



**486-OCV Plus
System Board
User's Manual**



- D21840429 -





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❖ Introduction

The 486-OCV Plus system board is designed so that it may be equipped with Intel's 80486DX, 80486DX2, 80486SX, and 80486 OverDrive™ Processors which can run from speeds of 25MHz to 66MHz. It may also use a Pentium™ OverDrive Processor running at 50MHz or 66MHz. This Pentium-based system board is twice as fast as the 80486DX-33 and accommodates almost all of the existing programs designed for 386 or 486-based systems. The system board also supports a Cyrix or AMD 486DX CPU running at 40MHz.

The 486-OCV Plus is a jumperless-upgrade board allowing you to easily upgrade your CPU from a 486SX to 486DX or DX2 for example, without altering any jumpers. However, if you change your CPU speed from 25MHz to 33MHz, 40MHz or 50MHz, or change a Cyrix CPU to an Intel or AMD CPU, you may have to alter a few jumpers.

The 486-OCV Plus is equipped with a Zero Insertion Force socket to make upgrading your CPU easy. It also supports an optional Flash EPROM. Flash EPROM is a memory chip for the storage of BIOS which can be erased in bulk or modified using a software utility.

The 486-OCV Plus system board is also equipped with two VESA compliant local bus slots. The VL-Bus of the 486-OCV Plus system board operates at the same frequency (up to 40MHz) and phase as the CPU, supporting all DMA and system I/O bus mastering cycles.



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The 486-OCV Plus uses 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 HSIM modules with speeds of at least 80ns. The memory can be configured to twenty-one different sizes from 1MB to 64MB. The system is equipped with two 32-bit VESA VL-Bus and eight 16-bit ISA expansion slots.

Features and Specifications

- Intel 80486DX running at 33/40/50MHz, 80486DX2 running at 50/66MHz, 80486 OverDrive™ Processor, Pentium™ OverDrive Processor running at 50/66MHz, or 80486SX running at 25/33MHz
- Cyrix or AMD 486DX running at 40MHz
- Uses AMI BIOS: 27512-20 (1)
- Uses OPTi 82C499 chip set
- Cache organization: direct map, write back and bank interleave
- Supports 64K, 128K and 256K cache sizes
- Memory configurable from 1MB to 64MB
- Uses 256Kx36, 1Mx36 and 4Mx36 HSIMM
- Uses 512Kx36, 2Mx36 and 8Mx36 (for Banks 0 and 2 only)
- Supports memory with parity check
- 8MHz bus clock
- Software programmable cache and DRAM wait states
- Supports system BIOS and Video BIOS Shadow RAM function
- Supports sixteen edge triggered interrupts
- Hidden refresh or slow refresh supported
- Optional Flash memory BIOS supported
- Supports Pentium™ OverDrive Processor Zero Insertion Force socket
- Supports one PS/2 mouse port
- An optional diagnostic LCD port



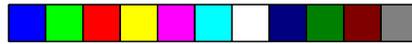
- Supports VESA VL-Bus devices (2 VESA Master/Slave)
 ISA DMA Master access to local device
 Local Master access to an ISA device
 Fully compatible with VESA VL-Bus rev. 1.0
- Two 32-bit VL-Bus and eight 16-bit ISA slots
- Maximum card length
 Full-length cards in all VL-Bus slots and in three ISA slots
 9.75" cards in three ISA slots
- Four layer PCB
- Baby AT size
- Operating temperature: 0°C - 40°C
- One year limited warranty

Warning:

If your 486-OCV Plus system board is using a 486DX 50 CPU, we recommend that you do not install any VL-Bus devices. The VL-Bus connectors, compliant with VESA VL-Bus standard rev. 1.0, limit the speed of a VL-Bus device operating across the connector (e.g. an add-on board) to 40MHz.

The table below, based on the VESA VL-Bus specification, shows the recommended number of installed VL-Bus devices at various CPU speeds. This table is only a recommendation, not a requirement. Any VL-Bus add-on board must correspond with the CPU speed, whether it is buffered or unbuffered.

CPU Speed	Unbuffered	Buffered
<= 33MHz	2 slots/2 devices	3 slots/3 devices
40MHz	1 slot/2 devices	not recommended
>= 50MHz	0 slot/2 devices	not recommended



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❖ *Installation Overview*

This chapter summarizes the steps in installing the 486-OCV Plus 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.

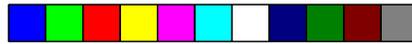
Preparing the Area

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 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 486-OCV Plus system board carefully.

2-1 ◆ Installation Overview



Handling the System Board

It is quite easy to inadvertently damage your system board even before installing it to 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 that no static build-up is present.

Tips in Handling the System Board

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

Hardware Installation

Memory Installation

The 486-OCV Plus system board can support 1MB to 64MB of memory using HSIMMs. HSIMM is an acronym for High Density Single In-line Memory Module.



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An HSIMM 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 on the system board. The 486-OCV Plus system board uses 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 HSIM modules.

Note:

The 8Mx36 HSIM module must be the standard size module. Mechanical problem may occur if a longer size of module is installed.

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, 4MB, 5MB, 6MB, 8MB, 9MB, 12MB, 13MB, 16MB, 18MB, 20MB, 24MB, 28MB, 32MB, 34MB, 36MB, 40MB, 48MB, 52MB or 64MB of onboard memory.

To install the HSIM modules, first populate Bank 0, then Bank 1 and so on. Failure to do so will cause the system board to work improperly.

The following table summarizes the bank locations and modules needed for the corresponding memory sizes. Each bank consists of 1 HSIMM socket.

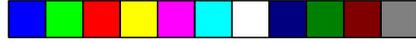
2-3 ♦ Installation Overview





486-OCV Plus

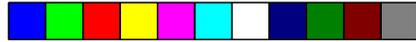
Memory Size	Bank 0	Bank 1	Bank 2	Bank 3
1MB	256Kx36	-	-	-
2MB	256Kx36	256Kx36	-	-
2MB	512Kx36	-	-	-
4MB	1Mx36	-	-	-
5MB	256Kx36	1Mx36	-	-
6MB	256Kx36	256Kx36	1Mx36	-
6MB	512Kx36	-	1Mx36	-
8MB	1Mx36	1Mx36	-	-
8MB	2Mx36	-	-	-
9MB	1Mx36	1Mx36	256Kx36	-
9MB	2Mx36	-	256Kx36	-
12MB	1Mx36	1Mx36	1Mx36	-
12MB	2Mx36	-	1Mx36	-
13MB	256Kx36	1Mx36	1Mx36	1Mx36
13MB	256Kx36	1Mx36	2Mx36	-
16MB	1Mx36	1Mx36	1Mx36	1Mx36
16MB	2Mx36	-	2Mx36	-
16MB	4Mx36	-	-	-
18MB	256Kx36	256Kx36	4Mx36	-
18MB	512Kx36	-	4Mx36	-
20MB	1Mx36	4Mx36	-	-
20MB	4Mx36	1Mx36	-	-
24MB	1Mx36	1Mx36	4Mx36	-
24MB	2Mx36	-	4Mx36	-
24MB	1Mx36	4Mx36	1Mx36	-
24MB	4Mx36	1Mx36	1Mx36	-
28MB	1Mx36	1Mx36	4Mx36	1Mx36
28MB	2Mx36	-	4Mx36	1Mx36
28MB	1Mx36	4Mx36	1Mx36	1Mx36
28MB	1Mx36	4Mx36	2Mx36	-
28MB	4Mx36	1Mx36	1Mx36	1Mx36
28MB	4Mx36	1Mx36	2Mx36	-
32MB	4Mx36	4Mx36	-	-
32MB	8Mx36	-	-	-



