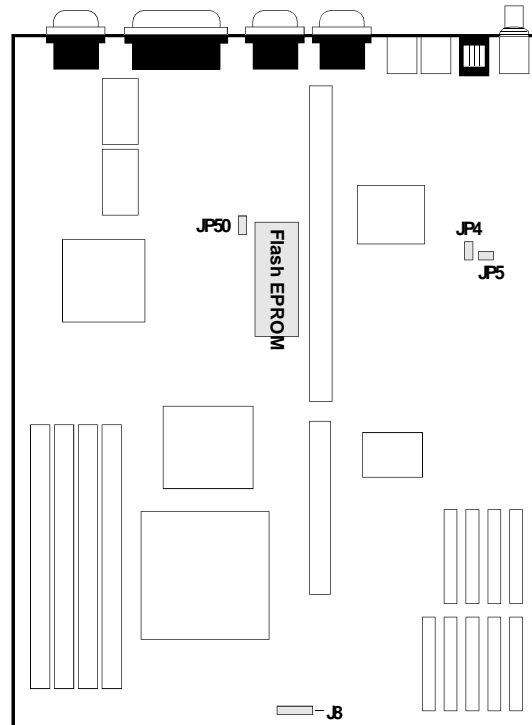




G486ESV AIO

Jumper Settings

Jumper Settings for Display Type, Password Clear, Internal/ External Speaker and Flash EPROM



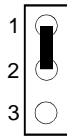
Locations of Jumpers JP4, JP5, J8 and JP50 on the G486ESV AIO System Board



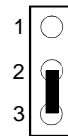
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Jumper JP4 Display Type Select

Jumper JP4 must match the type of display adapter installed. If you are using the built-in VGA adapter or a VGA add-on card, set pins 1 and 2 to On. If you are using a monochrome add-on card, set pins 2 and 3 to On.



1-2 On: Color Display
(Default)



2-3 On: Mono Display

Jumper JP5 Password Clear

If you set a password in the “Password Setting” option and forget your password, power off your system and set Jumper JP5 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 JP5 to Off.



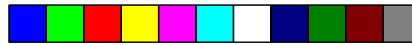
On: Clear Password



Off: Normal
(Default)

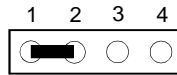
2-9 ◆ Installation Overview





Jumper J8 Internal/External Speaker

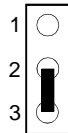
The G486ESV AIO comes with an internal speaker. If there is a problem with the internal speaker, or if you prefer to use an external speaker, remove the jumper from pins 1 and 2 and connect the external speaker to this jumper.



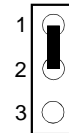
1-2 On: Internal Speaker
(Default)

Jumper JP50 Flash EPROM Voltage

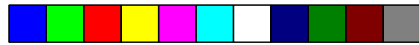
The G486ESV AIO supports 5 Volt and 12 Volt Flash EPROM. If your system board is using an EPROM or 5 Volt Flash EPROM, set Jumper JP50 pins 1 and 2 to On. Change JP50 pins 2 and 3 to On if you are using a 12 Volt Flash EPROM.



2-3 On:
12V Flash EPROM

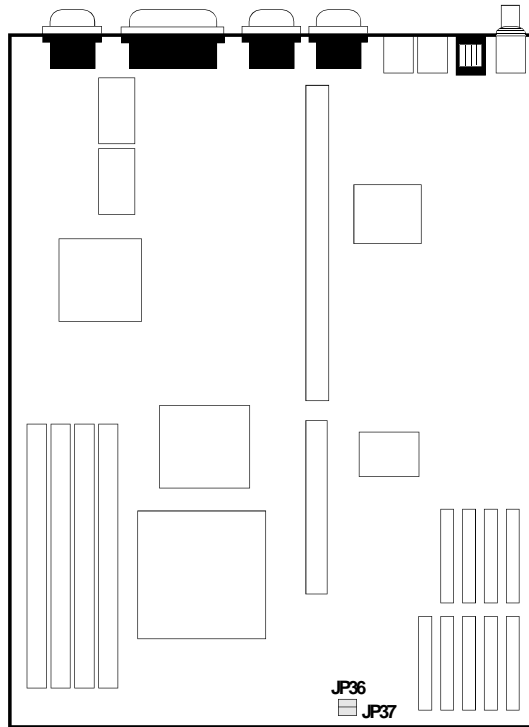


1-2 On:
EPROM or 5V Flash
EPROM (Default)

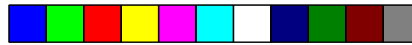


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Jumper Settings for VL-Bus Add-On Board



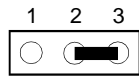
Locations of Jumpers JP36 and JP37
on the G486ESV AIO System Board



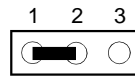
Jumper JP36

CPU External Clock Speed for VL-Bus Board

If a VL-Bus board is installed in the G486ESV AIO system board, Jumper JP36 pins 1 and 2 must be set to On if the CPU external clock speed is greater than 33MHz. Pins 2 and 3 must be set to On if the CPU external clock speed is less than or equal to 33MHz.



2-3 On: CPU External Clock Speed $\leq 33\text{MHz}$ (Default)

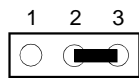


1-2 On: CPU External Clock Speed $> 33\text{MHz}$

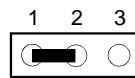
Jumper JP37

High Speed Mode for VL-Bus Board

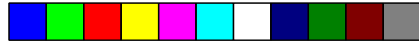
Set Jumper JP37 pins 1 and 2 to On only if each of the VESA VL-Bus add-on boards, installed in the VL-Bus slots on the riser card, supports Zero Wait State. If you are not sure whether your add-on boards support Zero Wait State, set JP37 pins 2 and 3 to On; otherwise, a system error may occur.



2-3 On: One Wait State (Default)

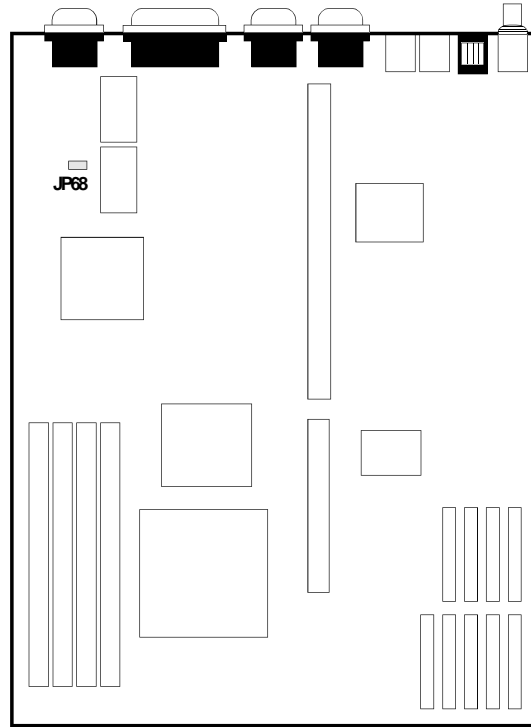


1-2 On: Zero Wait State

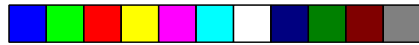


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Jumper Settings for Built-in VGA



Location of Jumper JP68 on the G486ESV AIO System Board

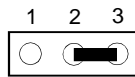


G486ESV AIO

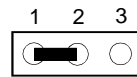
Jumper JP68

Built-in VESA VGA Enable/Disable

The G486ESV AIO supports a 15-pin analog connector built onto the system board. If you wish to install a VGA add-on board, set pins 1-2 to On to disable the built-in VGA. Install the VGA add-on board on the riser card.

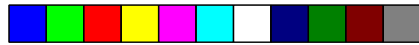


2-3 On:
Built-in VGA Enabled
(Default)



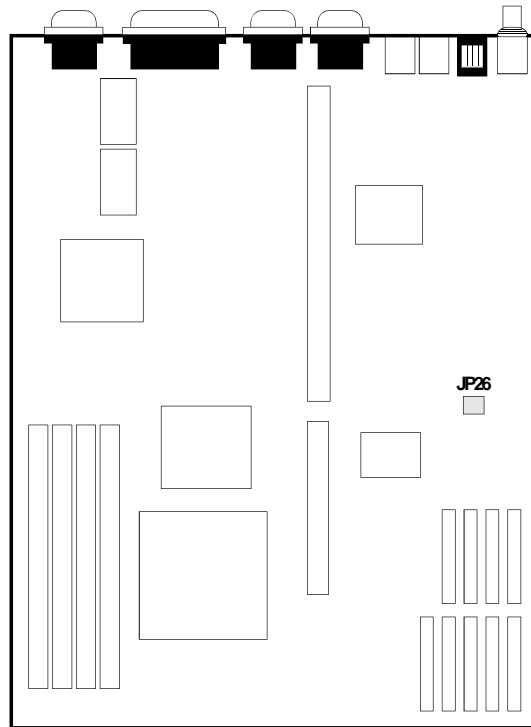
1-2 On:
Built-in VGA Disabled



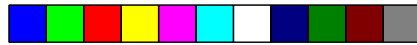


Green All-in-One System Board

Jumper Settings for Parallel Port



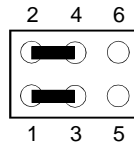
Location of Jumper JP26 on the G486ESV AIO System Board



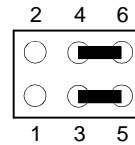
G486ESV AIO

Jumper JP26 ECP DMA Select

If your G486ESV AIO system board is using a NS PC87322 I/O chip, leave Jumper JP26 in its default setting. If your G486ESV AIO is using a NS PC87332 I/O chip, it will support an ECP parallel port, allowing you to use DMA Channel 1 or 3. Set Jumper JP26 according to the DMA channel used by the system board.



1-3, 2-4 On: DMA
Channel 1
(Default)

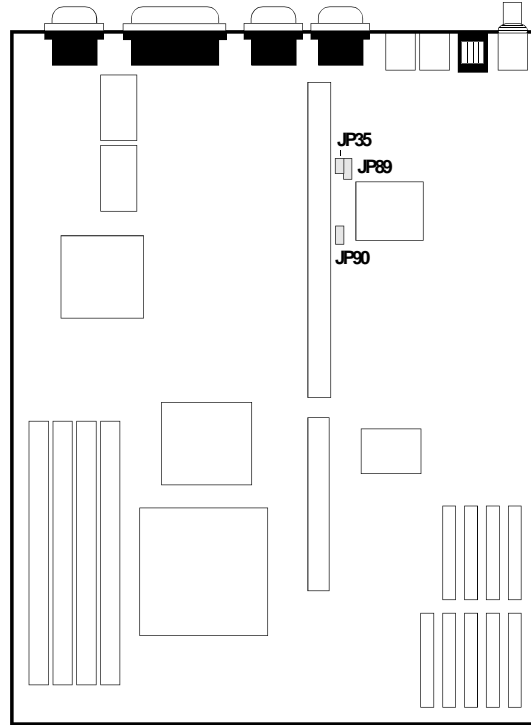


3-5, 4-6 On: DMA
Channel 3

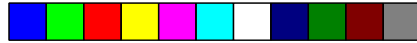


Green All-in-One System Board

Jumper Settings for the Built-in LAN



Locations of Jumper JP35, JP89 and JP90
on the G486ESV AIO System Board



G486ESV AIO

Jumper JP35 LAN Buffer Size

Set Jumper JP35 to On for 64K buffer size and Off for 16K buffer size.



Off: 16K
(Default)



On: 64K

Jumper JP89 Flush Ethernet Settings (For SCO UNIX Problems Only)

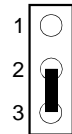
The Setmode Configuration Utility, contained in the “NET-700EC/ET/ECT Drivers and Utilities” diskette, allows you to easily configure the G486ESV AIO's LAN address. However, certain versions of SCO UNIX use I/O ports 280h, 2C0h and 300h. With these versions, you may experience problems, including the onboard LAN not being detected, the configuration not working, or being unable to enable the onboard LAN. These symptoms mean SCO UNIX has overwritten the Ethernet configuration data stored in the EEPROM, preventing the board from detecting its address. If this happens, use JP89 to flush the settings and reconfigure the board.



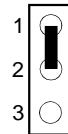
Green All-in-One System Board

The default setting of Jumper JP89 is 2-3 On. To reconfigure the board:

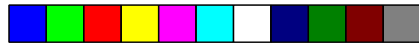
1. Power off your system.
2. Set Jumper JP89 to 1-2 On.
3. Power on your system.
4. Configure the board to IRQ3 and I/O port 300 using the SETMODE Configuration Utility.
5. Save the configuration to EEPROM.
6. Power off your system again.
7. Reset Jumper JP89 to 2-3 On.
8. Power on your system again to reconfigure your board.



2-3: On
(Default)



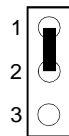
1-2: On



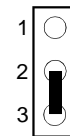
G486ESV AIO

Jumper JP90 Built-in LAN Enable/Disable

The G486ESV AIO supports AUI, BNC and RJ-45 connectors built onto the system board. If you wish to install a LAN add-on board, set pins 2 and 3 to On to disable the built-in LAN. Install the LAN add-on board on the riser card.



1-2 On: Enabled
(Default)



2-3 On: Disabled

Cache Configuration

The G486ESV AIO system board can be configured to cache sizes of 128KB, 256KB, 512KB and 1MB. 256KB is the default size.

The SRAM socket is a dual socket, allowing you to install either a 32K x 8 or 128K x 8 SRAM. One 32K x 8 or 128K x 8 SRAM tag RAM chip is required to store the cacheable addresses. The system board automatically detects the cacheable system RAM size based on the size of cache installed. SRAM and tag RAM chips should have speeds of 20ns.

Cache Size	U1/U5/U9/U14	U2/U6/U10/U15	U21
128KB	32Kx8	-	32Kx8 or 8Kx8
256KB *	32Kx8	32Kx8	32Kx8
512KB	128Kx8	-	32Kx8
1MB	128Kx8	128Kx8	128Kx8

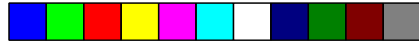
* Default setting

Note:

U1/U5/U9/U14 (Bank 0) and U2/U6/U10/U15 (Bank 1) are locations for the 32Kx8 SRAM or 128Kx8 SRAM.

When installing the cache chips, populate Bank 0 first and then Bank 1. For example, to configure 128K of cache memory, install four 32Kx8 chips in Bank 0 and leave the SRAM sockets of Bank 1 empty.

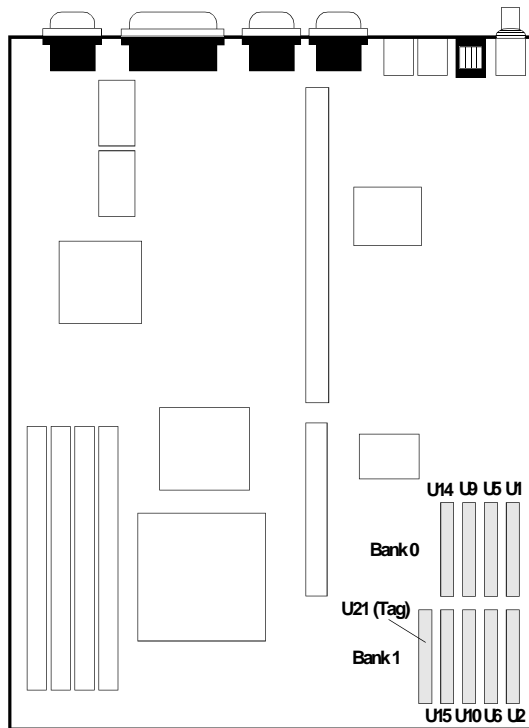
The table on the next page summarizes the cacheable system RAM size for the corresponding cache size.



G486ESV AIO

Cache Memory	Cacheable System RAM Size
128KB	32MB
256KB*	64MB
512KB	64MB
1MB	64MB

* Default setting

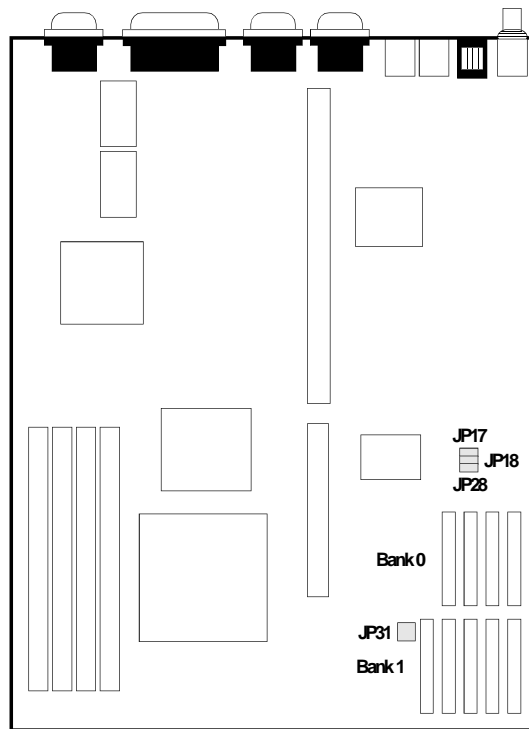


Locations of the SRAMs on the G486ESV AIO System Board

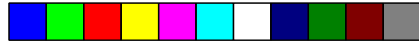


Green All-in-One System Board

Jumper Settings for Cache Memory



Locations of Jumpers JP17, JP18, JP28 and JP31 on the System Board

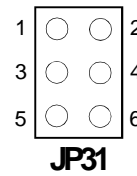
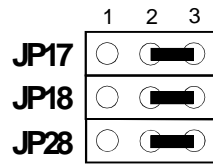
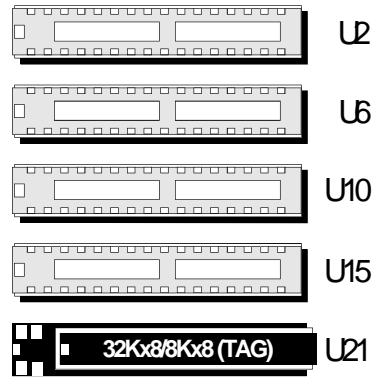
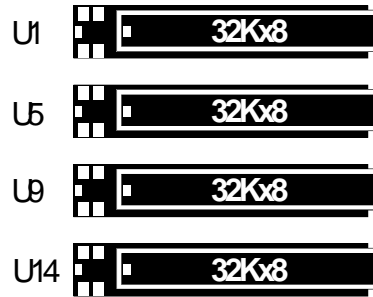


G486ESV AIO

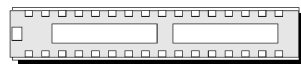
128KB Cache SRAM

Bank 0

Bank 1

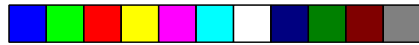


Note:



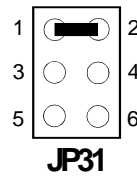
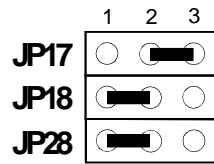
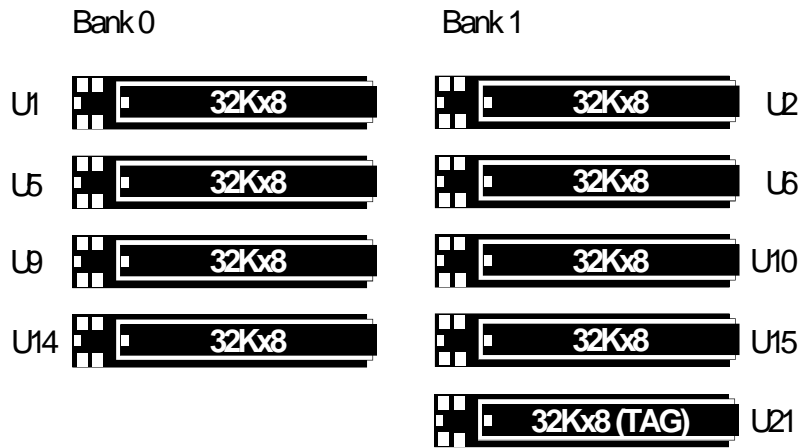
This refers to an empty SRAM socket.





