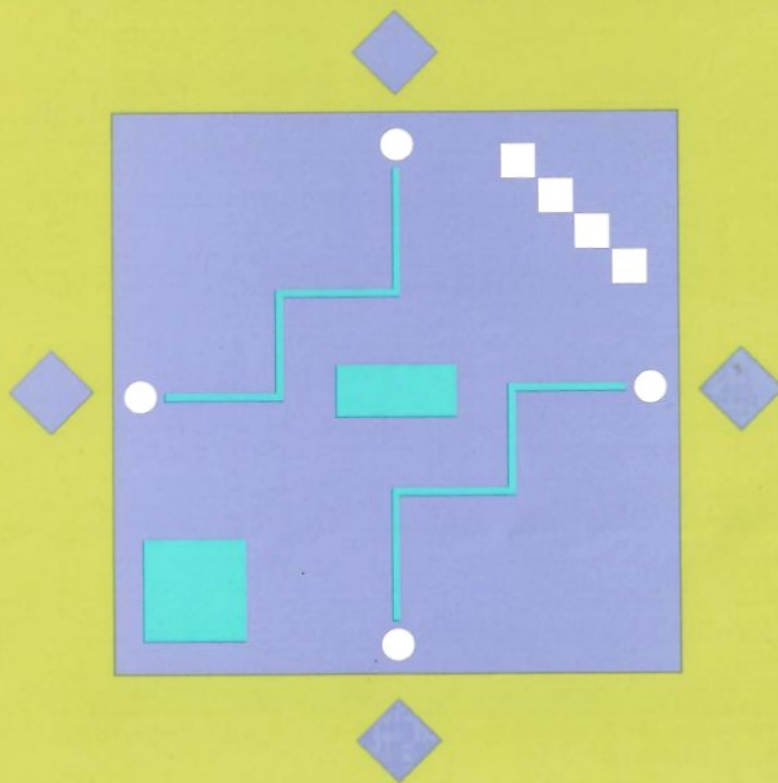


486

**VESA LOCAL BUS
MAIN BOARD**



USER'S MANUAL

BIOS Setup

WARRANTY

Limited Warranty Policy

The vendor will not be responsible for any damage to the system or data loss caused by the use of the BIOS Setup utility.

A copy of the warranty policy is included in the BIOS Setup utility. The vendor is not responsible for any damage to the system or data loss caused by the use of the BIOS Setup utility.

The BIOS Setup utility is provided as a service to the user. The vendor is not responsible for any damage to the system or data loss caused by the use of the BIOS Setup utility.

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HIGH PERFORMANCE CACHING

486 VESA LOCAL BUS MAINBOARD

USERS MANUAL



4. Block-0 Function Select

This option enables the Non-Cache or Non-Loca block area which are defined by the Block-0 Size and Base Address.

CHANGE PASSWORD

The CHANGE PASSWORD allows you to protect your system with a user defined password; if you have Enabled Password Checking in the AMI BIOS ADVANCED SETUP. The default password is AMI.

AUTO DETECTION OF HARD DISK TYPE

The AUTO DETECTION OF HARD DISK TYPE is a very useful tool to detect the hard disk's type which includes the information of the disk's cylinders, heads and sectors.

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ADVANCED CHIPSET SETUP

The ADVANCED CHIPSET SETUP allows you to configure the 486-VL mainboard to function correctly with other components you may have installed and to provide optimum performance of the system.

Diagram 4.4- ADVANCED CHIPSET SETUP Screen

BIOS SETUP PROGRAM - ADVANCED CMOS SETUP (C) 1990 American Megatrends Inc., All Rights Reserved	
CPU Frequency Select	: 16/33MHz
SRAM Read Burst Mode	: 3222
SRAM Write Wait State	: 1
System BIOS in Cacheable	: Disabled
Video BIOS in Cacheable	: Disabled
Cacheable Range	: 32 MB
Address 18 Mbyte Access	: Normal
Block-0 Function Select	: Disabled
Block-0 Size Select	: 64 KB
Block-0 Base Address Select	: 2048 KB

ESC:Exit ↓→↑Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F9:Color
F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults

NOTE:

The version of AMI BIOS you are using may not have all the above features in the ADVANCED CHIPSET SETUP.