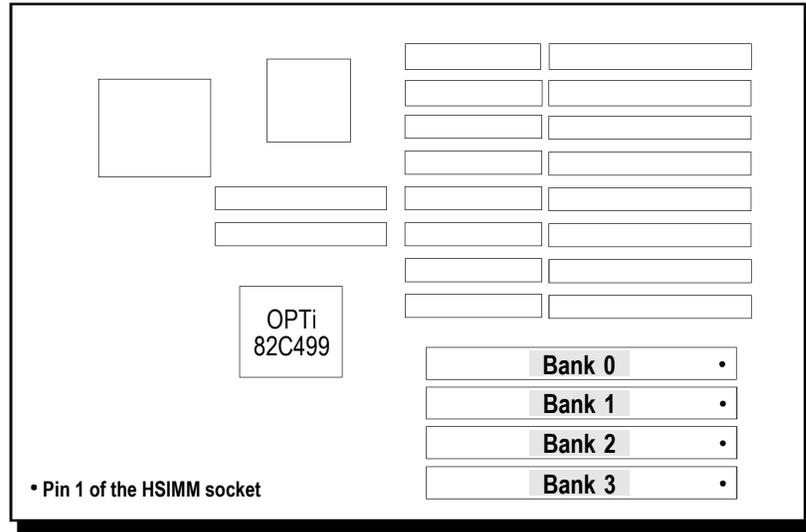
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Memory Size	Bank 0	Bank 1	Bank 2	Bank 3
34MB	256Kx36	256Kx36	4Mx36	4Mx36
34MB	512Kx36	-	8Mx36	-
36MB	1Mx36	4Mx36	4Mx36	-
36MB	4Mx36	1Mx36	4Mx36	-
36MB	4Mx36	4Mx36	1Mx36	-
36MB	8Mx36	-	1Mx36	-
40MB	1Mx36	1Mx36	4Mx36	4Mx36
40MB	2Mx36	-	8Mx36	-
40MB	1Mx36	4Mx36	4Mx36	1Mx36
40MB	4Mx36	1Mx36	4Mx36	1Mx36
40MB	4Mx36	4Mx36	1Mx36	1Mx36
40MB	8Mx36	-	2Mx36	-
48MB	4Mx36	4Mx36	4Mx36	-
48MB	8Mx36	-	4Mx36	-
52MB	1Mx36	4Mx36	4Mx36	4Mx36
52MB	1Mx36	4Mx36	8Mx36	-
52MB	4Mx36	1Mx36	4Mx36	4Mx36
52MB	4Mx36	1Mx36	8Mx36	-
52MB	4Mx36	4Mx36	4Mx36	1Mx36
52MB	8Mx36	-	4Mx36	1Mx36
64MB	4Mx36	4Mx36	4Mx36	4Mx36
64MB	8Mx36	-	8Mx36	-

2-5 ♦ Installation Overview



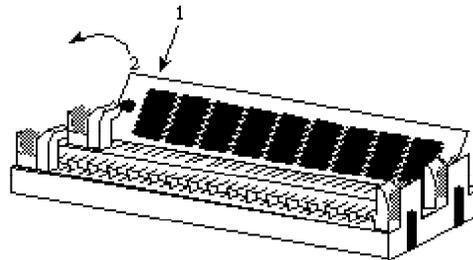
486-OCV Plus



Locations of the HSIMM Sockets on the System Board

Installing the Modules

HSIMMs simply snap into a socket on the system board. Pin 1 of the HSIMM must correspond with Pin 1 of the socket.



Installation Overview ♦ 2-6

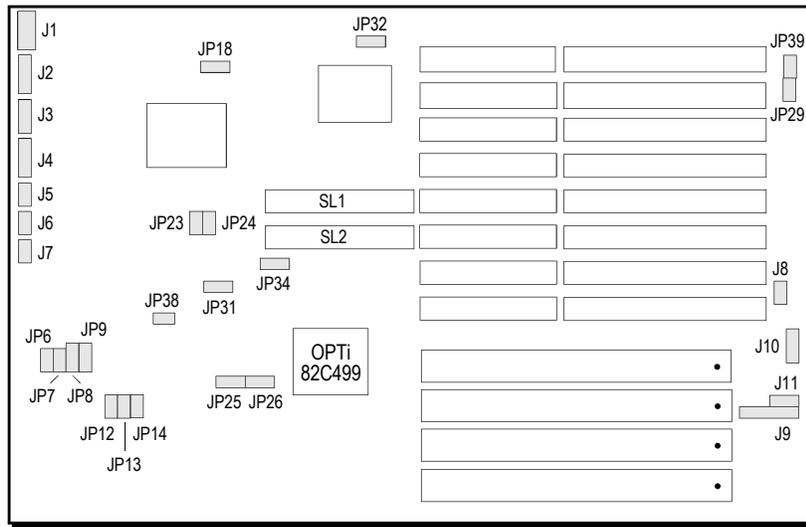


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1. Position the HSIM module above the HSIMM socket with the chips of the module facing the center of the system board.
2. Seat the module at an angle into the bank. Make sure it is completely seated. Tilt the module upright until it locks in place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

Board Configuration

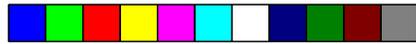
The 486-OCV Plus is designed with jumpers and connectors onboard. Make sure that the jumpers are set correctly before installing the system board into your system unit.



**Locations of Jumpers and Connector Pins
on the 486-OCV Plus System Board**

2-7 ♦ Installation Overview

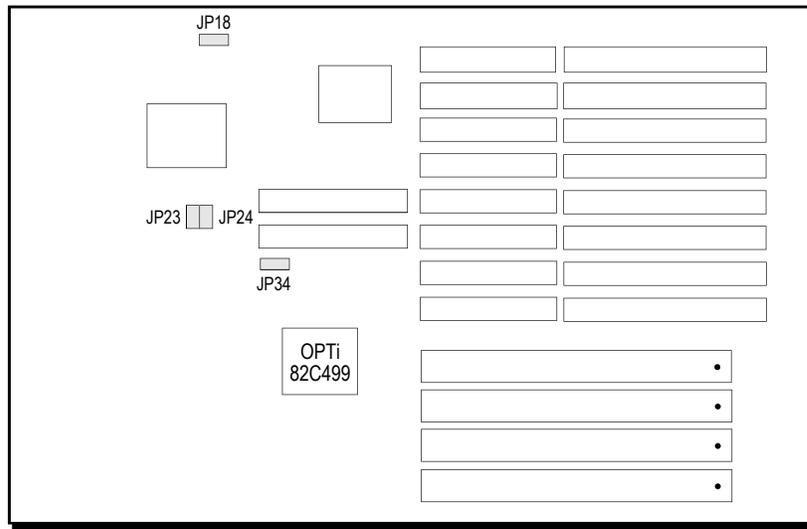




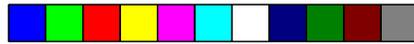
Jumper Settings

Jumper Settings for VL-Bus Add-On Board

If a VL-Bus add-on board is installed in the 486-OCV Plus system board, make sure Jumpers JP18, JP23, JP24 and JP34 are set correctly.



Locations of Jumpers JP18, JP23, JP24 and JP34 on the 486-OCV Plus System Board



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Jumper JP23

High Speed Mode for VL-Bus Board

Set Jumper JP23 to Off only if the VESA VL-Bus add-on board installed in the VL-Bus slots support Zero Wait State. If you are not sure that your add-on board(s) support Zero Wait State, set JP23 to On; otherwise, a system error may occur.