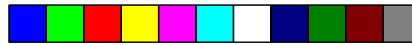
Green All-in-One System Board

256KB Cache SRAM *



* Default Setting



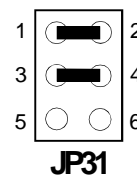
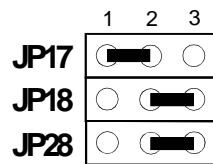
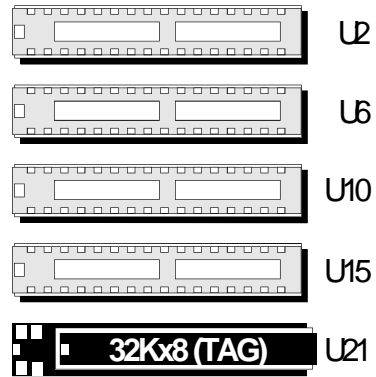
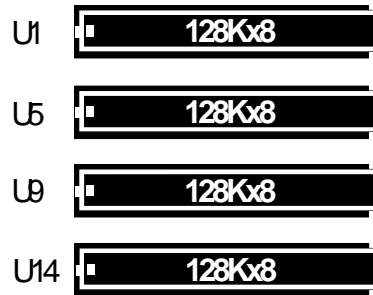


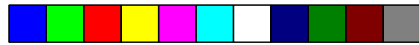
G486ESV AIO

512KB Cache SRAM

Bank 0

Bank 1



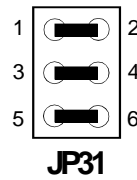
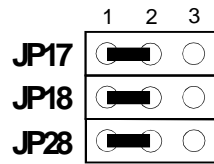


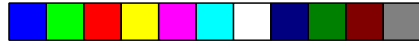
Green All-in-One System Board

1MB Cache SRAM

Bank 0

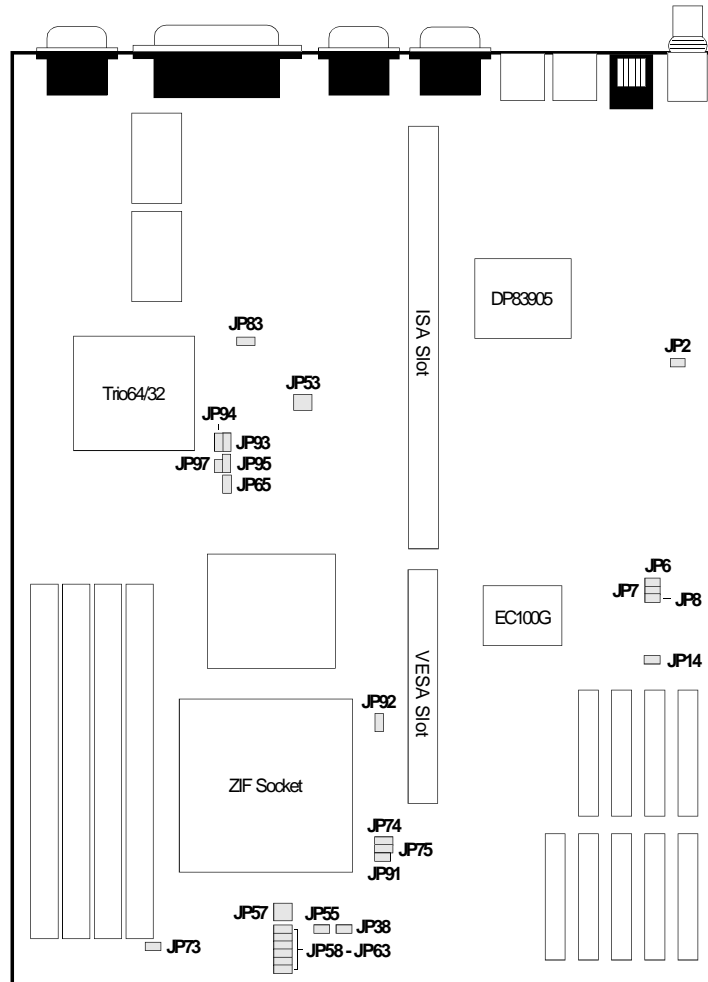
Bank 1





G486ESV AIO

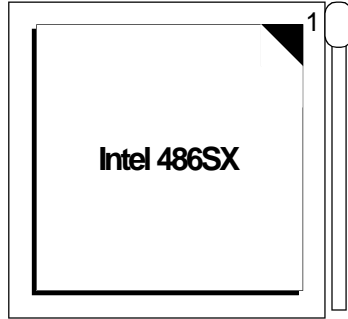
CPU Installation and Upgrade Jumper Settings for CPUs



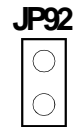
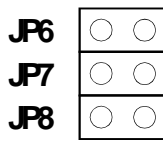
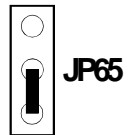
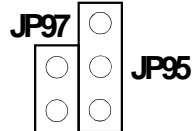
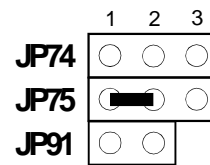
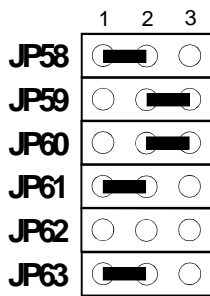
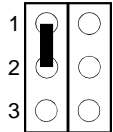


Green All-in-One System Board

Intel 486SX



JP94 JP93



2-29 ♦ Installation Overview



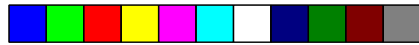
G486ESV AIO

Note:

Make sure Jumper JP53 is set correctly. This jumper is used to select the CPU external clock speed. The external CPU clock speed of the Intel 486SX CPU is equal to its internal clock speed. Please refer to page 2-45.

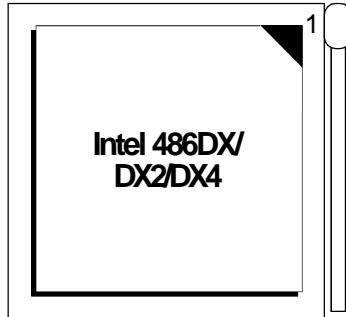
Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.

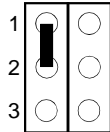


Green All-in-One System Board

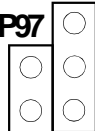
Intel 486DX/DX2/DX4



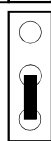
JP94 JP93



JP97



JP95



JP65

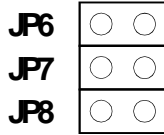
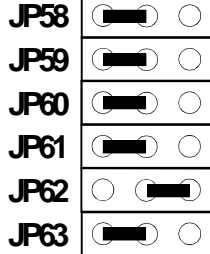


JP38



JP55

1 2 3



JP6

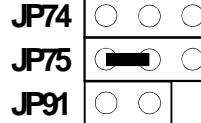
JP7

JP8



JP73

1 2 3



JP92





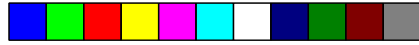
Note:

Make sure Jumper JP53 is set correctly. The external CPU clock speed of the Intel 486DX CPU is equal to its internal clock speed. To get the external CPU clock speed of the Intel 486DX2 CPU, divide its internal clock speed by 2. To get the external CPU clock speed of the Intel 486DX4, divide its internal clock speed by 3. Please refer to page 2-45.

Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

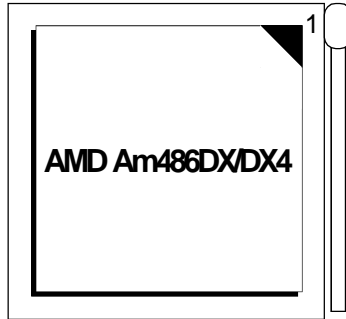
Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.



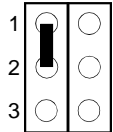


Green All-in-One System Board

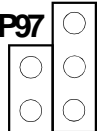
AMD Am486DX/DX4



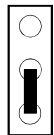
JP94 JP93



JP97



JP95



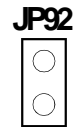
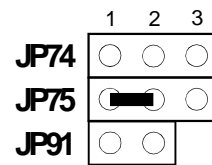
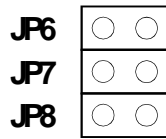
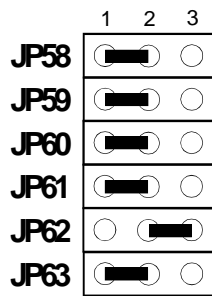
JP65



JP38



JP55





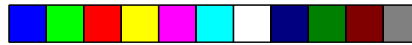
G486ESV AIO

Note:

Make sure Jumper JP53 is set correctly. The external CPU clock speed of the AMD Am486DX CPU is equal to its internal clock speed. To get the external CPU clock speed of the AMD Am486DX4, divide its internal clock speed by 3. Please refer to page 2-45.

Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.

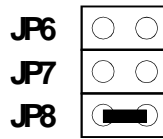
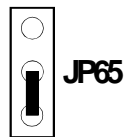
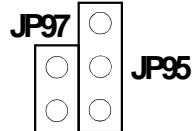
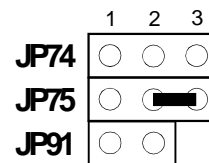
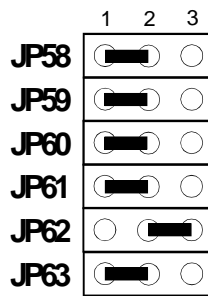
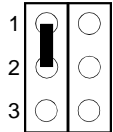


Green All-in-One System Board

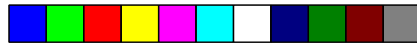
Intel Write-back 486 CPU



JP94 JP93



2-35 ♦ Installation Overview



G486ESV AIO

Note:

Make sure Jumper JP53 is set correctly. To get the external CPU clock speed of the Intel Write-back 486 CPU, divide its internal clock speed by 2. Please refer to page 2-45.

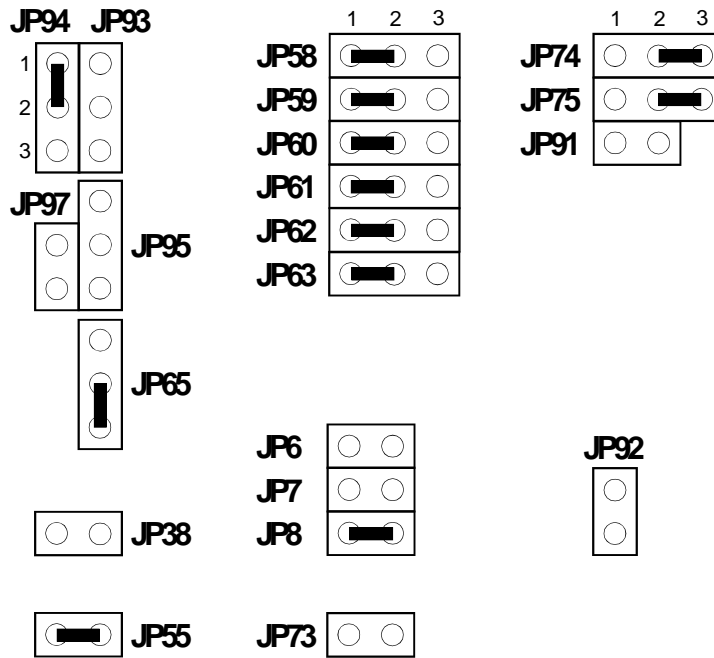
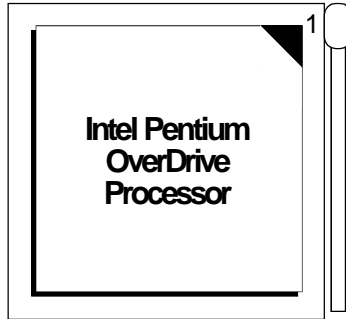
Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

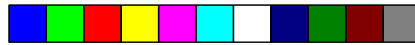
Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.



Green All-in-One System Board

Intel Pentium OverDrive Processor





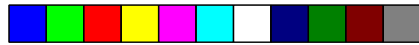
G486ESV AIO

Note:

Make sure Jumper JP53 is set correctly. To get the external CPU clock speed of the Pentium OverDrive Processor, divide its internal clock speed by 2.5. Please refer to page 2-45.

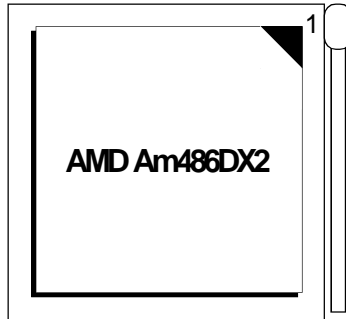
Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.

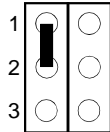


Green All-in-One System Board

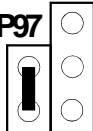
AMD Am486DX2



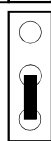
JP94 JP93



JP97 JP95



JP65



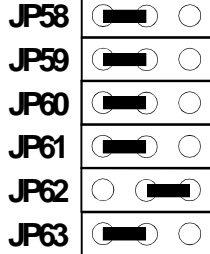
JP38



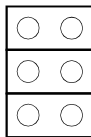
JP55



1 2 3



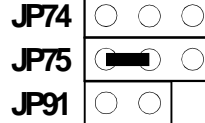
JP6 JP7 JP8



JP73



1 2 3



JP92





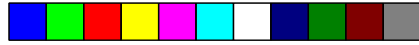
G486ESV AIO

Note:

Make sure Jumper JP53 is set correctly. To get the external CPU clock speed of the AMD Am486DX2, divide its internal clock speed by 2. Please refer to page 2-45.

Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.

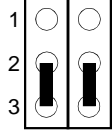


Green All-in-One System Board

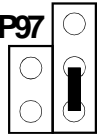
Cyrix Cx486DX/DX2
SGS-Thomson ST486DX/DX2



JP94 JP93



JP97



JP95



JP65



JP38



JP55

1 2 3

JP58



JP59



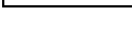
JP60



JP61



JP62



JP63



JP6



JP7



JP8



JP73



1 2 3

JP74



JP75



JP91



JP92





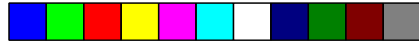
Note:

Make sure Jumper JP53 is set correctly. The external CPU clock speed of the Cyrix Cx486DX CPU is equal to its internal clock speed. To get the external CPU clock speed of the Cyrix Cx486DX2, divide its internal clock speed by 2. Please refer to page 2-45.

The external CPU clock speed of the SGS-Thomson ST486DX CPU is equal to its internal clock speed. To get the external CPU clock speed of the SGS-Thomson ST486DX2, divide its internal clock speed by 2. Please refer to page 2-45.

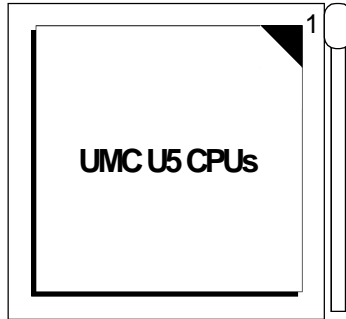
Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.

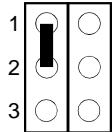


Green All-in-One System Board

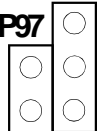
UMC U5 CPUs



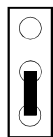
JP94 JP93



JP97



JP95



JP65

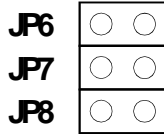
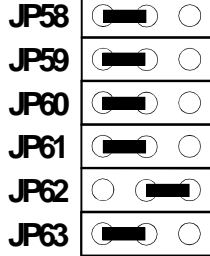


JP38

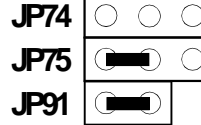


JP55

1 2 3



1 2 3



JP92





G486ESV AIO

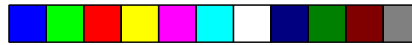
Note:

Make sure Jumper JP53 is set correctly. The external CPU clock speed of every UMC U5 CPU is equal to its internal clock speed. Please refer to page 2-45.

Jumper JP57 is used to select the CPU voltage. Make sure it is set correctly. Please refer to page 2-46.

Please refer to page 2-47 of the manual to determine the appropriate setting for Jumper JP83.





Green All-in-One System Board

Jumper JP14 DMA DRQ Sample Rate

Setting Jumper JP14 to On will set the DMA DRQ sample rate to the speed of the CPU. Setting JP14 to Off will double the 14.318MHz sample rate to 28.636MHz.