1. CPU Frequency Select

This feature will set the AT BUS access speed on your 486-VL mainboard. The CPU Frequency is based on the Oscillator frequency. Normally we suggest you select the clock as the table below to obtain a bus access speed close to 8MHz. Hence, if you have a 486DX-33 or 486DX2-66 with an oscillator rated at 33MHz, the 16/33MHz.

The jumper ID2, ID3 and JP72 are also required to be set. Please refer to the hardware setup in Chapter 2.

FORWARD

How to use this Manual

This manual has been designed to provide you with both Setup procedures and comprehensive Reference Information of both a general and technical nature. If your system has been configured and set up correctly, you may use this manual to become acquainted with the features and the layout of the board.

If you are about to re-configure or modify your system, this manual will guide you through the procedures required and provide relevant information as you proceed. Some of the information in this manual is of an advanced technical nature and may require assistance from either your local dealer or service store.

Manual Layout

The following paragraphs provide a summary of each chapter in this manual.

Chapter 1 - Introducing your 486-VL System.

This chapter explains the main features of your 486-VL System Board, including brief explanations of the standard components.

Chapter 2 - Hardware Setup.

This chapter explains all jumper configurations and connectors for your 486-VL System Board.

Chapter 3 - Memory.

This chapter explains all memory configurations including Cache and DRAM options. The range of suitable devices you can use and the appropriate jumper selections.

Chapter 4 - BIOS Setup.

This chapter explains all Setup configurations for your Basic Input Output System(BIOS).

ADVANCED CMOS SETUP

The ADVANCED CMOS SETUP allows you to configure the 486-VL mainboard to function correctly with other components you may have installed.

If you use the AMI BIOS command AUTO CONFIGURATION WITH BIOS DEFAULTS you will set the ADVANCED CMOS features to provide optimum performance of the system.

The AUTO CONFIGURATION WITH POWER-ON DEFAULTS command is primarily used to setup the mainboard without any ADVANCED CMOS features. You can use this AMI BIOS command as a diagnostic aid if your system is behaving erratically.

To enable you to select the correct values for your system, several ADVANCED CMOS features need more explanation.

Diagram 4.3 - ADVANCED CMOS SETUP Screen

BIOS SETUP PROGRAM - ADVANCED CMOS SETUP	
(C) 1990 American Megatrends Inc., All Rights Reserved	
Typematic Rate Programming	:Enabled
Typematic Rate Delay (msec)	:500
Typematic Rate (Chars/Sec)	:30
Above 1 MB Memory Test	:Disabled
Memory Test Tick Sound	:Enabled
Memory Parity Error Check	:Enabled
Hard Disk Type 47 Data Area	:0:300
System Boot Up Num Lock	:On
Numeric Processor Test	:Enabled
Floppy Drive Seek At Boot	:Enabled
System Boot Up Sequence	:A, C:
System Boot Up CPU Speed	:High
External Cache Memory	:Enabled
Internal Cache Memory	:Enabled
Turbo Switch Function	:Enabled
Password Checking Option	:Setup
Video ROM Shadow C000,16K	:Enabled
Video ROM Shadow C400,16K	:Enabled
Adaptor ROM Shadow C800,16K	:Disabled
Adaptor ROM Shadow CC00,16K	:Disabled
System ROM Shadow F000,64K	:Enabled
Main Memory Relocation	:Enabled
Boot Sector Virus Protection	:Disabled

ESC:Exit ↓→↑Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color
F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults

NOTE:

The version of AMI BIOS you are using may not have all the above features in the ADVANCED CMOS SETUP.

WARNINGS

Power Supply

A clean (noise free) and regulated power source is essential to your computer system. If you experience excessive line noise, or power fluctuations, an appropriate Power Filter Unit between the power source and your computer should be used.

Installing Hardware

The system should be always be turned OFF whenever you are installing Processors, Crystals, DRAM/SRAM devices or Expansion cards and when configuring jumper settings. Failing to do this will result in permanent damage to either the system board or the device being installed. All chips must also be oriented and aligned with their correct pins. The correct position is usually indicated on the system board by a Pin 1 identification and/or the location of the appropriate notched position on the chip socket.

Installing some type of hardware may result in your warranty being made void. Please check with your dealer or service store, before attempting the installation.