On: One Wait State



Off: Zero Wait State

Jumper JP24

CPU Speed for VL-Bus Board

If a VL-Bus board is installed in the 486-OCV Plus system board, Jumper JP24 must be set to On if the CPU speed is greater than 33MHz. If the CPU speed is less than or equal to 33MHz, set JP24 to Off.

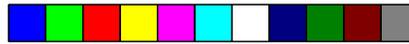


On
CPU Speed > 33MHz



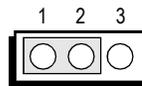
Off
CPU Speed <= 33MHz

2-9 ♦ Installation Overview

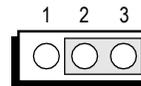


Jumper JP18 VL-Bus Ready Signal Select

If a VESA VL-Bus add-on board is installed in either one of the VL-Bus slots and the 486-OCV Plus system board is using a 486-50DX CPU, we recommend that you set Jumper JP18 to "Delay 1 PCLK". Your system board might not work properly if Jumper JP18 is set to "No Delay".



1-2 On: Delay 1 PCLK
(Default)

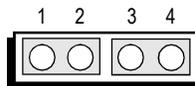


2-3 On:
No Delay

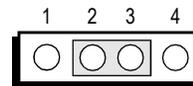
Jumper JP34 VL-Bus Address Select

If the 486-OCV Plus system board is using a 40MHz or 50MHz 486DX CPU, VESA VL-Bus add-on boards may not work when Jumper JP34 is set to "No Delay". In this case, we recommend that you set Jumper JP34 pins 1-2 and 3-4 to On, "Delay 1 PCLK".

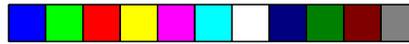
Set JP34 pins 2-3 to On if your system board is using a 386-25/33/40MHz or 486-25/33MHz CPU. If it is not set to these recommended settings, your system might hang.



1-2, 3-4 On:
Delay 1 PCLK



2-3 On: No Delay
(Default)

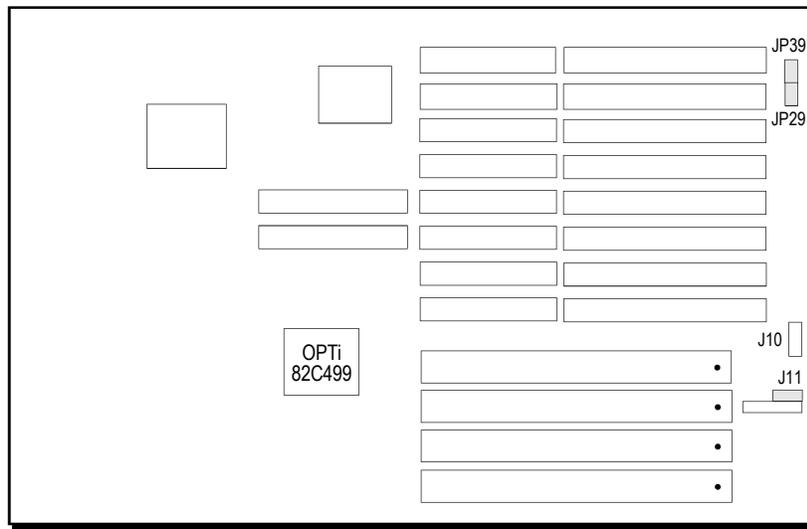


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** If Jumper JP34 is set to Delay 1 PCLK, the 486-OCV Plus will only support one VL-Bus Master in Slot SL2.*

Jumper Settings of Internal/External/CMOS Clean, Display Type and Diagnostic/Password Clear

Jumper J11 enables or disables the internal battery, external battery or CMOS Clean. JP29 allows you to select between a color or monochrome display. JP39 allows you to perform diagnostic test and clear the password.

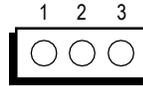


Locations of Jumpers J11, JP29 and JP39 on the 486-OCV Plus System Board



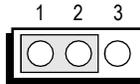
Jumper J11 Internal Battery/CMOS Clean Select

The 486-OCV Plus comes with an internal battery. If there is a problem with the internal battery, or if you prefer to connect an external battery, set Jumper J11 pins 1-2-3 to Off and connect an external battery to Connector J10.

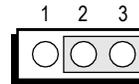


1-2-3 Off: External Battery Enable
(Default)

If, for some reason, the CMOS becomes corrupted, the system can be reconfigured with the default values stored in the ROM chips. To load the default values, set J11 pins 2 and 3 to On for approximately one to two days, then return to the default position.



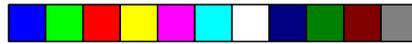
1-2 On:
Internal Battery Enable



2-3 On: CMOS Clean

Note:

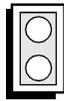
After CMOS has been reset, you must either set the jumper to Internal or External battery enable. If you set the jumper to External battery enable, make sure you connect an external battery to Connector J10.



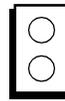
Pentium™ OverDrive Ready System Board

Jumper JP29 Display Type Select

Jumper JP29 sets the display adapter to color or mono. This jumper must match the type of display adapter installed. If you change your video adapter, make sure that this jumper is changed accordingly.



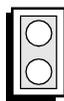
On: Color Display
(Default)



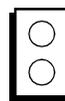
Off: Mono Display

Jumper JP39 Diagnostic/Password Clear

If you had enabled the Password Checking Option in the Advanced CMOS Setup and forgot your password, set Jumper JP39 to On. The 486-OCV Plus system board will perform diagnostic test and clear the password stored in your CMOS. Set JP39 to Off after you have cleared the password.



On: Diagnostic/
Password Clear



Off: Normal
(Default)



Cache Configuration

The 486-OCV Plus system board can be configured to three different cache sizes: 64KB, 128KB and 256KB. 128KB of cache memory is the default size. Either 8K x 8 (20ns) or 32K x 8 (20ns) chips are used for cache depending on the size of cache desired. Regardless of the amount of cache memory installed, one 8K x 8 (20ns), one 16K x 8 or one 32K x 8 (20ns) SRAM is needed for tag RAM to store the cacheable addresses. Because only one SRAM is installed for tag RAM, the cacheable system RAM size is dependent on the size of cache installed on your system board. The system board can automatically detect the cacheable system RAM size based on the size of cache installed in the 486-OCV Plus system board.

The following table summarizes the cacheable system RAM size for the corresponding cache size.