On: CPU Speed
(Default)



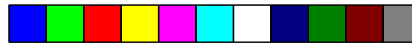
Off: 28.636MHz

Jumper JP53 CPU External Clock Speed Select

Jumper JP53 should be set to match the CPU external clock speed.

External CPU Clock Speed	25 Mhz	33 Mhz *	40 Mhz
Internal CPU Clock Speed	25/50 Mhz	33/66/ 100 Mhz *	40/80 Mhz
Pentium ODP Internal Clock Speed	63 Mhz	83 Mhz *	
JP53			

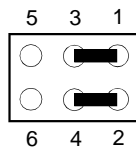
* Default setting



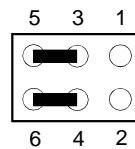
G486ESV AIO

Jumper JP57 CPU Voltage Select

Set Jumper JP57 according to the voltage of the CPU installed in your system board.



Pins 1-3, 2-4 On:
5V CPUs
(Default)



Pins 3-5, 4-6 On:
3.45V CPUs

3.45V CPUs:

AMD -

A80486DX4-100NV8T
A80486DX2-80NV8T
A80486DX2-66NV8T

Cyrix -

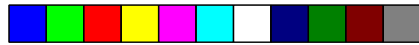
Cx486DX2-V66GP
Cx486DX2-V80GP
Cx486DX2-V50GP

Intel 486 -

A80486DX4-100
A80486DX4-75

UMC -

U5SLV-SUPER25
U5SLV-SUPER33



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Jumper JP83 CPU Type Select

Set Jumper JP83 according to the type of CPU installed on the G486ESV AIO system board.



Off: Intel-SL/Cyrix-SL
CPU (Default)



On: Other CPUs

Jumper JP2

Jumper JP2 is for factory testing only and should always be set to its default configuration. Reconfiguring this jumper will cause problems with your G486ESV AIO system board.



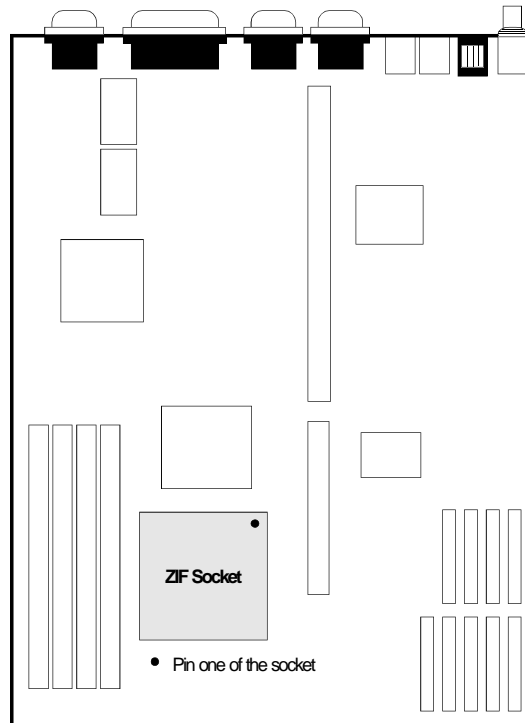
JP2: Off (Default)



G486ESV AIO

Installing Upgrade CPUs

The G486ESV AIO is equipped with a 237-pin Zero Insertion Force (ZIF) socket at location U43 of the system board. This socket is designed for easy removal of the old CPU and easy insertion of the 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, the installation is being done incorrectly.



**Location of the ZIF Socket on the
G486ESV AIO System Board**



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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 an OverDrive™ Processor will not affect the original system warranty.

The ZIF socket consists of four rows of pin holes on each side. Install the 80486SX, 80486DX, 80486DX2 or the Intel486™ OverDrive Processor, which only has three rows of pins, in the three inner rows of the socket. The outermost row of pin holes should be visible on all four sides of the socket when any of these CPUs is installed. The Pentium™ OverDrive Processor has four rows of pins on each side, and should be installed so it covers all the pin holes of the ZIF socket.

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 pin 1 of the CPU is being plugged into pin 1 of the socket. The location of pin 1 is shown on the next page.

Caution:

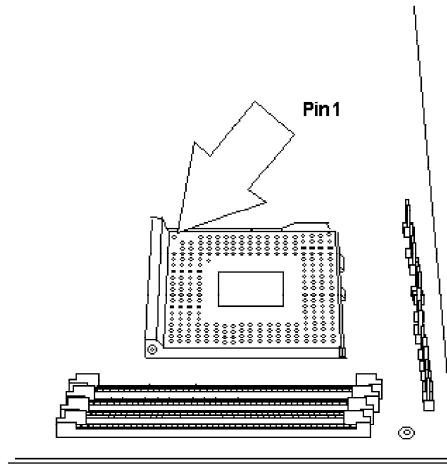
You will need to change the CPU-type jumper settings. (Please see the previous pages of this manual.)

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.





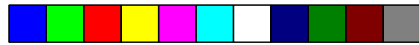
G486ESV AIO



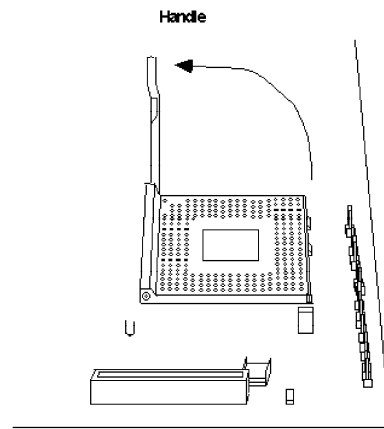
Zero Insertion Force (ZIF) Socket

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.

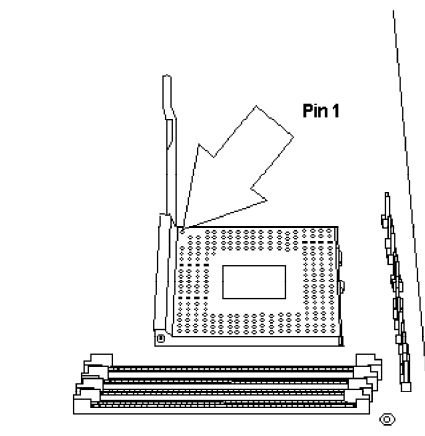


Green All-in-One System Board



Lifting the Handle

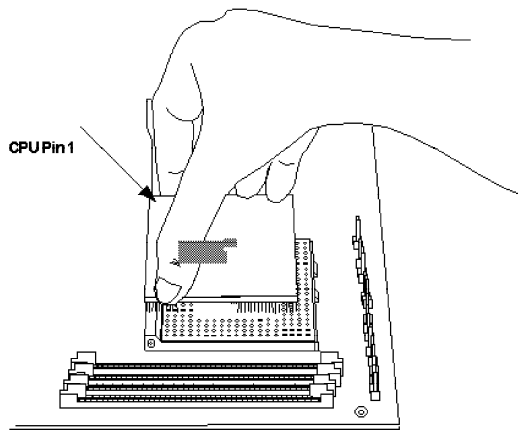
2. Once the lever is completely up, remove the old CPU by carefully lifting it straight out of the socket. You are now ready to insert the new CPU.



Pin 1 of the ZIF Socket



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.



Green All-in-One System Board

Clearance Requirements

The Pentium OverDrive 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 OverDrive 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.

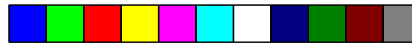
Fan Exhaust

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.

Note:

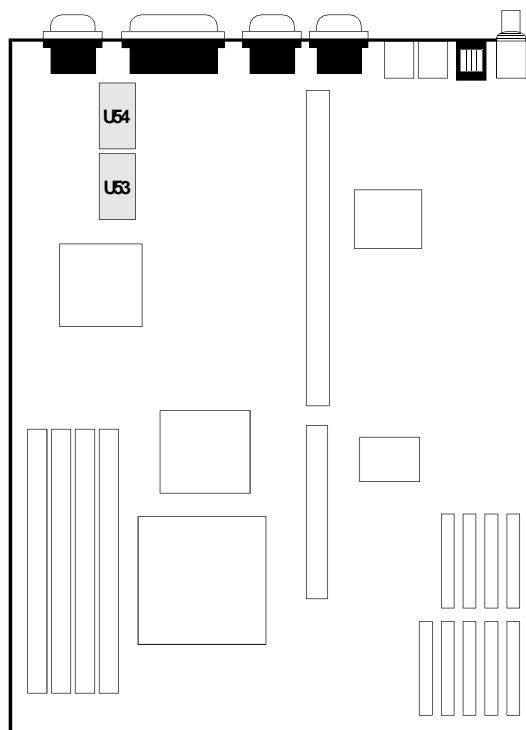
Verify that Jumper JP57 (CPU Vcc Select) is set to match the voltage of your upgrade CPU. Refer to page 2-37 for more information.



G486ESV AIO

Upgrading the Video Memory from 1MB to 2MB

If your G486ESV AIO is equipped with 1MB of video memory, it can be upgraded to 2MB by installing two additional 256Kx16 DRAM chips. This will allow 256 colors to be simultaneously displayed in the 1280x1024 mode. The DRAM speed should be 70ns and we recommend using the same brand of chips as those already installed. Insert the DRAM chips in the empty DRAM sockets (U53 and U54) on your system board as shown below.



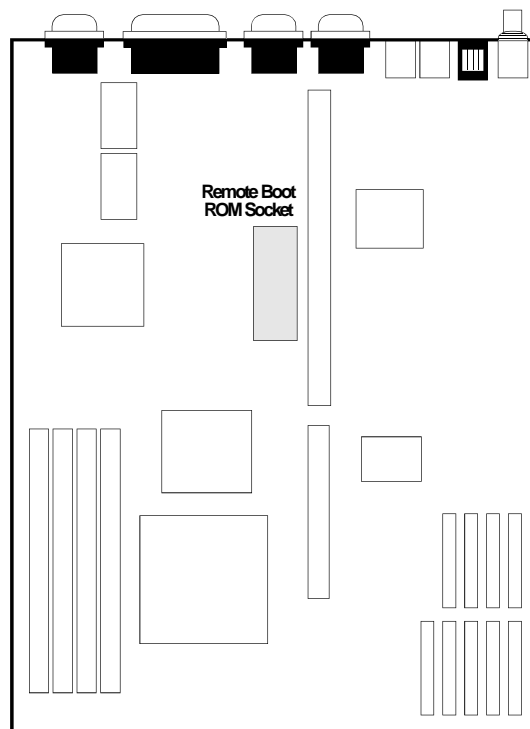
Installation Overview ◆ 2-54



Green All-in-One System Board

Installing the Remote Boot ROM

This chapter describes how to install the optional Remote Boot ROM. The location of the socket is shown below.



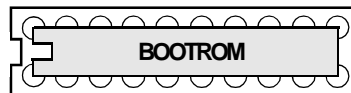
The Remote Boot ROM Socket on the G486ESV AIO System Board



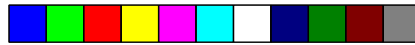
G486ESV AIO

To ease insertion of the Boot ROM chip into the socket, the pins or legs must be slightly bent. This is done by holding one side of the chip against a flat surface and gently pushing the chip. Be careful not to bend the legs too much.

When all the pins have been slightly bent, the chip is ready for insertion. Align the notch on the Boot ROM with the notch on the socket as shown below.



Before pushing the chip into its socket, make sure the pins are all aligned with the holes in the socket. If a pin is not inserted properly, the boot ROM will not function. Please note, a pin may bend up under the chip and lead you to mistakenly believe it is inserted properly.



Green All-in-One 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 Philips screwdriver*
- *one nutdriver, 3/16" or 5mm*
- *one grounded wriststrap is strongly recommended to protect the board against static electricity discharges.*

Step 1

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

Step 2

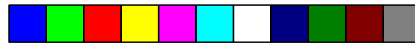
Remove the system unit cover. Refer to the manufacturer's instructions if necessary.

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.



G486ESV AIO

Step 5

Insert the HSIM modules into the HSIMM banks on the G486ESV AIO. The quantity and location of the HSIM modules depend upon the memory configuration and type of modules you intend to use.

Step 6

Set the appropriate jumpers.

Step 7

Install the prepared G486ESV AIO system board into the case and replace the screws.

Step 8

If you are using the AUI connector, or the ECT-100, you will have to locate for a free slot at the back of the system unit's case to install the additional ports. When you have chosen a suitable slot, remove the screw and the slot cover. Save the slot cover for future use. You will be using the screws in the next step.

Note:

The ECT-100 is a card-edge bracket holding the AUI, BNC and RJ-45 connectors.

Step 9

Insert the bracket holding the AUI connector or the ECT-100 bracket into the vacant slot. Secure the bracket with the slot cover screw.



Green All-in-One System Board

Step 10

Reinstall all cards and replace the system unit cover.

Step 11

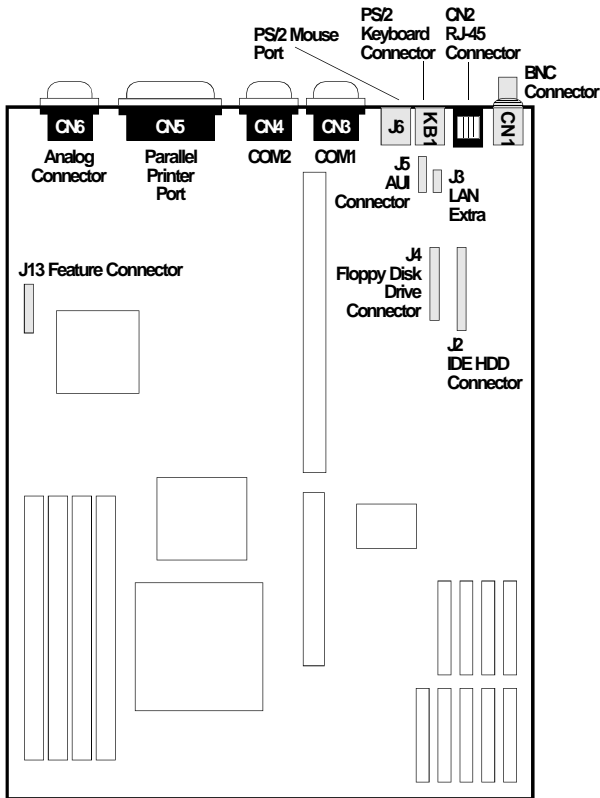
Plug in any peripherals, such as a mouse, modem or printer, into the appropriate ports on the G486ESV AIO board. Reconnect all power cords and cables.





Built-in Ports

The G486ESV AIO system board is equipped with two serial ports, one EPP parallel printer port, one FDD connector, one IDE hard disk interface, one BNC connector, one RJ-45 connector, one AUI connector, one analog connector, one feature connector, one PS/2 mouse port and one PS/2 keyboard connector. The chapter, "Initial Setup Program", describes the software setup procedures of these functions.





Green All-in-One System Board

Serial Ports

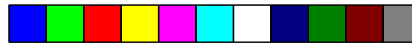
The built-in primary (COM1) and secondary (COM2) serial ports are RS-232C asynchronous communication ports that can be used with modems, serial printers, remote display terminals, and other serial devices. These serial ports use the following system I/O addresses:

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

Connecting the Serial Ports

The primary serial port (COM1) and secondary serial port (COM2) are 9-pin connectors on the system board. Connect the serial port cable to Connector CN3 for the COM1 primary serial port and the other serial port cable to Connector CN4 for the COM2 secondary serial port. Make sure the colored stripes on the ribbon cables align with pin 1 of Connectors CN3 and CN4.





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Parallel Port

The G486ESV AIO 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 Enhanced Parallel 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	378-37F Hex
LPT3	278-27F Hex

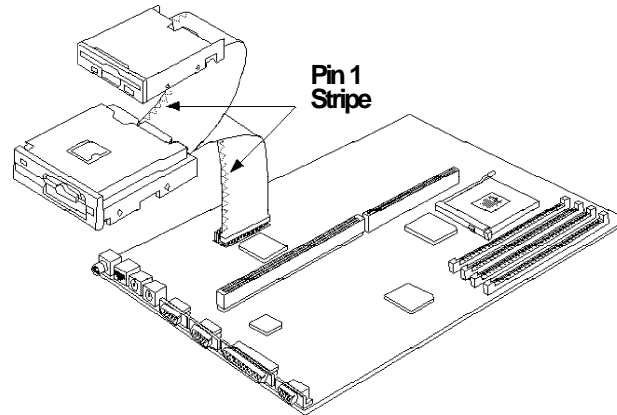
Floppy Disk Drive Connector

The G486ESV AIO 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/2.88MB floppy disk drives.



Green All-in-One System Board

Connecting the Floppy Disk Cable



The Floppy Disk Connector on the G486ESV AIO System Board

Step 1

Install the 34-pin header connector into the floppy disk connector (J4) on the G486ESV AIO system board, with the colored edge of the ribbon aligned to pin 1.

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.

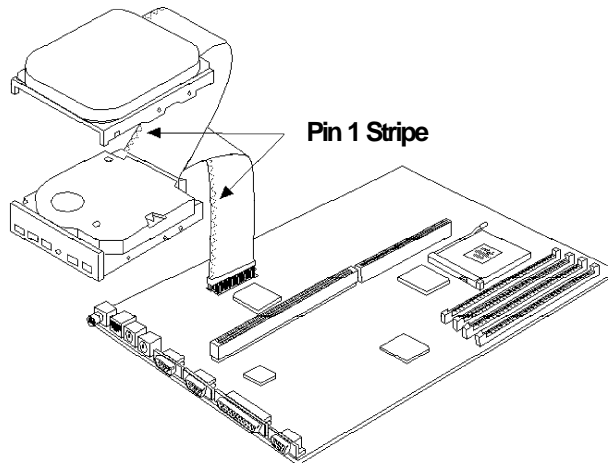


IDE Hard Disk Connector

The G486ESV AIO system board will interface two 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.

Connecting the IDE Hard Disk interface



**The IDE Hard Disk Connector on the
G486ESV AIO System Board**



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Step 1

Install the 40-pin header connector into the hard disk connector (J2) on the G486ESV AIO system board, with the colored edge of the ribbon aligned to pin 1.

Step 2

Install the other 40-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 C.