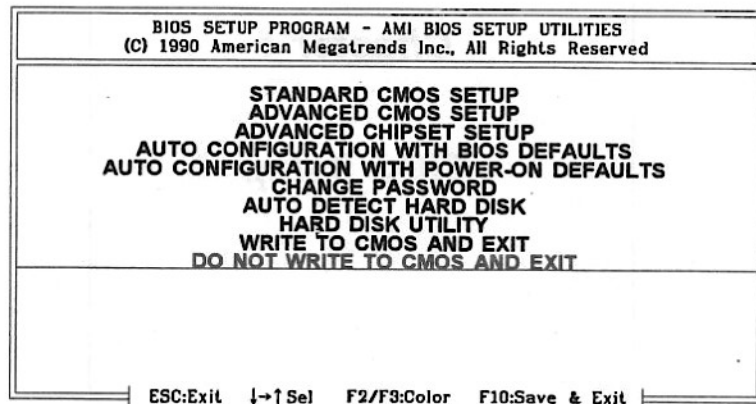
AMI BIOS

The BIOS Setup Program from American Megatrends Inc (AMI), referred to in this chapter as the AMI BIOS, is used as the default for the 486-VL. Other BIOS Setup Programs may be available with special orders.

The AMI BIOS includes: STANDARD CMOS SETUP, ADVANCED CMOS SETUP, ADVANCED CHIPSET SETUP, AUTO CONFIGURATION WITH BIOS DEFAULTS, AUTO CONFIGURATION WITH POWER-ON DEFAULTS, CHANGE PASSWORD, AUTO DETECT HARD DISK and HARD DISK UTILITY.

The AMI BIOS is initiated during boot-up of your system by pressing the key.

Diagram 4.1 - AMI BIOS Setup Utility Screen



Your computer's configuration information, which includes the amount of system memory, hard and floppy disk drives, video display and maths co-processor, is stored in the CMOS memory using the AMI BIOS. When your computer is switched off, the back-up battery provides power to the CMOS device, allowing the CMOS to retain your BIOS configuration information. Everytime your computer is switched on, the BIOS will interrogate the CMOS and configure your system with the information stored. If the CMOS device is faulty,

486-VL MAINBOARD

Users Manual

Chapter 1

Introduction

The VESA LOCAL BUS (VL-Bus) is an interface that allows high-speed devices to interface directly to the localbus of 486 CPU. The 486-VL has **two VL-Bus with bus master implementations**. The VL-Bus can support high speed video controllers, hard disk controllers, etc. The VL-Bus of 486-VL is capable of operating from 20MHz to 50MHz.

The 486-VL also has an **optional external secondary Cache** memory that can be configured within the range 64KB to 256KB. This allows the user to optimize the Cache requirements for any given operating environment.

The **highly integrated design**, which minimizes the chip count while maximizing the reliability, provides the user with the most cost effective and high performance main board available.

2. DRAM Considerations

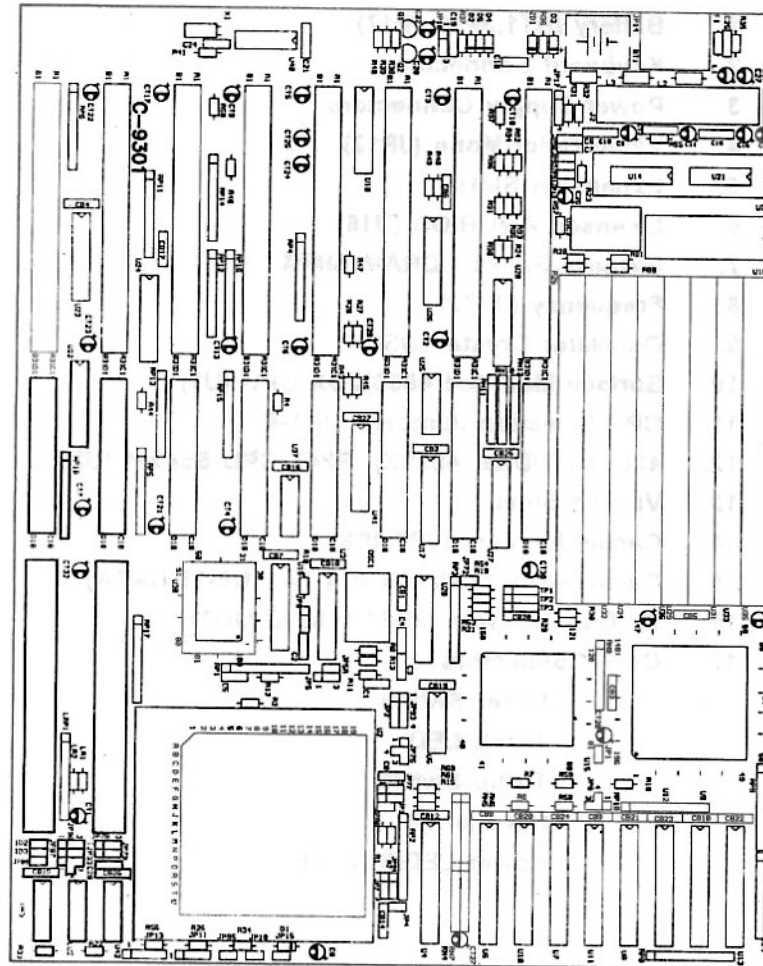
Before selecting and installing your DRAM there are several points you should consider.