Cache Memory	Cacheable System RAM Size
64KB	16MB and below
128KB	32MB and below
256KB	64MB (maximum memory)

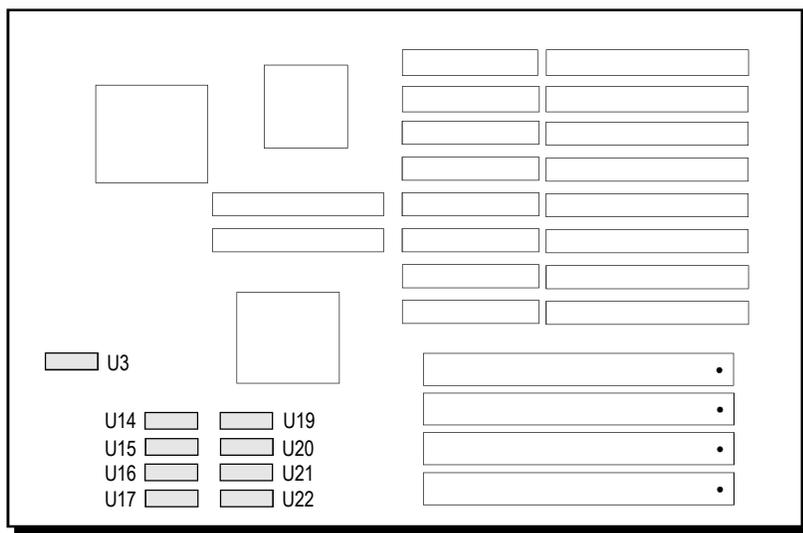
Important:

*When cache size is 64KB or 128KB, an 8K x 8 (20ns) SRAM should be inserted in socket U3 for tag RAM.
When cache size is 256KB, use a 16K x 8 or 32K x 8 (20ns) SRAM.*





Pentium™ OverDrive Ready System Board

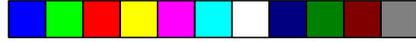


Locations of the SRAM Sockets on the 486-OCV Plus System Board

Cache Size	U14/U15/U16/U17	U19/U20/U21/U22	U3
64KB	8K x 8	8K x 8	8K x 8
128KB*	32K x 8	None	8K x 8
256KB	32K x 8	32K x 8	16K x 8 or 32K x 8

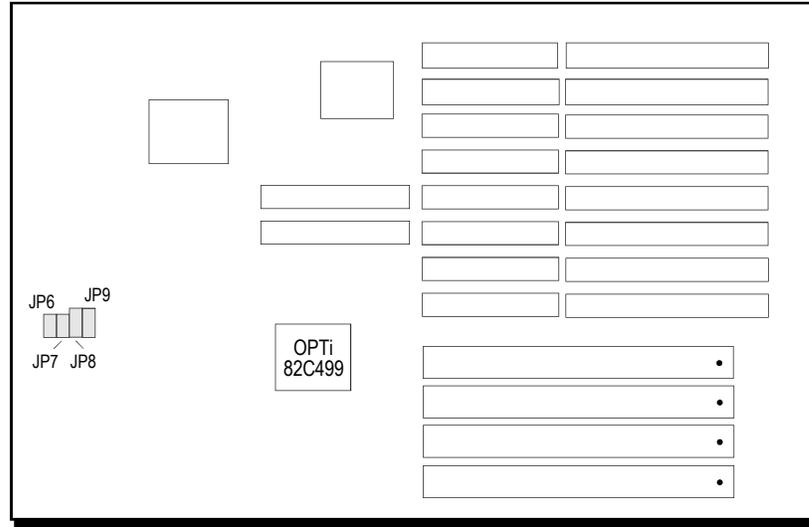
* Default setting



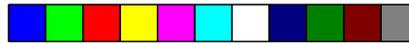


486-OCV Plus

Jumper Settings for Cache Memory



Locations of Jumpers JP6-JP9 on the 486-OCV Plus System Board



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Jumpers	Cache Memory Size		
	64KB	128KB*	256KB
JP6	Off	On	On
JP7	Off	Off	On
JP8	2-3 On	1-2 On	2-3 On
JP9	2-3 On	1-2 On	2-3 On

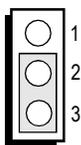
* Default setting



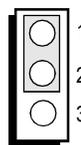
On



Off

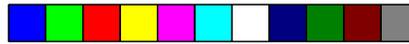


2-3 On



1-2 On

2-17 ♦ Installation Overview

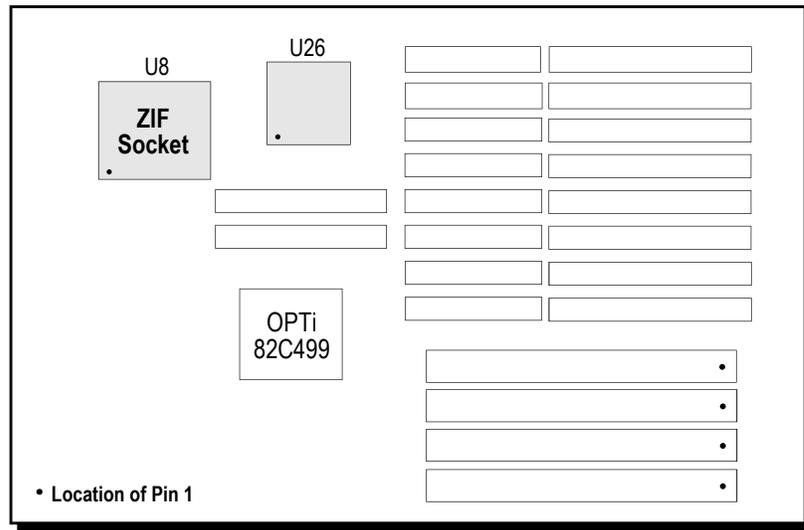


CPU Installation and Upgrade

The 486-OCV Plus is equipped with a Zero Insertion Force (ZIF) socket to make upgrading flexible and easy. Make sure the jumpers are set correctly before applying power, or you may damage the CPU or system board.

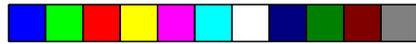
CPU Configuration

Location U8 of the 486-OCV Plus system board is a 237-pin ZIF socket for the Intel 486™ family of CPUs, 486 OverDrive™ Processors, and the Pentium™ OverDrive Processor. This makes upgrading easy and affordable. Location U26 is a 196-pin PQFP [Plastic Quad Flatpack Package] for 80486SX.



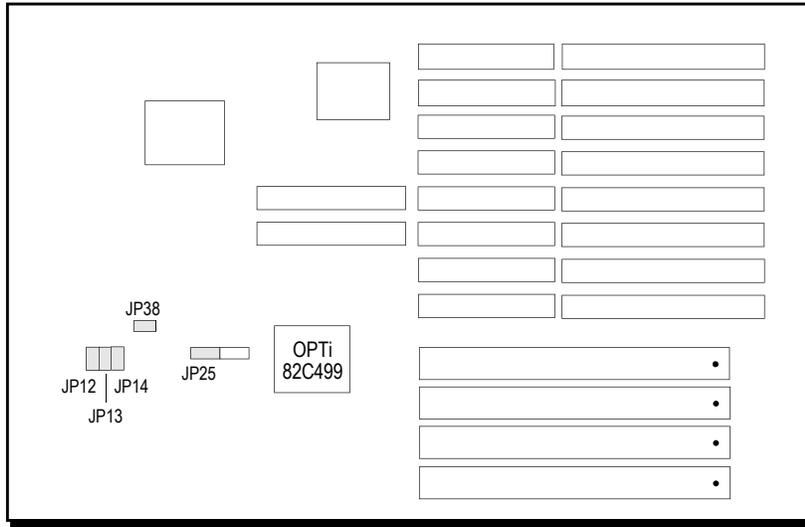
Locations of the CPU Sockets on the 486-OCV Plus





Pentium™ OverDrive Ready System Board

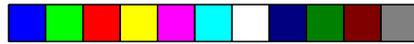
Jumper Settings for CPUs



Locations of Jumpers JP12-JP14, JP25 and JP38 on the 486-OCV Plus System Board

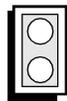
Jumpers JP12-JP14 and JP25 Clock Selection

These jumpers should be set to match the speed of the CPU installed on the 486-OCV Plus system board.