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 G486ESV AIO system board when adding a second hard drive.

We recommend that both 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 two drives, not the G486ESV AIO 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.



G486ESV AIO

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 on a drive that has already been formatted, or you will lose all programs and data stored on the drive.

PS/2 Mouse Port

A 6-pin PS/2 mouse port is built-in to the G486ESV AIO system board. Connect your PS/2 mouse to Connector J6 on the system board.

Analog Connector

The G486ESV AIO system board is equipped with a built-in 15-pin VGA analog connector that supports 1280x1024 graphics resolution in 256 colors with 2MB of maximum video memory onboard. It supports horizontal sync and vertical sync for VESA Display Advanced Power Management (DAPM) compliant monitors.

Connecting the Analog Connector

The G486ESV AIO system board can only be used with an analog video display using a 15-pin D-shell cable connector (standard VGA monitor connection). If your monitor supports analog video, but does not have a 15-pin D-shell connector, see your monitor dealer for an adapter or optional cable.



Green All-in-One System Board

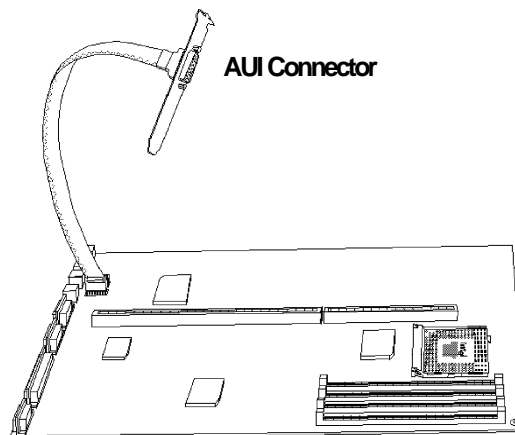
Insert the VGA monitor video connector into the 15-pin VGA analog connector on the G486ESV AIO system board and plug the VGA monitor power cord into a grounded three-pronged power outlet. Refer to your monitor reference manual for more information.

Note:

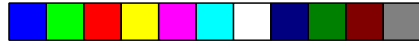
Some monitors have a switch that chooses between analog and TTL (or digital) operation. If your monitor has such a switch, set it for analog operation.

AUI Connector

The G486ESV AIO supports an AUI connector. The AUI connector is a 15-pin connector attached to a ribbon cable. Attach the ribbon cable, which came with the G486ESV AIO, to connector J5 on the system board. Make sure the colored stripe on the ribbon cable aligns with pin 1 of connector J5 as shown below.



The AUI Connector on the G486ESV AIO System Board



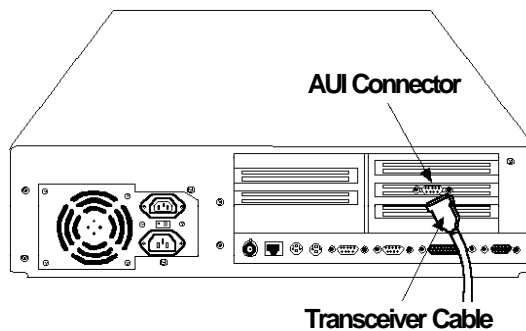
G486ESV AIO

Ethernet Cable

Use RG-11 Ethernet cable and the 15-pin AUI connector for standard Ethernet installation.

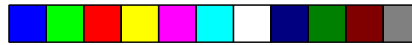
Connect the station end of the transceiver cable to the AUI connector of the G486ESV AIO system board. Tighten the screws on the adapter plate. Be careful not to tighten them too much. Connect the other end of the transceiver cable to the transceiver box.

To connect one station to another, RG-11 thick trunk cable must be connected from one station's transceiver box to another station's transceiver box.



Connecting a Transceiver Cable to the G486ESV AIO System Board





Green All-in-One System Board

BNC Connector

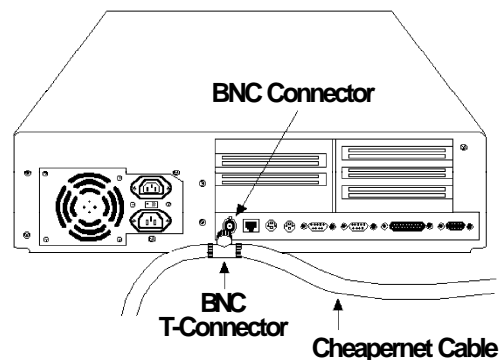
The G486ESV AIO supports an optional BNC connector at location CN1 of the system board.

Cheapermet Cable

Use RG-58 A/U thin Ethernet cable and the BNC connector for Cheapermet installation.

To connect a BNC T-connector to the BNC connector of the G486ESV AIO system board, align the post of the BNC connector with the slot of the BNC T-connector. Push the T-connector into the BNC connector and twist the T-connector sleeve clockwise as far as it will go.

Connect the RG-58 cable to one end of the BNC T-connector. To hook one station to another, connect RG-58 cable from one-end of the T-connector to one end of the T-connector of the next system.



Connecting a BNC T-Connector to the G486ECV-AIO



G486ESV AIO

Twisted-Pair Connector

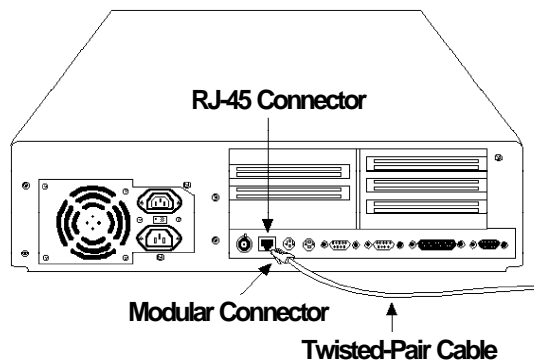
The G486ESV AIO supports an optional RJ-45 connector at location CN2 of the system board.

Twisted-Pair Cable

Use twisted-pair cable and the RJ-45 modular phone jack connector for Twisted-Pair installation.

Twisted-Pair installation is done by connecting the modular connector of the twisted-pair cable to the RJ-45 modular phone jack connector of the G486ESV AIO system board.

Each station in the network is connected to a port on a hub. This type of installation is favorable, since one station can go down without affecting the rest of the network.



**Connecting a Modular Connector
to the G486ESV AIO System Board**

ECT-100

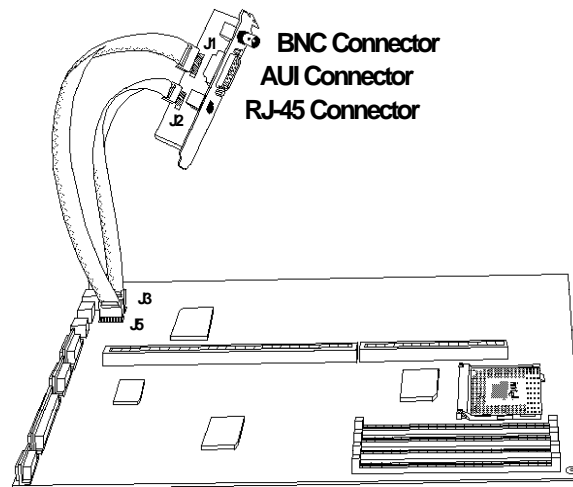
If your G486ESV AIO system board is not equipped with a BNC or RJ-45 connector, an optional ECT-100 will be provided upon request. The ECT-100 is a card-edge metal bracket holding the AUI, BNC and RJ-45 connectors.

Step 1

Attach the ribbon cable connected to J1 of the ECT-100 to connector J5 (AUI Connector) on the G486ESV AIO board, with the colored edge of the ribbon aligned to pin 1.

Step 2

Attach the ribbon cable connected to J2 of the ECT-100 to connector J3 (LAN Extra) on the G486ESV AIO board, with the colored edge of the ribbon aligned to pin 1.



Connecting the ECT-100 to the G486ESV AIO System Board



❖ **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 CTRL-ALT-ESC/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> keys. If you do not press these keys at the correct time and the system does not boot, the following error message will appear:

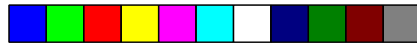
Press F1 to continue or Del to enter Setup

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>.

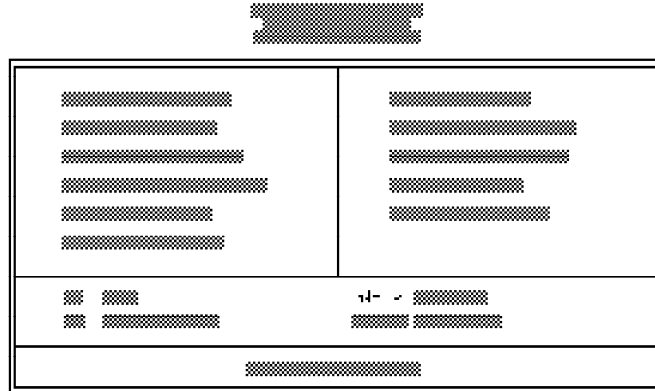
If you selected “Setup” in the Security Option, you will be prompted for the password only when you try to enter Setup. Refer to the “BIOS Features Setup” section for more information.

Award BIOS CMOS Setup Utility

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



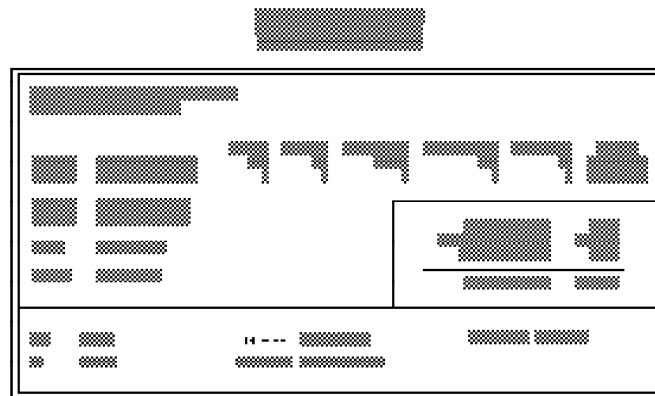
Green All-in-One System Board



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.



3-2 ◆ Initial Setup Program



Date and Time

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

Drive C and Drive D

If you have added a hard drive, you must select the appropriate type for the drive. The G486ESV AIO 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 G 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.

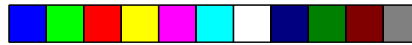
If none of the pre-set types is appropriate for your hard drive, choose “User,” which is the user-definable type. To use this type, highlight either hard disk C or D, depending on your hard drive configuration. Use the arrow keys until type “User” is showing.

You might want to use the “IDE HDD Auto Detection” option to set the appropriate type for your drive. Refer to page 3-12 of this manual.

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 improperly format the device.



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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.

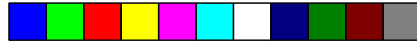
All, But Diskette: The system will stop for any errors except a disk error.

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, and the other memory size of your system. You cannot alter these items; your computer automatically detects and displays them.

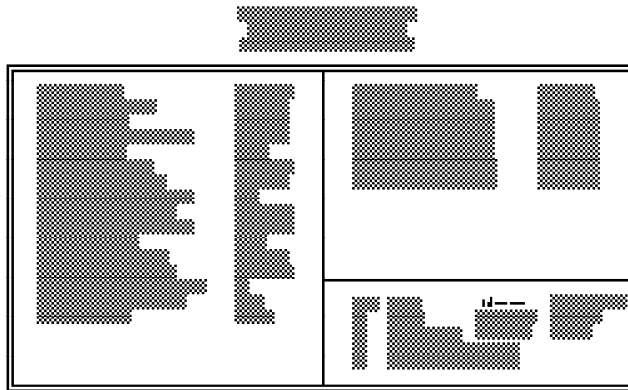
The Other Memory size refers to the memory located in the 640K to 1024K address space. This is the memory used for different applications. DOS uses this area to load device drivers to maximize free base memory for application programs. Most use this for the Shadow RAM.



G486ESV AIO

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 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.

Initial Setup Program ◆ 3-5

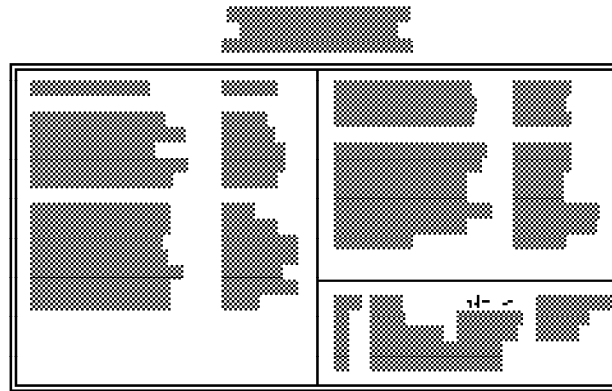


Green All-in-One System Board

Chipset Features Setup

The G486ESV AIO uses the EFAR EC802G 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.



If the Auto Configuration option is set to “Enabled,” the Cache write wait state, External cache burst read, DRAM R/W wait state, and AT bus clock selection options will automatically be set to their maximum (fastest) values. However, if the G486ESV AIO system board becomes unstable, set the Auto Configuration option to “Disabled”. This will allow you to reset these options to a slower value.

The Chipset Features Setup option also allows you to enable or disable the onboard serial ports, parallel port, floppy disk controller and hard disk controller.

3-6 ◆ Initial Setup Program

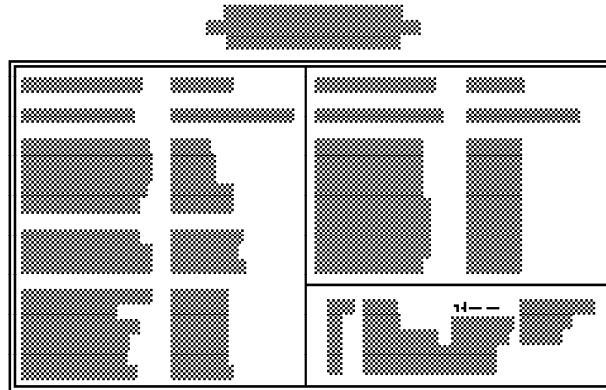


Use the arrow keys to move the highlight bar to the option you wish to change or modify. Use the <Page Up>, <Page Down>, <+> or <-> keys to make the corresponding changes.

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.

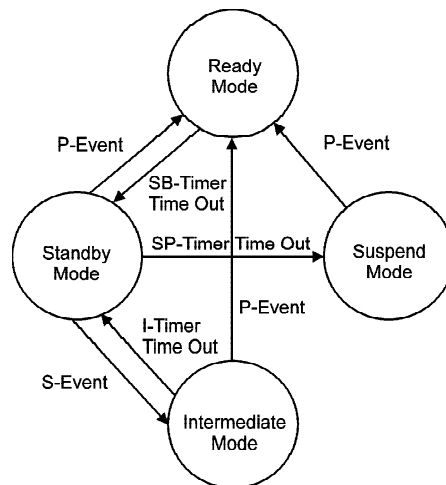


Choosing “User Defined” in the Power Management option will allow you to set the time of the power management features. “Min Power Saving” and “Max Power Saving” will set the minimum and maximum value of these options respectively. Choose “Disabled” if you do not wish your system to enter the green mode.



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Enabling the DMA request check, Interrupt check, Parallel port check, Serial port check, Hard disk check or Video write check will allow your system to enter the green mode and resume anytime there is an interrupt generated from these ports. If any of these options is set to “Disabled,” the system will enter the green mode, but will not resume operation, even if there is an interrupt generated from these ports, unless you press any key on the keyboard or move the mouse.



where:

P-Event	Primary Event
S-Event	Secondary Event
SB-Timer	Standby Timer
SP-Timer	Suspend Timer
I-Timer	Intermediate Timer

The gray arrows and circle indicate optional state and state transitions.

3-8 ◆ Initial Setup Program



Standby Mode Timer

The system will go into Standby Mode after the system is inactive for the duration set in this timer. In Standby Mode, the system conserves power by slowing the CPU to an intermediate speed, which you can define in the Standby Mode Speed entry.

Suspend Mode Timer

After the system enters Standby Mode, the system will go into Suspend Mode after the system is inactive for the duration set in this timer. You can prolong operation of the system in Standby Mode by defining secondary events. Secondary events are defined using the Event Class fields on the right side of this setup screen. If a secondary event occurs while the Suspend Timer is counting, the Suspend counter starts from the beginning again.

In Suspend Mode, the system conserves power by slowing the CPU to the speed set in the Suspend Mode Speed entry. In Suspend Mode, the system also blanks the screen. Suspend Mode gives greater power savings than Standby Mode.

Video Standby Timer

The monitor screen will go blank after the system is inactive for the duration set in this timer. In the Video Off Method field, you can specify how the screen is blanked. Greatest power savings are achieved if you select the “V/H SYNC+Blank” selection.

HDD Standby Timer

The hard disk drive motor will stop spinning after the duration set in this timer. Most current-model IDE hard drives support this feature.



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Intermediate Timer

When the system is in Standby Mode, it will be set into Intermediate Mode by a secondary event. After the Intermediate Timer runs out, the system will return to Standby Mode. The Standby Mode timer will start counting from the beginning. Secondary events allow you to run your system at the intermediate Standby Mode speed.

IRQ5-15 Event Class, Video Write Class

Primary events will set the system into Ready Mode for full-speed operation. If the system is in intermediate-speed Standby Mode, secondary events will prolong operation in Standby Mode.

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 default values provide the slowest performance for the system. You should use these values only if 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 default values are very stable and should be selected 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 return to the Setup default values. After pressing <Enter>, you will be returned to the main menu.

To configure your system for optimum performance, you must reset the options under the Chipset Features setup. You are advised to do so only under the instruction of a technical engineer, otherwise, failure may occur.

Password Setting

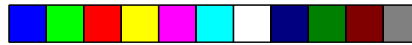
If you want to set a password, make sure the Security Option under the BIOS Features Setup is set to “System” or “Setup”. Refer to the BIOS Features Setup option for more information.