Firstly, the amount of DRAM you install usually depends on the requirements of the Software products you will be operating.

Secondly, if an increase in future capacity is likely, the type of DRAM you select should allow for the most effective upgrade options.

Finally, when physically installing DRAM always observe the static electricity precautions and warranty restrictions previously mentioned in this manual.

Whenever the DRAM has been changed the BIOS Setup Program will automatically detect these changes.



A series of Jumper options must be selected for the amount of Cache memory installed. The possible configurations of SRAM capacities, device types and Jumper selections are shown in the table below.

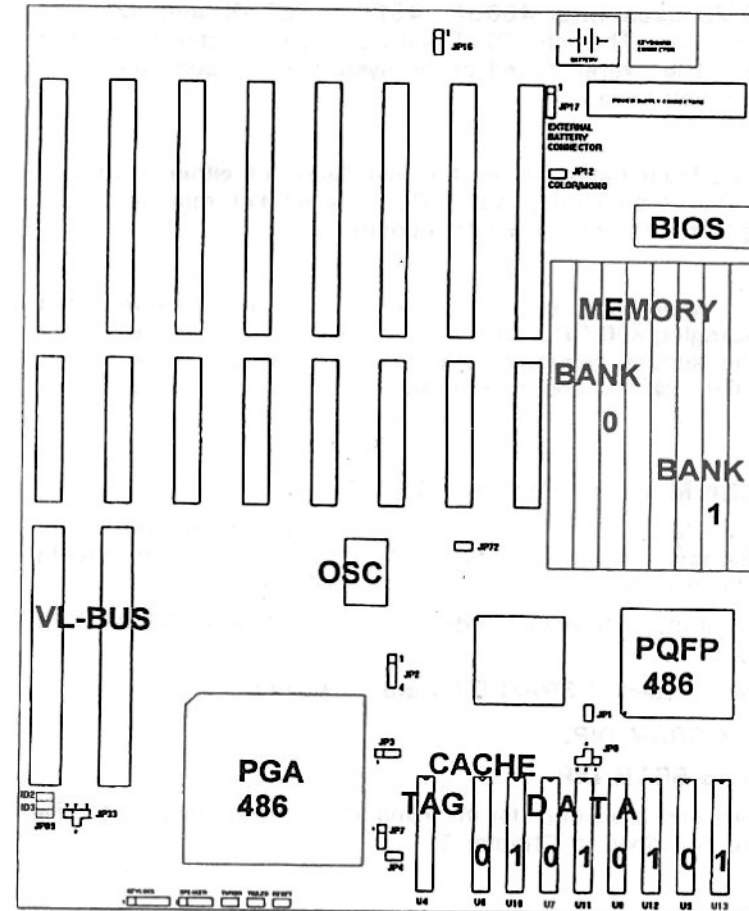
Cache Size	64KB	128KB	256KB
TAG: U4	8Kx8	8Kx8	32Kx8
DATA Bank0: U6,7,8,9	8Kx8	32Kx8	32Kx8
DATA Bank1: U10,11,12,13	8Kx8	NONE	32Kx8
JP7	2-3	1-2	1-2
JP8	2-4	2-3	1-2

System Memory (DRAM)

The 486-VL has eight memory sockets for installing Dynamic Random Access Memory(DRAM) directly on the system board. These sockets are designed to support Single Inline Memory Modules(SIMM) devices. The SIMM sockets are divided into two banks, Bank 0 (U30,32,34,36) and Bank 1 (U29,31,33,35). You can use one or both Banks.