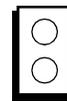


486-OCV Plus

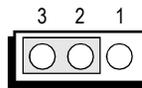
	JP12	JP13	JP14	JP25
486SX/DX-25, 486DX2-50, Pentium™ OverDrive Processor 50MHz	Off	Off	On	2-3 On
486SX/DX-33, 486DX2-66, Pentium™ OverDrive Processor 66MHz	On	Off	On	2-3 On
486SX/DX-40 486DX-50	On Off	On Off	Off On	1-2 On 1-2 On



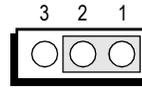
On



Off



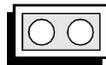
2-3 On



1-2 On

Jumper JP38 CPU Type Selection

Jumper JP38 should be set to match the type of CPU installed on the 486-OCV Plus system board.



On:
Cyrix CPU



Off:
Intel/AMD CPU



Pentium™ OverDrive Ready System Board

The jumpers below are for factory testing only and should always be set to their default configurations. Reconfiguring these jumpers will cause problems with your 486-OCV Plus system board.

JP26: 1-2 On

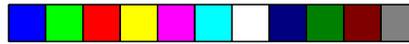
JP31: 1-2 On

JP32: BIOS ROM Type Select

1-2 On: Flash RAM 28F001BX-T

2-3 On: Flash RAM 28F010 or 64KB ROM





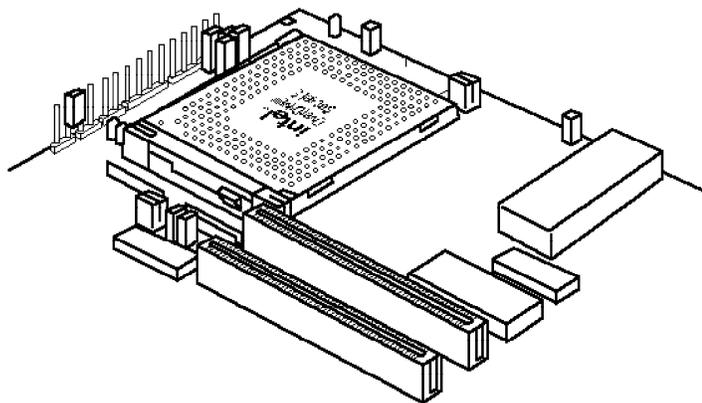
Installing Upgrade CPUs

The 486-OCV Plus is equipped with a 237-pin Zero Insertion Force (ZIF) socket at location U8 of the system board. The 486-OCV Plus accommodates all of the Intel 486™ and 5V Pentium™ family of OverDrive processors, and Cyrix or AMD 486DX-40 CPU. The ZIF socket allows easy CPU upgrades and minimizes the chance of breaking off CPU pins.

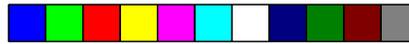
Warning:

Open the socket only if actually installing an upgrade 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 237-pin ZIF socket consists of four rows of pin holes on each side.



Zero Insertion Force (ZIF) Socket

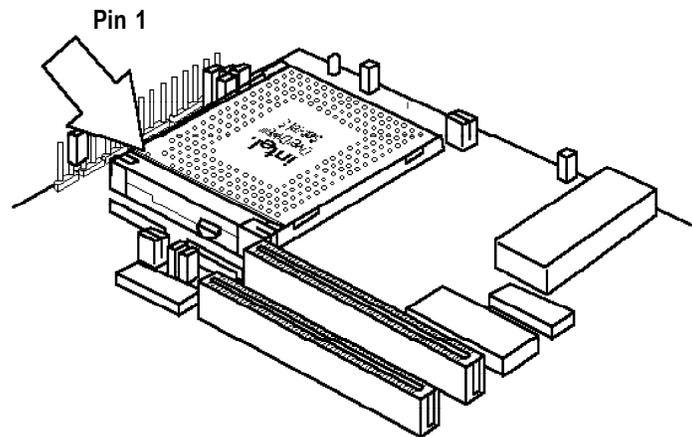


Pentium™ OverDrive Ready System Board

Install the 80486SX, 80486DX, 80486DX2 or the 80486 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 install, simply move the handle upward. Remove the original CPU from the socket. If the board has an 486SX CPU soldered on at U26, you should leave it intact.

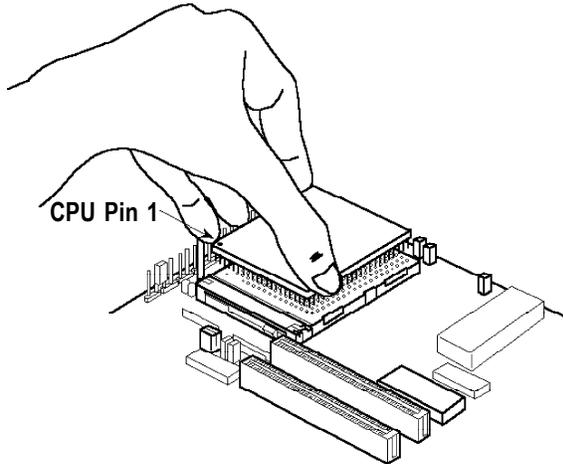
Position the upgrade CPU above the socket. Make sure pin 1 of the CPU is aligned with pin 1 of the socket. Lower the chip until the pins are inserted properly in their corresponding holes.



Pin 1 of the ZIF Socket



486-OCV Plus



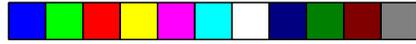
Positioning the CPU Above the ZIF Socket

Gently push the handle down until the handle locks into place. You will hear a click when the handle is secure. When you want to remove the chip, simply lift the handle and remove the chip.

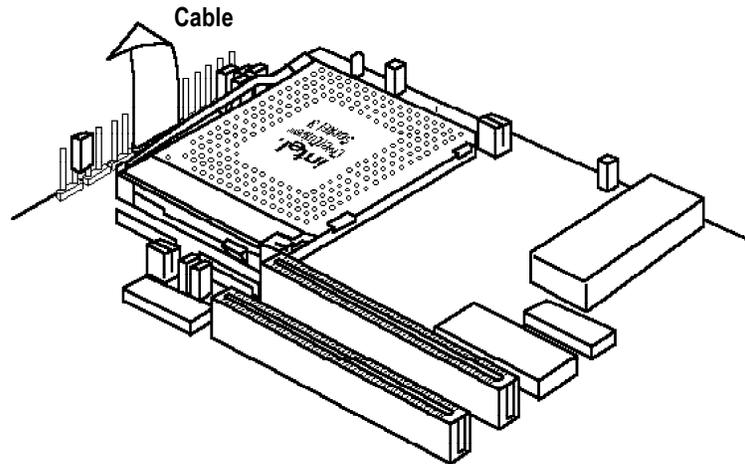
Warning:

The cables (floppy drive, hard drive, CD-ROM, etc.) must be routed clear of the CPU with a minimum of 0.25" horizontal clearance to allow heat dissipation.

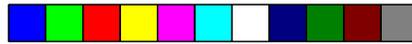
A minimum of 1.4" vertical clearance (measured above the socket surface) must be kept free above the CPU. Do not run cables or other obstructions in this area.



Pentium™ OverDrive Ready System Board



Adequate airflow for cooling must be provided over the CPU. For Pentium™ OverDrive Processors, the airflow must be adequate to keep the system temperature below 40°C, measured 0.5 inch above the CPU and assuming a room temperature of 25°C.



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*

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.



Pentium™ OverDrive Ready System Board

Step 5

Insert the SIM modules into the SIMM banks on the 486-OCV Plus. The quantity and location of the SIM modules is dependent upon the memory configuration and type of modules you intend to use.