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 following message will appear:

Confirm Password:



Green All-in-One System Board

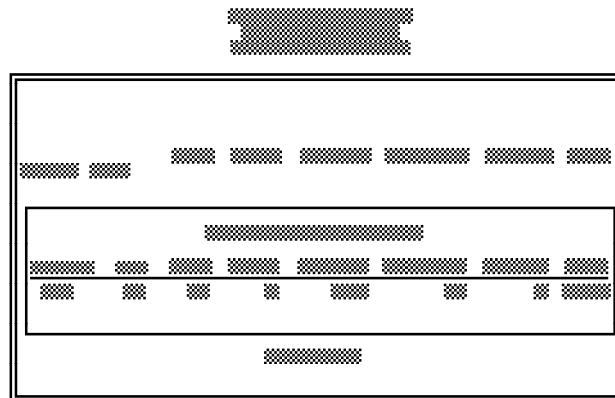
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. Otherwise, enter a new password.

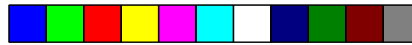
To delete or disable the password function, simply press <Enter> instead of typing in a new password. If for some reason, you forget your password, a jumper can be set to clear the password. Refer to Jumper JP5 under the Jumper Settings section for more information.

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.

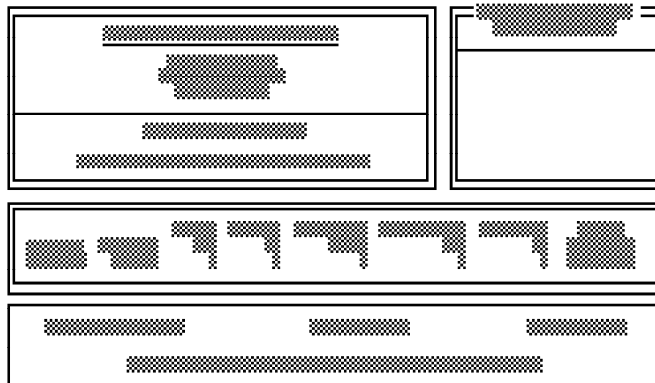




The screen displays the parameters detected and allows you to accept or reject the parameters. Type “Y” and press <Enter> to accept the parameters, or press <Esc> to abort. If you select “Y”, the parameters of the hard disk will be displayed in the Standard CMOS Setup.

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 on an IDE drive, 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 <En-



Green All-in-One System Board

ter> 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> 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> or after memory testing is done.





❖ *Setmode Configuration Utility*

The G486ESV AIO board supports optional AUI, BNC and RJ-45 connectors built onto the system board. The onboard LAN may be configured using either the Setmode Configuration Utility or the Command Line under DOS. This allows easy configuration of its port and address settings, without the use of jumpers.

Setmode

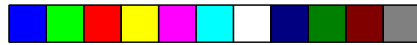
Setmode allows you to configure the onboard LAN's I/O port, IRQ channel, architecture, memory address, and perform a loopback test. The utility also allows you to view the current values in configuration registers A and B.

To run the Setmode utility:

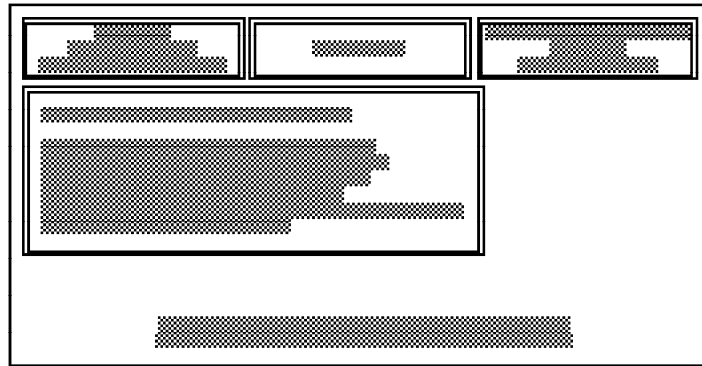
Insert the “NET-700EC/ET/ECT Drivers and Utilities” diskette 1 into drive A: (or B:) and type the following command:

```
A:\>CD Setmode      <Enter>  
A:\Setmode>Setmode  <Enter>
```

A screen similar to the one on the next page will appear.



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Main Functions Menu

“Main Functions” consists of six menus that will help you configure the G486ESV AIO's onboard LAN. Pay special attention to the “Notes” and “Warnings” mentioned in this section of the manual. They contain important information that can be the difference between a successful and unsuccessful configuration.

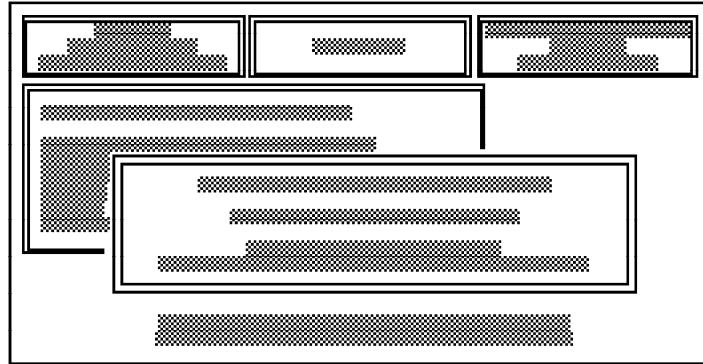
Configure Currently Enabled Card

The “Configure Currently Enabled Card” menu allows you to configure or change the configuration of the onboard LAN.

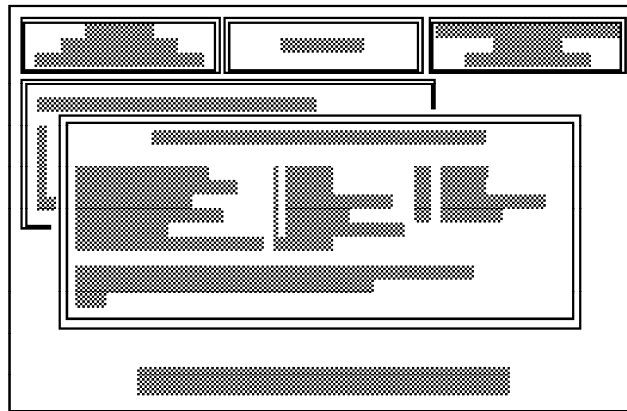
Use the arrow keys to move to this menu and press <Enter>, or simply press the function key <F1>. A screen similar to the one on the next page will appear.



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The “Select Boards I/O Port Address” screen will show the current I/O port address of the onboard LAN. If you wish to change the current port address, press <F1> until the desired I/O port address appears. Press <Enter>, and a screen similar to the one shown below will appear.





Green All-In One System Board

Note:

If the message, “No board was present at this address”, appears on the screen, check the following:

- 1. The address you have selected may not be available. Select another address.*

If you wish to view the current address, run the Getmode utility. Refer to the “Getmode” section for more information.

- 2. If you have selected all of the available addresses and you still get the same message, the onboard LAN may have been disabled. Enable it by using the “Configure Card From Disabled Card” menu. Refer to page 4-11 for more information.*

You may also use Jumper JP90 to enable the onboard LAN. Refer to page 2-19 for more information.

The “DFI NET-700 Change Configuration” screen allows you to change the configuration of the onboard LAN. Displayed on the screen are the default values for the I/O Base Address, Interrupt Assignment, Physical Media and Board Architecture. It also includes the “Boot PROM” and “Advanced Configuration” options.

Unless you know of any conflicts with these default settings, configure the onboard LAN with these values by selecting the “Update Registers & Save Configuration to EEPROM” option (refer to page 4-10 for more information).

4-4 ◆ Setmode Configuration Utility

If you wish to reconfigure the onboard LAN, use the arrow keys to select the desired option, then press <Enter>.

If your system is installed with a printer port and your onboard LAN is configured under Shared Memory mode, do not choose I/O port 0x360. Under Shared Memory mode, I/O port 0x360 conflicts with the printer port. If you have accidentally chosen 0x360, the onboard LAN will automatically be configured to 0x2C0.

The following steps will show you how to reconfigure the onboard LAN to another I/O port address.

1. Power off your system and turn it on again.
2. Run the Setmode Configuration Utility.
3. Choose the “Configure Currently Enabled Card” menu.
4. The “Select Board I/O Port Address” screen will appear. Press <F1> to select address 0x2C0. Press <Enter>.

Important:

You can only reconfigure the onboard LAN to another port address if you select 0x2C0 first.

5. The “DFI NET-700 Change Configuration” screen will appear. Use the arrow keys to select the “I/O Base Address” option and press <Enter> to select the appropriate port address.



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6. Choose “Update Registers & Save Configuration to EEPROM” to save the newly configured values to EEPROM.

The first four options in the “DFI NET-700 Change Configuration” screen appear in two sets of values, the “current values” and the “new values” (displayed on the rightmost column of the screen). Each “new value” changes as you press <Enter>. Continue pressing <Enter> until the desired value appears on the screen.

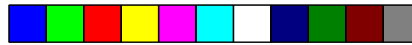
I/O Base Address

The onboard LAN of your G486ESV AIO board supports the following I/O base addresses: 0x240, 0x280, 0x2C0, 0x300, 0x320, 0x340 and 0x360.

This option also allows you to set the onboard LAN to its “Disabled” mode. Under this mode, the onboard LAN does not appear in any I/O port address, avoiding conflicts with any add-on board installed in your system. To enable the onboard LAN, refer to the section “Configure Card from Disabled Card” on page 4-11 or Jumper JP90 on page 2-19.

Interrupt Assignment

You may configure the onboard LAN to the following interrupt request lines: IRQ3-IRQ5, IRQ9-IRQ12 and IRQ15.



Physical Media

The onboard LAN of your G486ESV AIO board supports the following physical layer interface: Thin Ethernet, Thick Ethernet, TPI (10BaseT) and TPI (non spec.).

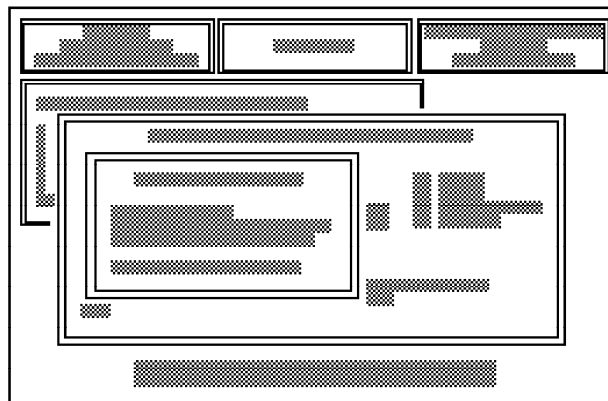
Board Architecture

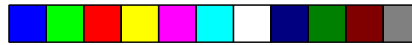
The onboard LAN can function in two different modes, I/O mode (NE-2000 compatible) and Shared Memory mode (Western Digital/SMC compatible).

Boot PROM

The default setting is “No Boot PROM”. If you have a Boot PROM installed on your G486ESV AIO board, you must alter the setting to the size of the Boot PROM used.

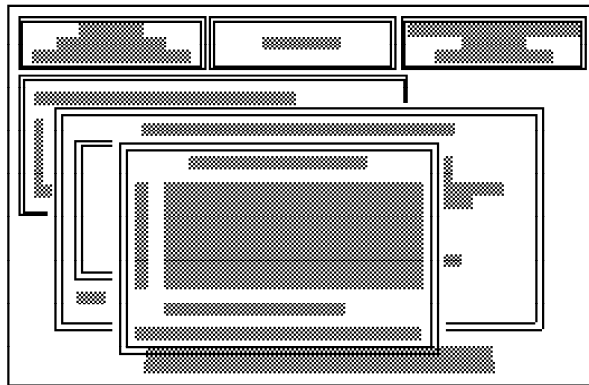
Use the arrow keys to move to the “Boot PROM” option and press <Enter>. A “Boot PROM Select” box similar to the one shown below will appear.



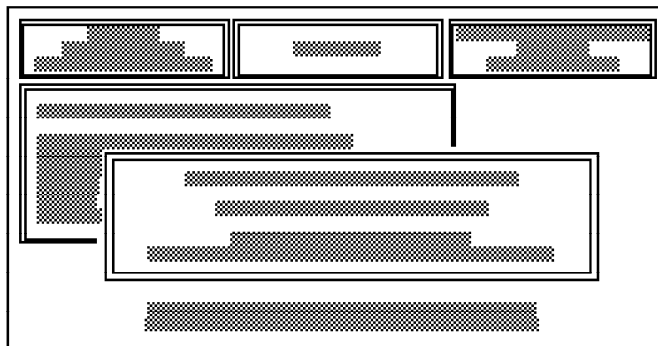


Green All-in One System Board

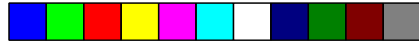
If an 8/16 PROM is installed in the Boot PROM socket, use the arrow keys to select the “Boot PROM with Size 8/16K” option and press <Enter>. A “Boot PROM Address” box similar to the one shown below will appear.



On the other hand, if a 32K PROM is installed, select the “Boot PROM with Size 32K” option and press <Enter>. A “Boot PROM Address” box similar to the one shown below will appear.



4-8 ◆ Setmode Configuration Utility



Use the arrow keys to select the appropriate Boot PROM address and press <Enter>. The last line on the box will display the address you have selected. Select “Return to Previous Menu” or press <Esc> to return to the “DFI NET-700 Change Configuration” screen.

Advanced Configuration

Use the arrow keys to move to this option and press <Enter>. A screen similar to the one shown below will appear.



The “DFI NET-700 Register Flags” screen displays the default settings of the available options. Only alter the settings of the first three options if you encounter a compatibility problem.



Green All-In One System Board

The fourth option, TPI Link Integrity Checking Enabled, will allow you to check the linkage between the send and receive twisted-pair lines, and ensure proper function.

Use the arrow keys to move to the desired option and press <Enter> to make the appropriate selections.

Pressing “Return to Previous Menu” or <Esc> will return you to the “DFI NET-700 Change Configuration” screen.

Update Registers & Save Configuration to EEPROM

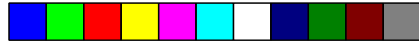
If you choose this option, the configuration you have modified will be updated. It will also save the newly configured values to the EEPROM, so that when you reboot your system, the onboard LAN will initialize with these new configurations.

Warning:

Only write to the EEPROM after you have successfully passed the initialization and loopback test. Refer to the section “Initialize Board and Perform Loopback Test” on page 4-14.

Update Registers to New Configurations

If you choose this option, the configuration you have modified will be updated. However, the new configuration will not be saved to the EEPROM. Therefore, if you reboot your system, the onboard LAN will initialize using the old configuration.



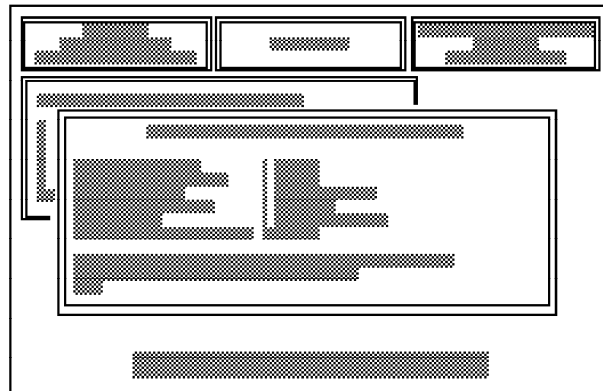
Exit

This option will allow you to leave this menu without saving the changes made to any of the options.

Configure Card from Disabled Card

This function allows you to enable the onboard LAN from its disabled mode. While configured under “Disabled” mode, you will not be allowed to change any options using the “Configure Currently Enabled Card” menu. The message, “No board was present at this address”, will appear on the screen.

Use the arrow keys to move to the “Configure Card from Disabled Card” function and press <Enter> or simply press <F2>. A screen similar to the one shown below will appear.





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This function is identical in operation to the “Configure Currently Enabled Card” menu. The only difference is that the “current values” are not displayed on the screen.

After setting the appropriate options, use the arrow keys to move to the “Update Registers & Save Configuration to EEPROM” option and press <Enter>. The message, “Board Enabled Correctly”, will appear on the screen.

The Setmode Configuration Utility allows you to enable the onboard LAN once. If you have disabled the onboard LAN for the second time, you must reboot your system first to enable it.

Note:

If the onboard LAN was enabled to an address that conflicts with a device in the system, the error message, “No board was present at this address”, will appear. You must reconfigure the onboard LAN to its correct values.

Read the Configuration Registers

This menu displays the current values of Configuration Registers A and B, Shared Memory Control Registers 1 and 2, and AT Detect Register. If your onboard LAN is configured under I/O mode, you may ignore the values of the second and third options. Use the arrow keys to move to this function and press <Enter>, or simply press <F3>. A screen similar to the one on the next page will appear.



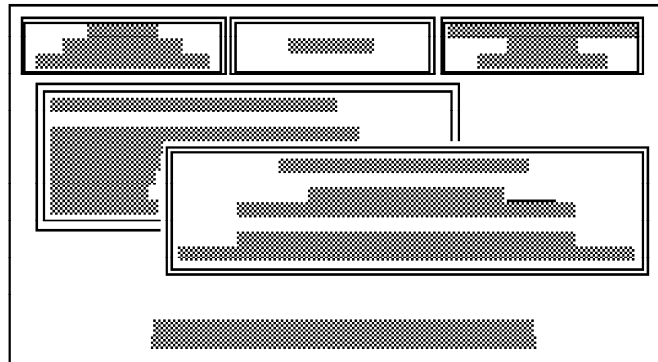
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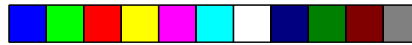


Set Shared Memory Addresses

This menu is only accessible when the architecture is configured to “Shared Memory” mode. You must specify the address of the buffer memory space under this mode.

Use the arrow keys to move to this function and press <Enter>, or simply press <F4>. A “Shared Memory Address” screen similar to the following will appear.



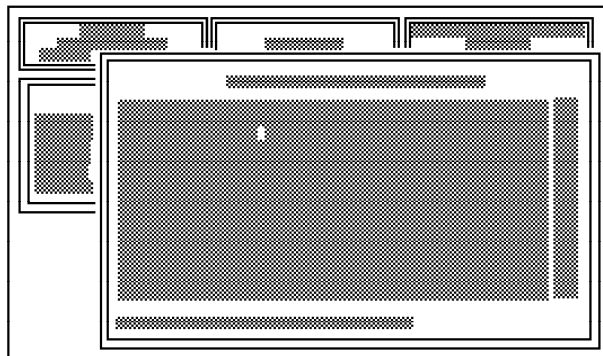


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Type the value on the space opposite the “Memory Address Value” and press <Esc> to return to the main menu.