If only one Bank is required for your DRAM, Bank 0 must be used. Below is a diagram of the DRAM Bank locations.

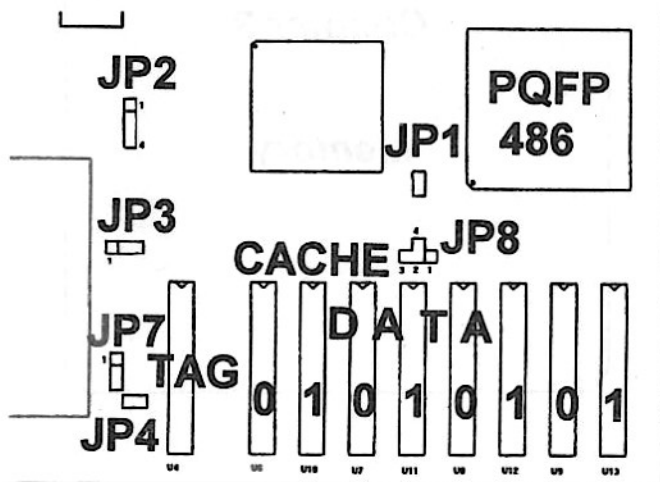
Diagram 1.1 - Board Layout



Cache Memory

The 486-VL has eight Secondary Cache Memory sockets for installing DATA Static-column Random Access Memory (SRAM) directly on the system board. There is also one socket for installing TAG SRAM. These sockets are designed to support Dual Inline Package (DIP) devices. Below is a diagram of the SRAM Bank locations, indicating the placement of the 32KBx8 and 8KBx8 (both 28 pin DIP) devices.

Diagram 3.1 - Cache Memory DIP Sockets



The range of Memory available depends on the type of DRAM SIMMs used. Two Memory Banks are available.

The following types of DRAM SIMMs are supported.

256 KB DRAM SIMM.

1 MB DRAM SIMM.

4 MB DRAM SIMM.

(4 modules are required for each bank)

The options and procedure for installing and configuring your DRAM are described in Chapter 3.

4. Licensed AMI BIOS

The 486-VL Main board normally operates using the AMI BIOS Software Program.

BIOS stands for Basic Input Output System which is a software program that has been permanently stored in a Read Only Memory (ROM) device located on your system board.

This software program enables the fundamental communications between the system board CPU and other on board and external peripheral devices. These include Hard Disks and Floppy Disk Drives, Video Adapters and Communication devices.

The BIOS Software Program allows you to correctly configure your system to enable communications between those devices you have installed.

The BIOS Software Program is invoked during boot-up of the system by pressing the DEL key, immediately after the RAM check has been performed. Refer to Chapter 4 for details on using the BIOS Software Program to set up your system configuration.

A copy of the BIOS Software Program may be placed in DRAM for improved system speed. To enable this option refer to Chapter 4 for setting your BIOS configuration.

5. Oscillator Crystal

The 486-VL must have an oscillator whose frequency matches that of the Intel 486 microprocessor's external clock frequency.

10. Keyboard Connector

The 486-VL Main board has the standard PC/AT keyboard connector mounted directly on the system board and accessed from the rear of the case.

11. Case Connectors

The 486-VL system board has several connectors for general operational functions. These are usually accessed by mounting appropriate devices on the front panel of the computer case.

The 486-VL Main board has the functions of: Power On LED/Keylock Switch, Reset System Switch, Turbo Speed Select, Turbo On LED and Speaker.

Some VL-Bus cards require special setting as described below.

LRDY#	Sync. to CPURDY#	Tristate
JP33	1-2 (default)	2-4

The Weitek POWER9000 VGA board requires the following special setup on the VL-BUS signal LDEV#. The Jumper JP89 is used to allow the special treatment on the second VL-BUS located on the outside slot.

LDEV2#	Normal	Weitek POWER9000
JP89	close (default)	open

3. Video Mode Select

This Jumper allows you to select the appropriate video display mode for your system. This Jumper is labelled JP12 and has two pins.

For monochrome display mode, the two Jumper pins are left open. If you are using colour display mode, close the two Jumper pins.