Step 6

Set the corresponding jumpers.

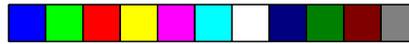
Step 7

Install the prepared 486-OCV Plus system board into the case and replace the screws.

Step 8

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





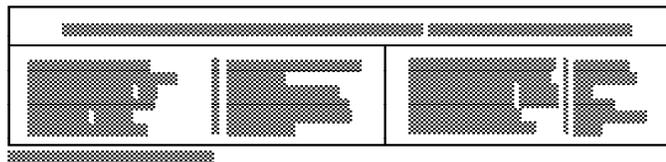
❖ *Initial Setup Program*

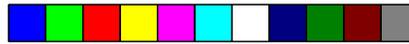
After you power up your system, the BIOS message appears on your screen and the memory count begins.

After the memory test, the message below will appear on the screen if your CMOS Setup is correct:

Enter CURRENT Password:

The default password is AMI. You have three chances to type the correct password. If the password is still incorrect after the third try, the system will lock up. You must turn your system off and back on to restart it. You can change the password under the change password option. Refer to the "Change Password" section on page 3-8 for more information. A screen similar to the one shown below will appear. If the password option is disabled, you will directly access this screen.





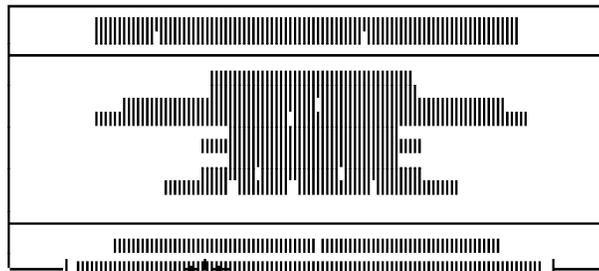
Pentium™ OverDrive Ready System Board

AMI BIOS Setup Utilities

If you want to change your CMOS setup, press when the message, "Hit if you want to run setup", appears on the screen. Again, if you enabled the password option, you will be prompted to the message below:

Enter CURRENT Password:

The default password is AMI. For information on how to change the password, refer to the "Change Password" section on page 3-8. After entering the correct password, the screen below appears. If the password option is disabled, you will directly access this screen.

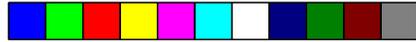


Use the arrow keys to highlight the option you want and hit the <ESC> key.

Note:

Before you access the setup utilities, a warning message will appear.

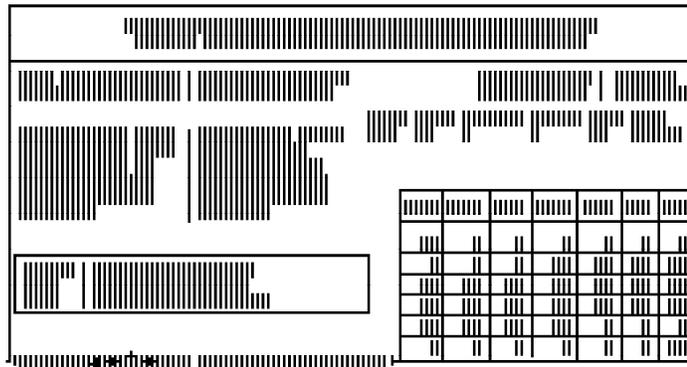
3-2 ◆ Initial Setup Program



This message warns you that inappropriate modifications may cause problems. Press <Enter> to continue or <Esc> to abort. If the system fails after the setup procedure, power off the computer and turn it on again. Wait for the message, "Hit if you want to run setup", and press .

Standard CMOS Setup

If you highlight "Standard CMOS Setup" and press <Enter>, a screen similar to the one below will appear:





Pentium™ OverDrive Ready System Board

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

The left side of the screen lists the modifiable parameters. You can change the date, time, hard disk drive (C and D), type of floppy drive (A and B), primary display, and keyboard options. The Daylight Savings function is intended for use in notebook computers and is not supported by the 486-OCV Plus, so it does not matter how it is set.

On the lower right hand corner is a calendar that shows the current date.

The box at the lower left provides information on each highlighted parameter.

Navigation and menu selection instructions are located below the information box. Use the up or down arrow key to move between options. Once you have highlighted the option you wish to change, use the <Page Up> or <Page Down> key to view the available selections for that option.

If you have added a hard drive, you must select the appropriate type for the drive. The 486-OCV Plus has 46 pre-set types and one user-definable type.

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

3-4 ♦ Initial Setup Program



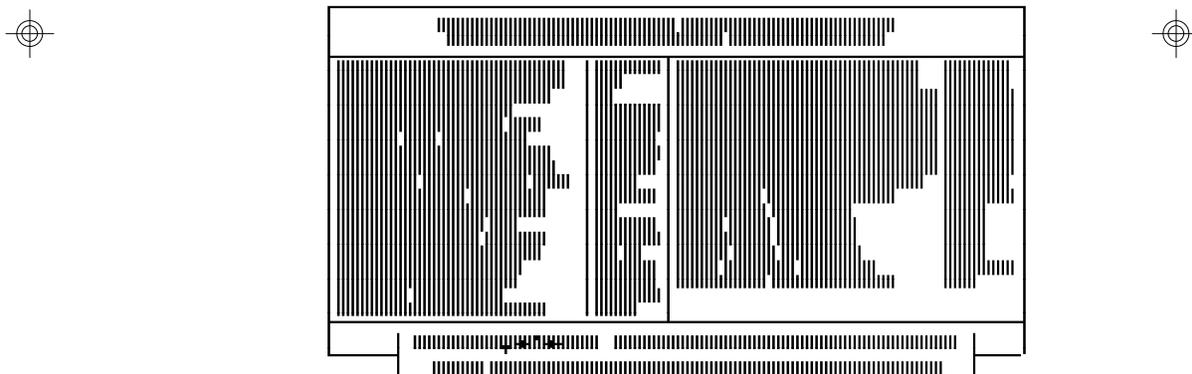


If none of the pre-set types is appropriate for your hard drive, choose 47, which is the user-definable type. To use this type, highlight either hard disk C or D, depending on your hard drive configuration. Use the <Page Up> key until type 47 is showing. Fill in all the parameters as specified by the drive manufacturer. To move between parameters, hit the <Enter> key.

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

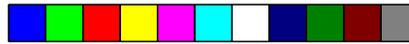
Advanced CMOS Setup

If you highlight "Advanced CMOS Setup" and press <Enter>, a screen similar to the following one will appear:



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





Pentium™ OverDrive Ready System Board

Set the password checking option to "Always" or "Setup" if you want to enable this option. Setting it to "always" will prompt you for a password every time you cold boot your system or access setup. When you set the option to "Setup", you will be prompted for a password only when trying to access setup.

The Boot Sector Virus Protection 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.

Note:

Your system must have an American Megatrend Keyboard Controller BIOS, version F or later, for this option to work.

If the changes 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.



Auto Configuration with BIOS Defaults

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

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

Load BIOS Setup Default Values from ROM Table (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.

Auto Configuration with Power-on Defaults

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

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

Load Power-on Default Values from ROM Table (Y/N)? N

Type "Y" and press <Enter> to return to the Power-on default values. After pressing <Enter>, you will be returned to the main menu.