Initialize Board and Perform Loopback Test

This menu performs initialization and loopback tests of the onboard LAN. Use the arrow keys to move to this function and press <Enter>, or simply press <F5>. A screen similar to the following one will appear.



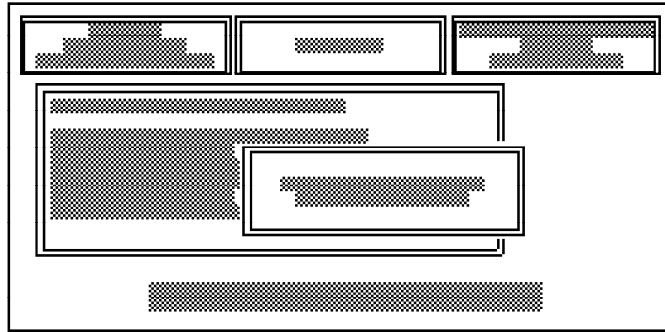
Failure to pass any of these tests will require you to check the configuration again for any conflicts. This test must be completed without any errors for the onboard LAN to function properly.

Press <Esc> to return to the main menu.



Quit and Return to DOS

Selecting this menu will return you to DOS. Use the arrow keys to move to this function and press <Enter>, or simply press <F10>. A screen similar to the one shown below will appear. Press “X” to exit or “C” to continue.

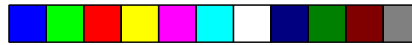


Configuring via the Command Line

The user may, via the command line, select part of a particular hardware configuration as shown below:

```
Setmode [hardware {io_mode | shared_memory} ]  
          [input {text} ] [speedy {fast | slow} ]  
          [nocablesearch]
```

Each of the command line options consists of a keyword followed by a parameter, except “nocablesearch”, which simply disables the automatic cable type select procedure normally done on initialization.



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The command line options may be placed in an environment variable named “ETHER”. The environment variable is treated exactly like a command line argument. In addition, the Setmode program has built-in defaults for all of the command line arguments. The priority of specifying the options for each method are shown below.

lowest	built-in default environment variable
highest	changes during execution

A brief description of each option keyword is given below.

hardware { shared_memory | io_mode }:

Controls a particular hardware configuration where the onboard LAN of your G486ESV AIO system board will operate. The default hardware configuration is “io_mode”.

input { text }:

Controls the initial input to the program. The text consists of characters to be initially entered before reading the characters from the keyboard. This allows the program to run through an initial set of menus and stop at the particular menu in which the user is interested. The text is composed of the characters you would enter to run the program through the menus. In addition to straight text, the following list of escape codes are also valid:



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`\r` is equivalent to pressing return
`\n` is equivalent to pressing return
`\e` is equivalent to pressing <esc>
`\dx` causes a short delay (software loop),
“x” is a number between 0 and 9
`\sx` causes the input to proceed slowly (software
loop),
“x” is a number between 0 and 9

speedy { fast | slow }:

Controls the speed of the video updates for a CGA controller. If a CGA controller is used, then Fast mode may produce snow on the screen. Default is set to Fast mode.

nocablesearch:

This option stops the software from automatically selecting the cable type to be used. The default is configured to automatically select the cable type on initialization. “Nocablesearch” must be used when the onboard LAN is set to non-software configurable.

Basic Menu and Keyboard Operation

The G486ESV AIO program is controlled by function keys. The simple data entry menu is NIC (Network Interface Card) shared memory addresses and the operation of the function keys are displayed in this menu. The following keys have special meaning:



❖ **LAN Software Driver Installation**

The G486ESV AIO board is designed to be 100% hardware compatible with Novell's NE-2000, NE-2000+ and Western Digital/SMC's Ethercard Plus 16 (8013EBT).

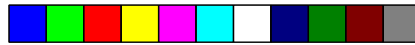
Included with the G486ESV AIO board are two LAN software driver diskettes. The "NET-700EC/ET/ECT Drivers and Utilities" diskette 1 is for the following network operating systems: Novell Netware 2.x and Netware 3.x, Packet Driver, and Microsoft's LAN Manager and Windows for Workgroups. These drivers are installed in different directories and subdirectories of the diskette. The "NET-700EC/ET/ECT Drivers and Utilities for SCO UNIX" diskette 2 contains the SCO UNIX Streams driver. Refer to Appendix H, which details the file structure of the driver diskettes, to find the specific driver you need.

Novell Netware

The "NET-700EC/ET/ECT Drivers and Utilities" diskette 1 includes a directory, "NETWARE", for Novell servers and workstations. This directory contains the IPXSVR (for Novell Netware 2.x server) and ODI (for Novell Netware 3.x) subdirectories.

IPXSVR

IPXSVR includes the SYSIO (NE-2000 compatible) and the SYMEM (WD compatible) files.



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The SYSIO subdirectory contains the following device drivers:

**ANET700LOBJ
BNET700LOBJ
CNET700LOBJ
DNET700LOBJ
NET700LLAN**

The SYSMEM subdirectory contains the following device drivers:

**ANET700MLOBJ
BNET700MLOBJ
CNET700MLOBJ
DNET700MLOBJ
NET700MLAN**

Important:

The device drivers you use must correspond to the architecture of the onboard LAN, either I/O mode (NE-2000 compatible) or Shared Memory mode (WD compatible).

Install the device drivers that are under the SYSIO subdirectory if the architecture of your onboard LAN is configured to I/O mode. Install the device drivers that are under the SYSMEM subdirectory if your onboard LAN is configured to Shared Memory mode. Refer to the section "Setmode Configuration Utility" for more information.



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Installing the Drivers and Utilities Using the Floppy Disk Method

This section shows you how to install the device drivers through a floppy disk.

To install:

1. Prepare a blank floppy diskette. We will call it the “working diskette”.
2. Format the “working diskette”.
3. After you have formatted the “working diskette”, name the volume label of the diskette similar to the one shown in bold face type below:

Volume Label (11 characters, ENTER for none)?
LAN_DRV_542

Refer to your DOS manual for more information on the “volume label”.

4. Copy the device drivers under the SYSIO or SYSMEM subdirectory into the “working diskette”.
5. Run the Novell Installation Utility. You will use the “working diskette” to install the device drivers into the utility.

Refer to Novell's manual for the LAN Drivers installation procedure.

Installing the Drivers and Utilities Using the Hard Disk or Network Drive Method

This section shows you how to install the device drivers into Novell's Netware directory.

To install:

1. Make sure you are in the Netware working directory on the hard disk, or you are in the network drive mapped to the Netware working directory.

Let's presume your Netware working directory is in drive C, you must create a subdirectory similar to the one shown in bold face type below:

```
C:\NETWARE>MD LAN_DRV_.542 <Enter>
```

2. Copy the following device drivers into the LAN_DRV_.542 subdirectory if the onboard LAN is configured to be NE-2000 compatible:

**ANET700I.OBJ, BNET700I.OJ,
CNET700I.OBJ and DNET700I.OBJ**

If the board is configured to be WD compatible, copy the following device drivers into the LAN_DRV_.542 subdirectory:

**ANET700M.OBJ, BNET700M.OBJ,
CNET700M.OBJ and DNET700M.OBJ**



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3. Copy the **NET700I.LAN** (NE-2000 compatible) or the **NET700M.LAN** (WD compatible) to the SYSTEM-1 directory if you are using Netware v2.2. If you are using Netware v2.15, copy the **NET700I.LAN** (NE-2000 compatible) or the **NET700M.LAN** (WD compatible) to the AUXGEN directory.

Note:

*Only use the *.LAN files if you are using NetWare v2.15C or later or ELS Level II v2.15 or later.*

ODI

ODI includes the DOS and SVR files. The NET700.COM driver, contained in the DOS subdirectory, is used to initialize the G486ESV AIO board installed in the workstation. The NET700.LAN driver, contained in the SVR subdirectory, is used to initialize the G486ESV AIO board installed in the server.

Installing the DOS ODI Driver

You can load the NET700.COM DOS ODI driver through the DOS command line or through a batch file such as AUTOEXEC.BAT. To install:

1. Create a subdirectory in your boot drive with the following files:



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- NETX.COM - Netware Shell (used with conventional memory workstations)
- LSL.COM - Link Support Layer
- NET700.COM - The G486ESV AIO DOS ODI driver
- The IPX protocol stack file (IPXODI.COM, for instance)
- NET.CFG - Optional (for configuring options different from the default settings)

The NETX.COM file may be replaced with NET3.COM, NET4.COM, or NET5.COM, depending on which version of Novell you are using.

NETX.COM, LSL.COM and IPXODI.COM can be obtained from the Workstation Driver Diskette in the Novell Client Software Package. Copy the NET700.COM and NET.CFG (optional) from the ODI DOS directory of the "NET-700EC/ET/ECT Drivers and Utilities" diskette 1 to the subdirectory.

2. To manually load these files from the DOS prompt each time the system is restarted, type the following commands, in the given order, to initialize DOS ODI driver support and the IPX protocol stack:

```
LSL.COM          <Enter>
NET700.COM       <Enter>
IPXODI.COM       <Enter>
NETX.COM         <Enter>
```



3. To automatically load these files, use the DOS text editor to create and/or modify an AUTOEXEC.BAT file, then save it to the disk. Load the files in the following order: link support layer, LAN driver, protocol stacks, then the shell. Your AUTOEXEC.BAT file should look similar to the following:

```
<subdirectory>\LSL  
<subdirectory>\NET700.COM  
<subdirectory>\IPXODI  
<subdirectory>\NETX
```

4. To change the default settings of the driver loaded, you must create a NET.CFG file on the workstation diskette.

You can use NET.CFG to change the driver's interrupt channel, node address, shared memory base address, port address, cable type, frame type, and the speed of the transmitting buffer. You can also use it to enable the TPI link using a protocol other than IPXODI. Refer to the "NET.CFG for Netware" section on page 5-8 for more information.

Warning:

The frame type of the NET700.COM driver (workstation) has a different default value from that of the NET700.LAN driver (for the server). Make sure their frame types are the same, otherwise, your workstation and server will not work properly.

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5. Reboot the workstation. After NETX is executed, and if a server is present, it will attach to the server. Logging into the network ensures that the AUTOEXEC.BAT and CONFIG.SYS files you created will connect you to the network. To log in, type:

```
F:          <Enter>
F:\login
```

Refer to Novell's manual for more information on installing the DOS ODI driver.

NET.CFG for Netware

If you wish to change the driver's configuration from its default settings, or if you are using multiple protocols, you must create a NET.CFG file. The driver will use the default value of the options that were not changed.

The following table shows the available options and their supported values for the NET700.COM driver.

Options	Supported Values
INT	[3]* [4] [5] [9] [10] [11] [12] [15]
CFG	[I/O]* [RAM]
MEM	[D0000]* [C0000] [C4000] [C8000] [CC000] [D4000] [D8000] [DC000]
PORT	[300]* [240] [280] [2c0] [320] [340] [360]
CABLE [THIN]* [THICK] [TP] [LTP]	
FRAME	[ETHERNET_802.2]* [ETHERNET_802.3] [ETHERNET_ij] [ETHERNET_SNAP]
TXBUFS	[1] [2] [3]* [4] [5] [6] [7] [8] [9] [10]

* Default value



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The “CFG” option is used to configure the function of the driver to I/O mode (system I/O) or RAM mode (Shared Memory). I/O mode is NE2000 compatible and the RAM mode is WD compatible.

The “CABLE” option must be configured according to the type of cable your G486ESV AIO board is using. Choose between Thin, Thick, TP, or LTP. LTP is a non-specification long twisted-pair cable.

The “FRAME” type of the workstation's driver must be the same as the frame type of the server's driver.

Warning:

The default value of the Frame type is “Ethernet_802.2”. If you are unable to link under this value, set the Frame type to Ethernet_802.3.

The “TX BUFS” or “Transmit Buffer” option supports values from 1 to 10. The higher the value of the transmitting buffer, the faster the transmitting speed of the data sent out. However, the faster the speed of the data sent out, the slower the speed of the data received. Therefore, we recommend that you configure the onboard LAN to its default value, which is 3.

Important:

Make sure that the port address of the driver is the same as the port address you have selected on the Setmode Configuration Utility. The interrupt channel, cable type and memory address may be configured differently.

Refer to your Novell manual for additional NET.CFG information.



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Installing the ODI Server Driver

Use the LOAD and BIND command to load the Netware 3.x Open Datalink Interface (ODI) server driver. For more information on these commands, refer to Novell's manual on loading the Netware 3.x LAN driver. The device driver for the ODI server is NET700.LAN.

You may install the driver either by using the server command line prompted by “:” or by editing the AUTOEXEC.NCF. If you use the server command line, you need to install the driver each time you boot the system. If you edit the AUTOEXEC.NCF, it will automatically load the driver each time you boot your system.

1. Install NetWare 3.x into your system.
2. Copy the ODI server driver, NET700.LAN, from the “NET-700EC/ET/ECT Drivers and Utilities” diskette 1, into the hard disk drive directory where the Netware 3.x system files are located.
3. Run NetWare 3.x by executing the SERVER.EXE file. Refer to Novell's manual on loading disk drivers and mounting volumes.



4. To install the driver manually and change the default settings, type the following command at the file server console to access the installation utility:

:LOAD INSTALL <Enter>

The “Netware 386 Installation” screen will appear. Choose the “System Options” option and press <Enter>.

The “Available System Options” screen will appear. Choose the “Edit AUTOEXEC.NCF File” option and press <Enter>.

The “File Server AUTOEXEC.NCF File” screen will appear. Add the following command lines if you are configuring the board to its I/O mode:

```
LOAD C:NET700 CFG=I/O PORT=300 INT=3 CABLE=THIN
TX BUFS=3 FRAME=ETHERNET_8023
BIND IPX to NET700 [CFG=I/O PORT=300 INT=3
FRAME=ETHERNET 802.3] net=xxx
```

Add the following command lines if you are configuring the board to its Shared Memory mode:

```
LOAD C:NET700 PORT=280 INT=a CFG=RAM MEM=D0000
CABLE=THIN TX BUFS=5 FRAME=ETHERNET_8023
BIND IPX to NET700 [PORT=280 MEM=D0000 INT=a
FRAME=ETHERNET 802.3] net=xxx
```

If the values of the interrupt line, memory address and I/O port address were not included in the command line, you will be prompted to include these values. The driver will use the default value of the other options that were not changed.



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Warning:

The frame type of the NET700.LAN driver (server) has a different default value from that of the NET700.COM driver (for the workstation). Make sure their frame types are the same, otherwise, your workstation and server will not work properly.

5. After you have configured the onboard LAN, press the <Esc> key; the “Save AUTOEXEC.NCF File?” screen will appear. Select “Yes” to save the new configuration.

Important:

Do not modify the configuration under the “Create the AUTOEXEC.NCF File” option. If you have accidentally selected this option, press <Esc> and the “Save AUTOEXEC.NCF File?” screen will appear. Select “No” to quit without saving the changes. If you choose “Yes”, it will overwrite the previous configuration which may cause problems with your G486ESV AIO board.

6. Reboot your system. The system will reboot using the new configuration.



Microsoft LAN Manager and Windows for Workgroups

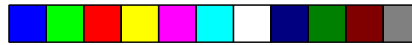
In order to use Microsoft LAN Manager, you must first install Microsoft LAN Manager 2.1 and Windows for Workgroups into your system. Your computer can be used as a LAN Manager server, workstation, enhanced workstation for MS-DOS, or a basic workstation for MS-DOS. Please refer to Microsoft's LAN Manager/Windows for Workgroups Installation Guide for the system hardware and software requirements as well as the installation procedure of the LAN Manager/Windows for Workgroups software.

Installing the Microsoft LAN Manager Drivers

The drivers contained in the MSLANMAN.DOS and MSLANMAN.OS2 directories must be installed in the menu of LAN Manager 2.1 or later. Use the LAN Manager SETUP program to install these drivers. Refer to the section "Importing Additional Network Drivers and Utilities" in the Microsoft LAN Manager Installation Guide for more information.

The SETUP utility of Microsoft LAN Manager will install the drivers contained in the MSLANMAN.DOS and MSLANMAN.OS2 directories. SETUP requires that the two information files, NIF and PROTOCOL.INI, be included in order to install the drivers.

The NIF file provides the information the SETUP utility will need to coordinate and install the various available drivers. Information contained in these two files includes the driver name, the path on the diskette where the driver is stored, and the type of driver.



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The PROTOCOL.INI file is used by the LANMAN Protocol manager and netbind program at startup time. This file contains the NDIS and Transport specific parameters for the network. Both the NDIS (drivers) and Transport (NETBEUI) will have their own PROTOCOL.INI. When SETUP installs NDIS and Transport, the two PROTOCOL.INI files will be merged into one file.

The “NET-700EC/ET/ECT Drivers and Utilities” diskette 1 is created with the base directory structure as shown in Appendix H. The Microsoft Setup Utility will always look into the NIF directory for the NDIS drivers network information files. Additional directories that are created to store the drivers should be consistent with the install directory structure. Shown below are the conventions that are used with Setup.

1. Install the Microsoft LAN Manager DOS or OS/2 workstation installation disk into your system.
2. Follow the instructions given by Microsoft to install the workstation drivers.
3. If the drivers are in the menu, choose this option. Otherwise, select the “IMPORT” option to import the drivers from the “NET-700EC/ET/ECT Drivers and Utilities” diskette 1.
4. Complete the installation process according to the instructions given by Microsoft.

As an example, the CONFIG.SYS, AUTOEXEC.BAT and PROTOCOL.INI files will appear similar to the ones shown on the next page:

5-14 ◆ LAN Software Driver Installation



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CONFIG.SYS

```
DEVICE= C:\LANMAN.DOS\DRIVERS\PROTMAN.DOS/  
        iC:\LANMAN.DOS  
DEVICE= C:\LANMAN.DOS\DRIVERS\ETHERNET\  
        NET700\NET700I.DOS
```

AUTOEXEC.BAT:

```
SET PATH=C:\LANMAN.DOS\NETPROG;%PATH%  
NET START WORKSTATION  
LOAD NETBEUI  
NET LOGON john.doe
```

PROTOCOLINI:

[PROTMAN]

```
DRIVERNAME = PROTMANS  
DYNAMIC    = YES  
PRIORITY   = NETBEUI
```

[NETBEUI_XIF]

```
DRIVERNAME = netbeui$  
SESSIONS   = 6  
NCBS       = 12  
BINDINGS   = NET700I_NIF  
LANABASE   = 0
```

[NET700I_NIF]

```
DRIVERNAME = NET700I$  
IOADDRESS  = 0x0300  
INTERRUPT  = 4
```



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Installing the Windows for Workgroups Drivers

To install:

1. Choose the “Control Panel” icon under the Program Manager's Main Group.
2. From the “Control Panel” screen, choose the “Network” icon.
3. The “Network Settings” dialog box will appear. Choose the “Adapters” option.
4. The “Network Adapters” dialog box will appear. Choose “Add”.
5. Under the list of network adapters, select the “Unlisted or Updated Network Adapter” option.
6. Insert the “NET-700EC/ET/ECT Drivers and Utilities” diskette 1 into drive A (or drive B) and type the drive and directory where the driver is located as shown below.

A:\MSLANMAN.DOS\DRIVERS\ETHERNET\NET700

Choose OK.

You can also use the “Browse” option to locate and select the drive and directory where the driver is located. Choose OK to exit the “Browse” dialog box.



Packet Driver

The “NET-700EC/ET/ECT Drivers and Utilities” diskette 1 includes a Packet driver for your G486ESV AIO board.

The PKT directory on diskette 1 contains two subdirectories: SYSIO and SYSMEM. The Net700I.COM driver under the SYSIO subdirectory is NE-2000+ compatible and the Net700M.COM driver under the SYSMEM subdirectory is WD 8013 compatible.

Important:

The device driver you use must correspond to the architecture of the onboard LAN, either I/O mode (NE-2000 compatible) or Shared Memory mode (WD compatible).

Install the device driver that is under the SYSIO subdirectory if the architecture of your onboard LAN is configured to I/O mode. Install the device driver that is under the SYSMEM subdirectory if your onboard LAN is configured to Shared Memory mode. Refer to the section “Setmode Configuration Utility” for more information.

Installing the Packet Driver

Insert the “NET-700EC/ET/ECT Drivers and Utilities” diskette 1 into drive A: (or B:) and type the appropriate command line.

The command line format of the Packet driver is:

NET700I <PACKET INT NO> <IRQ> <I/O BASE>



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(when the board is configured to I/O mode)
**NET700M <PACKET INT NO> <IRQ> <I/O BASE>
<MEM ADDR>**

(when the board is configured to Shared Memory mode)

Listed below are the available options and their corresponding addresses:

<PACKET INT NO> Set Software Interrupt Number
0x60 - 0x80

<IRQ> Set Hardware Interrupt Number
0x3, 0x4, 0x5, 0x9, 0xa, 0xb, 0xc, 0xf

<I/O BASE> Set I/O Base Address
0x300, 0x320, 0x340, 0x360,
0x240, 0x280, 0x2C0

<MEM ADDR> Set Memory Segment Address
0xd000, 0xd400, 0xd800, 0xdc00,
0xc000, 0xc400, 0xc800, 0xcc00

Shown below is an example of how the command line should appear:

```
C>A:\SYSTEM\NET700M.COM 0x60 0x3 0x300 0xD000
```

SCO UNIX Streams Driver

Before installing the G486ESV AIO's SCO UNIX Streams Driver, the Base System (N1-N5, M1, P1-P4), Extended System (ed, vi, link kit), TCP/IP and NFS (P11-P15) modules of the SCO Open Desk Top v3.2 or the Basic System, Extended System, and SCO TCP/IP Runtime System of the SCO System v/386 release 3.2 or later must first be installed in your system.



Installation Procedure

Installing the SCO UNIX Streams Driver

1. Login to the SCO UNIX operating system.
2. Type “custom” and press <Enter> to run the Custom utility. The Custom utility is provided by SCO for software installation.
3. Select the “Install” option and press <Enter>. The “Install” screen will appear.
4. Select “A New Product” option from the “Install” screen and press <Enter>. You will find this option on the lower right side of the screen.
5. Select the “Entire Product” option and press <Enter>.
6. Insert the “NET-700EC/ET/ECT Drivers and Utilities” diskette 2 into the floppy drive. Select “Continue” to proceed with the installation process or “Quit” to stop the installation.

Making Special File and System Files

1. Type “1” to configure the onboard LAN to I/O mode or “2” to configure it to Shared Memory mode, and press <Enter>.
2. Your board is now configured to the mode you have selected. The message below will appear:

Add, remove or modify the en700 or q to quit (a/r/m/q):

Type “A” and press <Enter> to add the “en700” driver and setup the board’s hardware interface.

3. The message below will appear:

Please choose one of the following IRQ, I/O Base and RAM Base or enter q to quit

IRQ: (3 4 5 9 10 11 12 15) [5]:

The default value is “[5]”. Type the desired value and press <Enter>.

The option shown below will appear:

I/O base: (240 320 340 300) [240]:

The default value is “[240]”. Type the desired value and press <Enter>. The next option will appear:

RAM base: (d000 d4000 d8000 dc000) [d4000]:

This message will only appear if you have chosen “2” to configure your board to Shared memory mode, in Step 1.

The default value is “[d4000]”. Type the desired value and press <Enter>.

Note:

- i) *IRQ3 and IRQ4 are for the device “sio”. You may remove one of them, but not both.*
- ii) *IRQ11 and IRQ15 are for devices “ad” and*



- “wd1” respectively. Removing either of them will cause a kernel linking error.*
- iii) *Do not select I/O address “300”. Your onboard LAN will not work properly under this address. Refer to your Open Desktop Installation Guide for more information.*

To use the default values of the IRQ, I/O base address and RAM base address, you may just press <Enter> without typing any values.

If you wish to modify the configuration, exit the “Custom” utility and type the “mkdev en70” command.

4. After you have finished installing the driver, the message below will appear:

Relink the kernel now? (y/n/q)

The kernel must be relinked and the operating system rebuilt to install the driver into the kernel.

Type “Y” and press <Enter>.

Linking with TCP/IP

1. The new configuration has been added to the system. The message below will appear:

Do you want this kernel to boot by default? (y/n)

Type “Y” and press <Enter>.

2. The next message will appear:



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Do you want the kernel environment rebuilt? (y/n)

Type “Y” and press <Enter>.

3. Once the kernel has been successfully linked and installed, the message below will appear:

Relink the TCP now? (y/n/q)

Type “Y” and press <Enter>.

4. The message below will appear:

Please choose one of the drivers listed above or enter q to quit:

Type “en70” and press <Enter>.

“en70” is the driver that will allow your onboard LAN to interact with TCP/IP.

Refer to the Open Desktop Installation Guide for additional steps to complete the TCP/IP driver installation.

Rebooting the System

Reboot your system by typing the command “**init 6**”, then press <Enter>.

Note:

1. The “en700” driver can only support the G486ESV AIO's onboard LAN.
2. The “netstat -I en70” command is not supported by the “en700” driver.



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VGA Software Driver Installation

The G486ESV AIO package includes four VGA software driver diskettes. These are:

- Trio 32/64 Drives for Windows NT 3.5
- Trio 32/64 Drivers for OS/2 2.0 and 2.1 (Disk 1 of 2)
- Trio 32/64 Drivers for OS/2 2.0 and 2.1 (Disk 2 of 2)
- Trio 32/64 Utilities, DOS and Windows 3.1 Drivers

The diskettes contain “Read Me” files which provide information on driver installation.

Troubleshooting Checklist

If you experience difficulty with the G486ESV AIO 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 the HSIM modules are in the correct locations.
- 4) Check that all populated memory banks are filled with valid size HSIMMs.
- 5) If your board fails to function, place the board on a flat surface and seat all socketed components (gently press each component into its socket).
- 6) Recheck the CMOS settings.
- 7) If you have no display, but the computer otherwise appears to be working:
 - a. Recheck your monitor's power cable and On-Off switch.
 - b. Make sure your brightness and contrast controls are turned up.



- c. If your monitor has a “TTL-Analog” switch, make sure that it is set to Analog.
- 8) If your screen image is distorted or goes blank when software is run, the software may not be configured properly to use the video. Reinstall or change the configuration of the software to use EGA or VGA.

Extended Mode Problems

Your G486ESV AIO board is designed to be compatible with all standard VGA display modes and monitors. In addition, it offers several extended modes, with higher-than-standard resolution, to those monitors capable of displaying them.

In general, VGA-compatible monitors fall into two categories: standard “fixed-frequency” VGA monitors and multi-frequency (multi-scanning) monitors. Multi-frequency monitors are more expensive than standard VGA monitors, and support higher resolutions than called for in the original VGA standard.

Note:

Standard VGA monitors work with a fixed set of frequencies based only on the original VGA standard. Multi-frequency monitors work with additional scanning frequencies.

Most standard “fixed-frequency” VGA monitors will display Hi-Rez VGA board's 132-column modes. However, the 800 x 600 and 1024 x 768 extended graphics modes use a higher horizontal scanning frequency than “fixed-frequency” VGA monitors are capable of displaying. To use these modes, you must have a multi-frequency monitor.



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If you are having problems displaying some modes, but not others, check the range of synchronization signals with which your monitor is supposed to work. If this information is not in the monitor's documentation, contact the monitor manufacturer or service representative.

Note:

On most monitors that accept either analog or TTL inputs, the text-color switch (if present) will not function in the analog (VGA) mode.

Picture Size and Position

If you have a monitor capable of displaying the G486ESV AIO board's extended modes, you may find that you will need to adjust the horizontal and vertical size and position controls when you switch between standard and extended modes. This is normal for multi-frequency monitors.

Interlacing

In the interlaced 1024x768 mode, the odd-numbered and even-numbered sets of lines composing an image are alternately drawn on the screen. The sets of lines, called "fields", alternate about 87 times a second (87Hz). A complete "frame" consists of two fields (odd and even), so it is completely refreshed at half the field rate, i.e., 43.5 times per second (43.5Hz). This is normal and results from the lower persistence phosphors used in these monitors.

7-3 ◆ Troubleshooting Checklist

Appendix A: Types of Modules

The G486ESV AIO 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
Hitachi	HM514280-JP8
	OKI M516256B-80J
Fujitsu	81C4256-80

For HSIM 512Kx36 Modules

Brand	Chip Number
Panasonic	MN41C256SJ-08
OKI	M514256B-80J
Hitachi	HM514280-JP8
NEC	44256-70

For HSIM 1Mx36 Modules

Brand	Chip Number
Toshiba	TC514400ASJL-70
Fujitsu	814400-80
OKI	M514400A-70SJ
NEC	4218160-60



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For HSIM 2Mx36 Modules

Brand	Chip Number
Micron	4C4001JDJ-6
NEC	4218160-60
OKI	M511000B-70J

For HSIM 4Mx36 Modules

Brand	Chip Number
NEC	4217400-80
Mitsubishi	M5M417400BJ
Fujitsu	8117400-70PJ
OKI	M514100B-70SJ

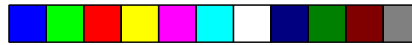
For HSIM 8Mx36 Modules

Brand	Chip Number
OKI	M511000B
NEC	GT-4M
Fujitsu	81C1000A-80



Appendix B: System Error Report

POST (hex)	Name	Description
00	Turn off chipset cache	OEM specific-cache control.
1	Processor test 1	Processor status (1FLAGS) verification. Test the following processor status flags carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off.
2	Processor test 2	Read/Write/Verify all CPU registers except SS,SP and BP with data pattern FF and 00.
3	Initialize chips	Disable NMI, PIE, AIE, UEI, SQWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers, CMOS shutdown byte. Initialize timer 0, 1 and 2, including set EISA timer to a known state. Initialize DMA controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended registers.
4	Test memory refresh toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures that the memory refresh function is working properly.
5	Blank video, initialize keyboard	Keyboard controller initialization.
6	Reserved	
7	Test CMOS interface and battery status	Verifies CMOS is working correctly, detects bad battery.



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POST (hex)	Name	Description
EE	Chipset default initialization	Program chipset registers with power on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory.
C5	Early shadow	OEM Specific-Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection.
8	Setup low memory	Early chip set initialization. Memory presence test. OEM chip set routines. Clear low 64K of memory. Test first 64K memory.
9	Early cache initialization	Cyrix CPU initialization. Cache initialization.
A	Setup interrupt vector table	Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL.
B	Test CMOS RAM checksum	Test CMOS RAM checksum, if bad, or insert key pressed, load defaults.
C	Initialize keyboard	Detect type of keyboard controller (optional). Set NUM_LOCK status.
D	Initialize video interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and initialize video adapter.
E	Test video memory	Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup.

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POST (hex)	Name	Description
F	Test DMA controller 0	BIOS checksum test. Keyboard detect and initialization.
10	Test DMA controller 1	
11	Test DMA page registers	Test DMA page registers.
12-13	Reserved	
14	Test timer counter 2	Test 8254 timer 0 counter 2.
15	Test 8259-1 mask bits	Verify 8259 channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 mask bits	Verify 8259 channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test stuck 8259's interrupt bits	Turn off interrupts then verify no interrupt mask register is on.
18	Test 8259 interrupt functionality	Force an interrupt and verify the interrupt occurred.
19	Test stuck NMI bits (Parity/IO check)	Verify NMI can be cleared.
1A		Display CPU clock.
1B-1E	Reserved	
1F	Set EISA mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests and clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface).

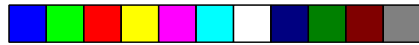
Green All-in-One System Board

POST (hex)	Name	Description
20	Enable slot 0	Initialize slot 0 (system board).
21-2F	Enable slots 1 - 15	Initialize slots 1 through 15.
30	Size base and extended memory	Size base memory from 256K to 640K and extended memory above 1MB.
31	Test base and extended memory	Test base memory from 256K to 640K and extended memory above 1MB using various patterns. Note: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA extended memory	If EISA mode flag is set then test EISA memory found in slots initialization. Note: This will be skipped in ISA mode and can be "skipped" with Esc key in EISA mode.
33-3B	Reserved	
3C	Setup enabled	
3D	Initialize and install mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup cache controller	Initialize cache controller.
3F	Reserved	
40	Chipset initialization	Program chipset registers with Setup values.
41	Initialize floppy drive and controller	Display virus protest disable or enable. Initialize floppy disk drive controller and any drives.



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POST (hex)	Name	Description
42	Initialize hard drive and controller	Initialize hard drive controller and any drives.
43	Detect and initialize serial/parallel ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect and initialize math coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	
4E	Manufacturing POST Loop or Display Messages	Reboot if manufacturing POST loop pin is set. Otherwise display any messages (i. e. any non-fatal errors that were detected during POST) and enter Setup.
4F	Security check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot enable	Enable parity checker. Enable NMI, enable cache before boot.
52	Initialize option ROMs	Initialize any option ROMs present from C8000h to EFFFFh. Note: When FSCAN option is enabled, will initialize from C8000h to F7FFFh.
53	Initialize time value	Initialize time value in 40h: BIOS area.
60	Setup virus protect	Setup virus protect according to Setup.
61	Set boot speed	Set system speed for boot.



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POST (hex)	Name	Description
62	Setup NumLock	Setup NumLock status according to Setup.
63	Boot attempt	Set low stack. Boot via INT 19h.
E0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display Press F1 to disable NMI, F2 reboot.
E1-EF	Setup pages	E1-Page 1, E2-Page 2, etc.
FF	Boot	





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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 00EBFFF	176K I/O Expansion ROM	Reserved for ROM on I/O Adapter Card
00EC0000 to 00FFFFFF	80K ROM on the System Board	System Board BIOS
0100000 to 3FFFFFF	Maximum Memory 63M	System Board Memory

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: 16-Bit Slot Pin Assignments

Solder Side	B	A	Component Side
+12V	- 01 -	+12V	
+5V	- 02 -	Gnd	
Gnd	- 03 -	Gnd	
Gnd	- 04 -	-IOChck	
Reset Drv	- 05 -	SD17	
+5VDC	- 06 -	SD16	
IRC9	- 07 -	SD15	
-5VDC	- 08 -	SD14	
DRCC	- 09 -	SD13	
-12VDC	- 10 -	SD12	
OVS	- 11 -	SD11	
+12VDC	- 12 -	SD10	
Gnd	- 13 -	-IOChrdy	
-SEMEMV	- 14 -	AEN	
-SEMEMR	- 15 -	SA19	
-IOW	- 16 -	SA18	
-IOR	- 17 -	SA17	
-Dack3	- 18 -	SA16	
-DRQ3	- 19 -	SA15	
-Dack1	- 20 -	SA14	
-DRQ1	- 21 -	SA13	
-Refresh	- 22 -	SA12	
CLK	- 23 -	SA11	
IRC7	- 24 -	SA10	
IRC6	- 25 -	SA9	
IRC5	- 26 -	SA8	
IRC4	- 27 -	SA7	
IRC3	- 28 -	SA6	
-Dack2	- 29 -	SA5	
TC	- 30 -	SA4	
Bale	- 31 -	SA3	
+5VDC	- 32 -	SA2	
OSC	- 33 -	SA1	
Gnd	- 34 -	SA0	
Gnd	- 35 -	Gnd	
+5V	- 36 -	Gnd	
+5V	- 37 -	+5V	
-MemCS16	- 38 -	SEHE	
-IOCS16	- 39 -	LA23	
IRC10	- 40 -	LA22	
IRC11	- 41 -	LA21	
IRC12	- 42 -	LA20	
IRC15	- 43 -	LA19	
IRC14	- 44 -	LA18	
-Dack0	- 45 -	LA17	
-DRQ0	- 46 -	-Memr	
-Dack5	- 47 -	-Memw	
-DRQ5	- 48 -	SD08	
-Dack6	- 49 -	SD09	
-DRQ6	- 50 -	SD10	
-Dack7	- 51 -	SD11	
-DRQ7	- 52 -	SD12	
+5VDC	- 53 -	SD13	
-Master	- 54 -	SD14	
Gnd	- 55 -	SD15	
Gnd	- 56 -	Gnd	
Gnd	- 57 -	Gnd	
+5V	- 58 -	Gnd	
+5V	- 59 -	+5V	
+5V	- 60 -	+5V	

Appendix E: VL-Bus Slot Pin Assignments

Component Side	B	A	Solder Side
	DAT00	- 01 -	DAT01
	DAT02	- 02 -	DAT03
	DAT04	- 03 -	GND
	DAT06	- 04 -	DAT05
	DAT08	- 05 -	DAT07
	GND	- 06 -	DAT09
	DAT10	- 07 -	DAT11
	DAT12	- 08 -	DAT13
	Vcc	- 09 -	DAT15
	DAT14	- 10 -	GND
	DAT16	- 11 -	DAT17
	DAT18	- 12 -	Vcc
	DAT20	- 13 -	DAT19
	GND	- 14 -	DAT21
	DAT22	- 15 -	DAT23
	DAT24	- 16 -	DAT25
	DAT26	- 17 -	GND
	DAT28	- 18 -	DAT27
	DAT30	- 19 -	DAT29
	Vcc	- 20 -	DAT31
	ADR31	- 21 -	ADR30
	GND	- 22 -	ADR28
	ADR29	- 23 -	ADR26
	ADR27	- 24 -	GND
	ADR25	- 25 -	ADR24
	ADR23	- 26 -	ADR22
	ADR21	- 27 -	Vcc
	ADR19	- 28 -	ADR20
	GND	- 29 -	ADR18
	ADR17	- 30 -	ADR16
	ADR15	- 31 -	ADR14
	Vcc	- 32 -	ADR12
	ADR13	- 33 -	ADR10
	ADR11	- 34 -	ADR08
	ADR09	- 35 -	GND
	ADR07	- 36 -	ADR06
	ADR05	- 37 -	ADR04
	GND	- 38 -	WBAC#
	ADR03	- 39 -	BE0#
	ADR02	- 40 -	Vcc
	nc	- 41 -	BE1#
	RESET#	- 42 -	BE2#
	DIC#	- 43 -	GND
	MIO#	- 44 -	BE3#
	WR#	- 45 -	ADS#
	RDYRTN#	- 48 -	LRDY#
	GND	- 49 -	LDEV∞#
	IRC9	- 50 -	LREQ∞#
	BRDY#	- 51 -	GND
	BLAST#	- 52 -	LCNT∞#
	ID0	- 53 -	Vcc
	ID1	- 54 -	ID2
	GND	- 55 -	ID3
	LCLK	- 56 -	ID4
	Vcc	- 57 -	LDEN#
	LBS16#	- 58 -	LEADS#

Note:

Side "A" of the connector is the add-in board component side.