Pentium™ OverDrive Ready System Board

Change Password

The default password is AMI. If you want to change the password, make sure you set the Password Checking Option to "Always" or "Setup" under Advanced CMOS Setup. If not, the error message below will appear on the screen:

**<Password Option> must be enabled in Advanced CMOS Setup
Press any key to continue**

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

Enter Current Password:

The preset password is AMI. Type AMI or the current password and press <Enter>. The message below will appear:

Enter NEW Password:

Type in the the new password. You are limited to six ASCII characters. If you type more than six characters, you will get the following error message:

Error, press any key





486-OCV Plus

Press any key on the keyboard to return to the message below:

Enter NEW Password:

Type in a password that is six characters long or shorter. When done, you will be asked to verify the new password:

Re-enter NEW Password:

Type in exactly the same password. Failure to do so will yield the error message shown below:

Error, press any key

If you receive this error, you will have to start all over.

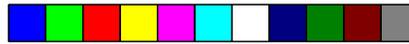
After typing in the new password, the message below will appear:

New password installed

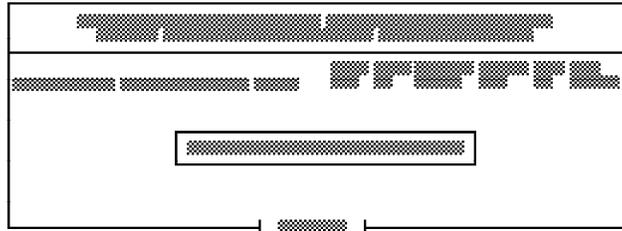
Press the <Esc> key to return to the main menu.

Auto Detect Hard Disk

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 following one will appear.



Pentium™ OverDrive Ready System Board



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 for hard disk Type 47 will be displayed in Standard CMOS Setup. If you select "N", the parameters in the Standard CMOS Setup will remain the same.

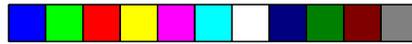
Hard Disk Utility

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 following one will appear.

Note:

DO NOT use this utility on IDE hard drives. Using this utility can severely damage your IDE hard drive.





Use the arrow keys to select the desired options, and press <Esc> to exit when done.

Write to CMOS and Exit

When all the changes have been made, highlight "Write to CMOS and Exit" and press <Enter>. The message below will appear:

Write to CMOS and Exit (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 after memory testing is done.

Do Not Write to CMOS and Exit

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

Want to 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 after memory testing is done.



Pentium™ OverDrive Ready System Board

❖ **Troubleshooting Checklist**

If you experience difficulty with the 486-OCV Plus 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 SIM modules are seated securely into the bank sockets.
- 3) Make sure that the SIM modules are in the correct locations.
- 4) Check that all populated memory banks are completely filled. If not, fill them completely.
- 5) If your board fails to function, place the board on a flat surface and seat all socketed components (gently press each component into the socket).



❖ **Appendix A: Types of Modules**

The 486-OCV Plus system board allows you to populate memory with 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 SIM modules. The following modules have been tested with this board. Most untested brands will work but a few may fail to do so.

For SIM 256Kx36 Modules

Brand	Chip Number
Hitachi	HM514280-JP8
OKI	M516256B-80J
Fujitsu	81C4256-80

For SIM 512K36 Modules

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

For SIM 1Mx36 Modules

Brand	Chip Number
Toshiba	TC514400ASJL-70
Fujitsu	814400-80
OKI	M511000B-70J
NEC	424400-80



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For SIM 2Mx36 Modules

Brand	Chip Number
Fujitsu	814400-80
OKI	M511000B-70J





❖ **Appendix B: System Error Report**

During the POST (Power On Self Test) routines, which are performed each time the system is powered on, errors may occur. Errors can be fatal or non-fatal.

Fatal Errors

Fatal errors are those which will not allow a system to continue the boot-up procedure. If a fatal error occurs, you should consult your system manufacturer for repair.

Beep Count	Error Message
1	Refresh Failure
2	Parity Error
3	Base 64KB Memory Failure
4	Timer Not Operational
5	Processor Error
6	8042 - Gate A20 Failure
7	Processor Exception Interrupt Error
8	Display Memory Read/Write Error
9	ROM Checksum Error
10	CMOS Shutdown Read/Write Error



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Non-Fatal Errors

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Error Message

1. CH-2 Timer Error
2. INTR #1 Error
3. INTR #2 Error
4. CMOS Battery State Low
5. CMOS Checksum Failure
6. CMOS Options Not Set
7. CMOS Display Type Mismatch
8. Display Switch Not Proper
9. Keyboard is Locked...Unlock It
10. Keyboard Error
11. KB/Interface Error
12. CMOS Memory Size Mismatch
13. FDD Controller Failure
14. HDD Controller Failure
15. C: Drive Error
16. D: Drive Error
17. C: Drive Failure
18. D: Drive Failure
19. CMOS Time & Date Not Set
20. Cache Memory Bad, Do not Enable Cache
21. 8042 Gate-A20 Error
22. Address Line Short!
23. DMA #2 Error/DMA #3 Error/DMA Error
24. No ROM Basic
25. Diskette Boot Failure/Invalid Boot Diskette
26. On Board Parity Error/Off Board Parity Error/
Parity Error????

❖ 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 00EFFFF	192K I/O Expansion ROM	Reserved for ROM on I/O Adapter Card
00F0000 to 00FFFFFF	64K 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
0A0-08F	Interrupt Controller 2, 8259A
0C0-0DF	DMA Controller 2, 8237A-5
0E8	Shadow RAM and Cache Control Bit
0F0	Clear Numeric Processor Extension Busy
0F1	Reset Numeric Processor Extension
0F8-OFF	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 ISA I/O Pin Assignments

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

D		C
-Mem CS16	- 01 -	SBHE
-I/O CS16	- 02 -	LA23
IRQ10	- 03 -	LA22
IRQ11	- 04 -	LA21
IRQ12	- 05 -	LA20
IRQ13	- 06 -	LA19
IRQ14	- 07 -	LA18
-Dack0	- 08 -	LA17
DRQ0	- 09 -	-Memr
-Dack5	- 10 -	-Memw
DRQ5	- 11 -	SD08
-Dack6	- 12 -	SD09
DRQ6	- 13 -	SD10
-Dack7	- 14 -	SD11
DRQ7	- 15 -	SD12
+5V DC	- 16 -	SD13
-Master	- 17 -	SD14
Gnd	- 18 -	SD15



❖ Appendix E: VL-Bus I/O Pin Assignments

B	A
DAT00	-01-
DAT02	-02-
DAT04	-03-
DAT06	-04-
DAT08	-05-
GND	-06-
DAT10	-07-
DAT12	-08-
Vcc	-09-
DAT14	-10-
DAT16	-11-
DAT18	-12-
DAT20	-13-
GND	-14-
DAT22	-15-
DAT24	-16-
DAT26	-17-
DAT28	-18-
DAT30	-19-
Vcc	-20-
ADR31	-21-
GND	-22-
ADR29	-23-
ADR27	-24-
ADR25	-25-
ADR23	-26-
ADR21	-27-
ADR19	-28-
GND	-29-
ADR17	-30-
ADR15	-31-
Vcc	-32-
ADR13	-33-
ADR11	-34-
ADR09	-35-
ADR07	-36-
ADR05	-37-
GND	-38-
ADR03	-39-
ADR02	-40-
n/c	-41-
RESET#	-42-
D/C#	-43-
M/I#	-44-
W/R#	-45-
RDYRTN#	-48-
GND	-49-
IRC9	-50-
BRDY#	-51-
BLAST#	-52-
ID0	-53-
ID1	-54-
GND	-55-
LCLK	-56-
Vcc	-57-
LBS16#	-58-
	DAT01
	DAT03
	GND
	DAT05
	DAT07
	DAT09
	DAT11
	DAT13
	DAT15
	GND
	DAT17
	Vcc
	DAT19
	DAT21
	DAT23
	DAT25
	GND
	DAT27
	DAT29
	DAT31
	ADR30
	ADR28
	ADR26
	GND
	ADR24
	ADR22
	Vcc
	ADR20
	ADR18
	ADR16
	ADR14
	ADR12
	ADR10
	ADR08
	GND
	ADR06
	ADR04
	WBACK#
	BE0#
	Vcc
	BE1#
	BE2#
	GND
	BE3#
	ADS#
	LRDY#
	LDEV<x>#
	LREQ<x>#
	GND
	LGNT<x>#
	Vcc
	ID2
	ID3
	ID4
	LKEN#
	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
D/C#	1	O		O	
DAT<31..0>	32	I/O	I/O	I/O	I/O
ID<4..0>	5	O	O		
IRQ9	1			O	O
LBS16#	1		O		O
LCLK	1	O	O		
LDEV<x># ⁴	1		N/A	N/A	O
LEADS#	1	O		O	
LGNT<x># ⁴	1	O	O		N/A
LKEN#	1	O	O		
LRDY#	1			N/A	O
LREQ<x># ⁴	1			O	O
M/IO#	1	O		O	
RDYRTN#	1	O	O		
RESET#	1	O	O		
W/R#	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: System Overview

82C206 Integrated Peripherals Controller

The 486-OCV Plus uses an 82C206 integrated peripherals controller that supports the following:

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 (IBM Personal Computer)	Ch6-Reserved for User
Ch3-Reserved for User	Ch7-Reserved for User

Note:

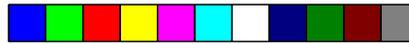
*DMA controller 1 supports 8-bit data transfer
DMA controller 2 supports 16-bit data transfer*

Address generation for DMA Channels 3 to 0

Source	DMA Page Memory	DMA Controller 1
Address	A23 ←→ A16	A15 ←→ A0

Address generation for DMA Channels 7 to 5

Source	DMA Page Memory	DMA Controller 2
Address	A23 ←→ A17	A16 ←→ A1



Page Memory Address

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

System Interrupts

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

Note:

The non-maskable interrupt (NMI) of the 486-OCV Plus 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 0 (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 2	IRQ13-Coprocessor
IRQ6-Diskette Controller	IRQ14-Fixed Disk Controller
IRQ7-Parallel Port 1	IRQ15-Reserved

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Note:

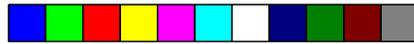
*Any or all interrupts including NMI may be masked.
The 15 levels of system interrupts from high to low are
ordered as: IRQ0>IRQ1>IRQ8>IRQ9>IRQ10>IRQ11
>IRQ12>IRQ13>IRQ14>IRQ15>IRQ3>IRQ4>IRQ5>
IRQ6>IRQ7.*

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



RAM Module

The DRAM memory on the 486-OCV Plus system board can be expanded to a total of 64MB using 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36 and 8Mx36 HSIMMs. The DRAM controller uses a page mode design with an access time of 80ns or less.

Cache Module

The 486-OCV Plus supports 64KB/128KB of direct map cache using 8Kx8 (20ns) SRAMs or 256KB using 32Kx8 (20ns) SRAMs.

Burst Cycles

The 486 microprocessor accepts burst cycles for any bus request that requires more than one data cycle. During burst cycles, a new data item is strobed into the 486 microprocessor for every clock, rather than every other clock as in non-burst cycles.

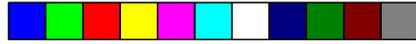
❖ Appendix G: Connector Pin Assignments

Jumper J1 Diagnostic LCD Port

Pin	Function
1	Vcc
2	XD0
3	XD1
4	XD2
5	XD3
6	XD4
7	XD5
8	XD6
9	XD7
10	Gnd

Connector J2 Keyboard Connector

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



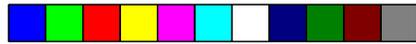
486-OCV Plus

Jumper J3
Speaker Connector

Pin	Function
1	Speaker
2	NC
3	Ground
4	VCC

Jumper J4
Keylock Connector

Pin	Function
1	LED Power
2	Key
3	Ground
4	Keyboard Inhibitor
5	Ground



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Jumper J5
Turbo LED Connector

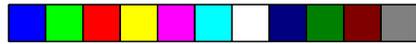
Pin	Function
1	-LED Power
2	

Jumpers J6/J8
Reset Switch Connectors

Pin	Function
1	Ground Reset Switch
2	

Jumper J7
Turbo Switch Connector

Pin	Function
1	Switch GND
2	



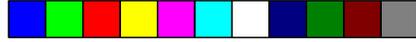
486-OCV Plus

Jumper J9
PS/2 Mouse Connector

Pin	Function
1	Mouse Data
2	N. C.
3	Gnd
4	+5V
5	Mouse Clock
6	N. C.

Jumper J10
External Battery Connector

Pin	Function
1	Battery +3.6V
2	NC
3	Ground
4	Ground



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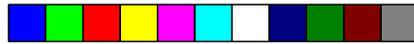
Power Connector PL1 and PL2

Connectors	Pin	Function
PL1	1	Power Good
	2	+5V
	3	+12V
	4	-12V
	5	Ground
	6	Ground
PL2	1	Ground
	2	Ground
	3	-5V
	4	+5V
	5	+5V
	6	+5V



❖ Appendix H: AMI BIOS Hard Disk Table

Type	Cyln	Head	WPcom	LZone	Sect	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	20MB
3	615	6	300	615	17	31MB
4	940	8	512	940	17	62MB
5	940	6	512	940	17	47MB
6	615	4	65535	615	17	20MB
7	462	8	256	511	17	31MB
8	733	5	65535	733	17	30MB
9	900	15	65535	981	17	112MB
10	820	3	65535	828	17	20MB
11	855	5	65535	855	17	35MB
12	855	7	65535	855	17	50MB
13	306	8	128	319	17	28MB
14	733	7	65535	733	17	43MB
16	612	4	0	663	17	20MB
17	977	5	300	977	17	41MB
18	977	7	65535	977	17	57MB
19	1024	7	512	1024	17	60MB
20	733	5	300	732	17	30MB
21	733	7	300	732	17	43MB
22	733	5	300	733	17	30MB
23	306	4	0	336	17	10MB
24	925	7	0	925	17	54MB
25	925	9	65535	925	17	69MB
26	754	7	754	754	17	44MB
27	754	11	65535	754	17	69MB
28	699	7	256	699	17	41MB
29	823	10	65535	823	17	68MB



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Type	CylIn	Head	WPcom	LZone	Sect	Size
30	918	7	918	918	17	53MB
31	1024	11	65535	1024	17	94MB
32	1024	15	65535	1024	17	128MB
33	1024	5	1024	1024	17	43MB
34	612	2	128	612	17	10MB
35	1024	9	65535	1024	17	77MB
36	1024	8	512	1024	17	68MB
37	615	8	128	615	17	41MB
38	987	3	987	987	17	25MB
39	987	7	987	987	17	57MB
40	820	6	820	820	17	41MB
41	977	5	977	977	17	41MB
42	981	5	981	981	17	41MB
43	830	7	512	830	17	48MB
44	830	10	65535	830	17	69MB
45	917	15	65535	918	17	114MB
46	1224	15	65535	1223	17	152MB
47			User defined			



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