Side "B" of the connector is the add-in board solder side.



Pin Name	No.	LBC ¹	LBC ²	LBM ³	LBT
ADR<31..2>	30	O		O	
ADS#	1	O		O	
BE<3..0>	4	O		O	
BLAST#	1	O		O	
BRDY#	1		O		O
DC#	1	O		O	
DAT<31..0>	32	IO	IO	IO	IO
ID<4..0>	5	O	O		O
IRQ9	1			O	O
LBS16#	1		O		O
LCLK	1	O	O		
LDEV<<># ⁴	1		N/A	N/A	O
LEADS#	1	O		O	
LGNT<<># ⁴	1	O	O		N/A
LKEN#	1	O	O		
LRDY#	1			N/A	O
LREQ<<># ⁴	1			O	O
MIO#	1	O		O	
RDYRTN#	1	O	O		
RESET#	1	O	O		
WR#	1	O		O	
WBACK#	1	O	O		N/A
(power)	8				
(ground)	14				
(reserved)	1				
Total per slot	112				

¹ Direction of signals for the LBC if the host CPU or a system I/O bus master is active.

² Direction of signals for the LBC if an LBM is active.

³ Direction of signals for any LBM while it owns the VL-Bus.

⁴ One unique signal per slot or device.

Note:

LBC = VL Local Bus Controller

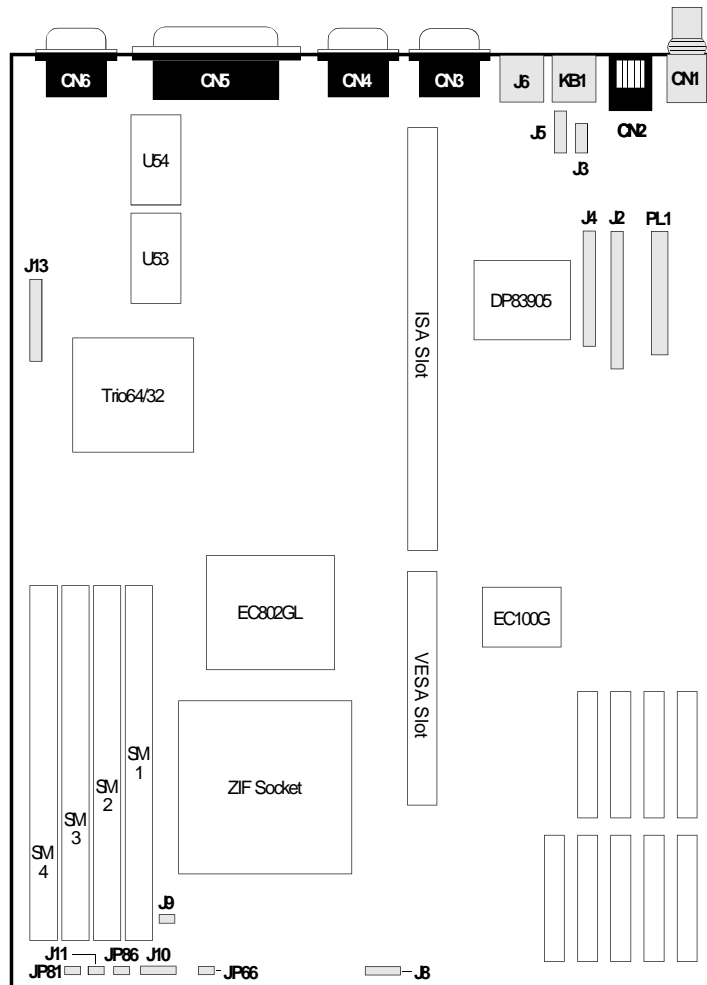
LBM = VL Local Bus Master

LBT = VL Local Bus Target



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Appendix F: Connector Pin Assignments



Locations of Connectors on the G486ESV AIO System Board

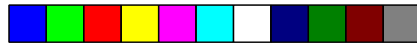
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Connector J2
IDE Hard Disk Drive Connector

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	-OW
24	Ground
25	-OR
26	Ground
27	Reserved
28	BALE
29	Reserved

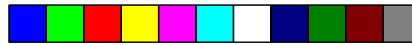


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Pin	Function
30	Ground
31	IRQ14
32	IOCS16
33	SA1
34	Reserved
35	SA0
36	SA2
37	HCS0
38	HCS1
39	LED
40	Ground

Connector J3 LAN Extra

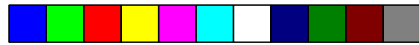
Pin	Function
1	TXOD-
2	Outputs
3	TXOD+
4	Ground
5	RXI+
6	ISOLR
7	RXI-
8	Ground
9	Ground
10	Ground



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Connector J4
Floppy Disk Drive Connector

Pin	Function
1	Ground
2	DENSEL
3	Ground
4	Reserved
5	Ground
6	Drate0
7	Ground
8	Index
9	Ground
10	MTR0
11	Ground
12	DR1
13	Ground
14	DR0
15	Ground
16	MTR1
17	Drate1
18	Dir
19	Ground
20	Step
21	Ground
22	Write Data
23	Ground
24	Write Gate
25	Ground



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Pin	Function
26	Track 0
27	MSEN
28	Wr Protect
29	Ground
30	Read Data
31	Ground
32	Head Select
33	Ground
34	Disk Change

Connector J5 AUI Connector

Pin	Function
1	Ground
2	CD+
3	TX+
4	Ground
5	RX+
6	Ground
7	+5V
8	Ground
9	CD-
10	TX-
11	Ground
12	RX-
13	+12V
14	Ground
15	+5V
16	Reserved




G486ESV AIO

Connector J6
PS/2 Mouse Connector

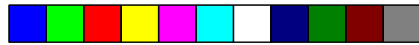
Pin	Function
1	Mouse Data
2	Reserved
3	Ground
4	+5V
5	Mouse Clock
6	Reserved

Connector J8
Speaker Connector



Pin	Function
1	Signal
2	Connector to Buzzer
3	Ground
4	+5V





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Connector J9 Fan Connector

Pin	Function
1	+12V
2	Ground

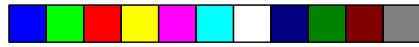
The fan, installed on top of the CPU, automatically stops once your system enters the Green mode.

Connector J10 Power LED/Keylock Connector

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

Connector J11 Reset Switch Connector

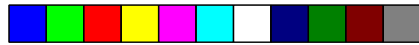
Pin	Function
1	Reset
2	Ground



G486ESV AIO

Connector J13
Feature Connector

Pin	Function
1	Ground
2	PD0
3	Ground
4	PD1
5	Ground
6	PD2
7	EnVideo
8	PD3
9	EnSync
10	PD4
11	EnPdk
12	PD5
13	Not Used
14	PD6
15	Ground
16	PD7
17	Ground
18	Pdk
19	Ground
20	Blank
21	Ground
22	H Sync
23	Not Used
24	V Sync
25	Not Used
26	Ground



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Connector JP66
IDE LED

Pin	Function
1	Vcc
2	Signal

Connector JP81
Standby Mode LED

Pin	Function
1	Ground
2	Signal

Connector JP86
Standby Mode Switch Connector

Pin	Function
1	Ground
2	Signal



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Connector KB1
PS/2 Keyboard Connector

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

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



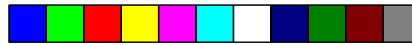
Green All-in One System Board

Connector CN1
BNC Connector

Pin	Function
1	ISOLR
2	Outputs

Connector CN2
RJ-45 Connector

Pin	Function
1	TXOD-
2	TXOD+
3	RXI+
4	Reserved
5	Reserved
6	RIX-
7	Reserved
8	Reserved



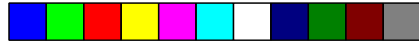
G486ESV AIO

Connectors CN3 and CN4 Primary and Secondary 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 CN5 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



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Pin	Function
12	Paper Empty
13	Select
14	-Autofd
15	-Error
16	-Init
17	-Slctin
18	Ground
19	Ground
20	Ground
21	Ground
22	Ground
23	Ground
24	Ground
25	Ground



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Connector CN6
Analog Connector

Pin	Function
1	Red
2	Green
3	Blue
4	Not Used
5	Ground
6	Red Return (ground)
7	Green Return (ground)
8	Blue Return (ground)
9	Key (no pin)
10	Sync Return (ground)
11	Not Used
12	DDC1 - Data
13	Horizontal Sync
14	Vertical Sync
15	DDC1 - CLK

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



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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	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							

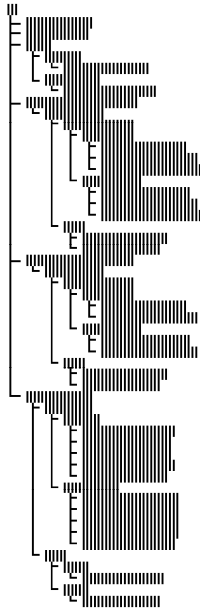


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Appendix H: LAN Software Diskettes

NET-700EC/ET/ECT Drivers and Utilities (Diskette 1)

The “NET-700EC/ET/ECT Drivers and Utilities” diskette 1 contains drivers for Netware 2.x and 3.x, LAN Manager 2.1, Windows for Workgroups and Packet driver.



NET-700EC/ET/ECT Drivers and Utilities for SCO UNIX (Diskette 2)

The “NET-700EC/ET/ECT Drivers and Utilities for SCO UNIX” diskette 2 contains drivers for SCO UNIX 3.2.x. Please review the contents of the diskette for a listing of files it contains.

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Appendix I: Reference Table

S3 Video Modes

Mode (Hex)	VBEDIT Mode	Screen Resolution	Bits/Pixel	Sweep (KHz)	Refresh Rate (Hz)	Dot Clock (MHz)
10A	54	132x43 Chars	4	31.5	70	40.000
109	55	132x25 Chars	4	31.5	70	40.000
100	68	640x400	8	31.5	70	25.175
101	69	640x480	8	31.5	60	25.175
101	69	640x480	8	37.9	72	31.500
101	69	640x480	8	37.5	75	31.500
102	6A	800x600	4	35.1	56	36.00
102	6A	800x600	4	37.9	60	40.000
102	6A	800x600	4	48.1	72	50.000
102	6A	800x600	4	47.5	75	49.500
103	6B	800x600	8	35.1	56	36.000
103	6B	800x600	8	37.9	60	40.000
103	6B	800x600	8	48.1	72	50.000
103	6B	800x600	8	46.8	75	49.500
104	6C	1024x768	4	35.5	43 (I)	44.900
104	6C	1024x768	4	48.4	60	65.000
104	6C	1024x768	4	56.5	70	75.000
104	6C	1024x768	4	60.2	75	80.000
105	6D	1024x768	8	35.5	43 (I)	44.900
105	6D	1024x768	8	48.4	60	65.000
105	6D	1024x768	8	56.5	70	75.000
105	6D	1024x768	8	60.2	75	80.000



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Mode (Hex)	VBEDIT Mode	Screen Resolution	Bits/Pixel	Sweep (KHz)	Refresh Rate (Hz)	Dot Clock (MHz)
106	6E	1280x1024	4	47.7	45 (I)	75.000
107	6F	1280x1024	8	47.7	45 (I)	75.000
107	6F	1280x1024	8	63.7	60	110.000
107	6F	1280x1024	8	77.7	72	130.000
107	6F	1280x1024	8	79.5	75	135.000
110	70	640x480	15	31.5	60	25.175
110	70	640x480	15	37.5	72	31.500
110	70	640x480	15	37.5	75	31.500
111	71	640x480	16	31.5	60	25.175
111	71	640x480	16	37.5	72	31.500
111	71	640x480	16	37.5	75	31.500
112	72	640x480	32	31.5	60	25.175
112	72	640x480	32	37.9	72	31.500
112	72	640x480	32	37.5	75	31.500
113	73	800x600	15	37.9	60	40.000
113	73	800x600	15	48.1	72	50.000
113	73	800x600	15	46.8	75	49.500
114	74	800x600	16	37.9	60	40.000
114	74	800x600	16	48.1	72	50.000
114	74	800x600	16	46.8	75	49.500
115	75	800x600	32	37.9	60	40.000
115	75	800x600	32	48.1	72	50.000
115	75	800x600	32	46.8	75	49.500

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G486ESV AIO

Mode (Hex)	VBEDIT Mode	Screen Resolution	Bits/ Pixel	Sweep (KHz)	Refresh Rate (Hz)	Dot Clock (MHz)
116	76	1024x768	16	35.0	43 (I)	44.900
116	76	1024x768	15	48.9	60	65.000
116	76	1024x768	15	56.5	70	75.000
116	76	1024x768	15	60.4	75	80.000
117	77	1024x768	16	35.0	43 (I)	44.900
117	77	1024x768	16	48.9	60	65.000
117	77	1024x768	16	56.5	70	75.000
117	77	1024x768	16	60.4	75	80.000
118	78	1024x768	32	35.2	43 (I)	44.900
119	79	1280x1024	15	48.7	45 (I)	75.000
11A	7A	1280x1024	16	48.7	45 (I)	75.000
120	7C	1600x1200	8	62.0	48.5 (I)	130.000
201	49	640x480	8	31.5	60	25.175
201	49	640x480	8	37.9	72	31.500
201	49	640x480	8	37.5	75	31.500
202	4A	800x600	4	35.1	56	36.000
202	4A	800x600	4	37.9	60	40.000
202	4A	800x600	4	48.1	72	50.000
202	4A	800x600	4	46.9	75	49.500
203	4B	800x600	8	35.1	56	36.000
203	4B	800x600	8	37.9	60	40.000
203	4B	800x600	8	48.1	72	50.000
203	4B	800x600	8	46.8	75	49.500



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Mode (Hex)	VBEDIT Mode	Screen Resolution	Bits/ Pixel	Sweep (KHz)	Refresh Rate (Hz)	Dot Clock (MHz)
204	4C	1024x768	4	35.5	43 (I)	44.900
204	4C	1024x768	4	48.4	60	65.000
204	4C	1024x768	4	56.5	70	75.000
204	4C	1024x768	4	60.3	75	80.000
205	4D	1024x768	8	35.5	43 (I)	44.900
205	4D	1024x768	8	48.4	60	65.000
205	4D	1024x768	8	56.5	70	75.000
205	4D	1024x768	8	60.2	75	80.000
207	4E	1152x864	8	55.3	60	80.000
208	4F	1280x1024	4	47.7	43 (I)	75.000
208	4F	1280x1024	4	63.7	60	110.000
208	4F	1280x1024	4	77.7	72	130.000
208	4F	1280x1024	4	79.8	75	135.000



Appendix J: System Overview

DMA Channels

DMA Controller 1	DMA Controller 2
Ch0-Reserved for User	Ch4-Cascade for CTRL 1
Ch1-SDLC	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



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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

NMI	Parity or I/O Channel Check
-----	-----------------------------

Note:

The non-maskable interrupt (NMI) of the G486ESV AIO is used to report memory parity errors. The memory parity is derived from the system board memory and I/O adapter optional memory.

Interrupt Controller 1	Interrupt Controller 2
IRQ0-Timer Output (Out 0)	IRQ8-Realtime Clock INT
IRQ1-KeyBoard (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 278, 378	IRQ13-Coprocessor
IRQ6-Diskette Controller	IRQ14-Fixed Disk Controller
IRQ7-Parallel Port 378, 3BC	IRQ15-Reserved

Note:

Any or all interrupts including NMI may be masked. 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	System Timer (IRQ0)
Channel 1	Refresh Request Generator (15us Rate Generator Period Signal)
Channel 2	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



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————— G486ESV A10