4. Discharge CMOS

This Jumper allows you to reset the BIOS setting to the manufacture default on your system. This Jumper is labelled JP16 and has three pins. The default setting is to close the pins 1&2.

Notes:

1. CPU Select

The 486SX, 486DX or 486DX2 CPU can be inserted into socket U2 or surface mounted on the board at location U1. To enable the system to operate correctly with the CPU installed, the Jumpers JP1,2,3 and JP4 must be selected as shown in the table below.

486CPU	DX,DX2	DX,DX2	486SX	486SX	487SX or P24T
TYPE	PGA	PQFP	PGA	PQFP	PGA
JP1	close	open	close	open	close
JP2	1-2,3-4	1-2,3-4	2-3	open	1-2,3-4
JP3	2-3	2-3	open	open	1-2
JP4	open	open	open	open	close

The CPU installed must have the appropriate Oscillator Crystal and select the frequency as shown in the table below.

Oscillator	20/25MHz	33/50MHz
JP72	close	open

The CPU operates with 1X Clock Mode. The 1X Clock Mode means that the Oscillator Crystal operates at the same frequency as the CPU except for the DX2 CPUs.

The 486DX2 CPU operates with internal double frequency clock and requires only half of the frequency for the external Oscillator. For example, the 486DX2-50MHz uses a 25MHz Oscillator.

486-VL MAINBOARD

Users Manual

Chapter 2

Hardware Setup

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FEBRUARY 1993

WARRANTY

Limited Warranty Policy

The vendor will repair or exchange any faulty parts, due to manufacturing, free of charge for one (1) year from date of purchase.

A copy of the invoice with the date of purchase is required before any warranty service is performed. Service can be obtained by calling the vendor for a Returned Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and mailed pre-paid or hand carried to the vendor. Shipping handling charges will be on all orders which have to be shipped back to the user when service is completed.

This Warranty covers normal consumer use and does not cover damages incurred in shipping, or failure due to alteration, misuse, abuse or improper maintenance.

In no event will the vendor be liable for direct, indirect, special, incidental, or consequential damages arising from the use, or inability to use this product or documentation, especially if advised of the possibility of such damages in this manual. In particular, the vendor shall not have liability for any hardware, software or data stored or used with the product, including the costs of repairing, replacing, or recovering such hardware, software or data.

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Oscillator	CPU Frequency
25MHz	25 MHz
33MHz	16/33 MHz
50MHz	50MHz

2. CACHE SRAM Wait State

Cache memory is one of the most important parts in the reliability of the computer systems. Please use the default value if the SRAM are not thoroughly qualified.,

The following settings are based on the CPU speed and the cache size with the SRAM speed described in Chapter 3.

OSC Frequency	<= 25 MHz	33 MHz	50 MHz
Read Burst: 64/256KB	2111	3111	3222
Read Burst: 128KB	2111	3222	3222
Write Wait	0	0	1

3. Address 16 Mbytes Access

The settings are Normal or Non-Loca (Non-Local).

The Non_Loca option is to allow some add-on card to use address range from 15 Mbytes to 16Mbytes as their special AT space (AT BUS is limited to 16Mbytes). The memory address above 15Mbytes will not be seen by the system at the Non-Loca option.

WARNINGS

Static Electricity

Like most advanced electronic equipment, static electricity of any amount can cause damage to the integrated circuit components on the 486-VL System Board. If you are going to handle the system board, or other electronic cards or modules, caution should be observed to prevent damage by static electricity.

To prevent damage by static electricity adhere to the following procedures.

Before handling any electronic equipment, discharge any build up of static electricity in your body by touching a grounded surface. This may be the computer case or power supply casing while the computer is plugged in.

While handling system boards, cards or modules, avoid contact with any components on them. Handle the equipment by the edges, or, if available, the mounting brackets.

If static electricity is a serious problem in your environment, the wearing of a static wrist strap, connected to a neutral earth may be required.

Corrosion

Some electronic cards or modules have edge connectors, with either tin or gold plating. To avoid corrosion caused by oils from your fingers do not touch these connectors while handling those devices.

Heat Dissipation

Due to the high speed CPU and SRAM chips ability to generate intense heat, a case with a good cooling/ventilation system is essential.

1. External Cache Memory

The External Cache Memory(SRAM) is the secondary cache memory residing on the 486-VL mainboard. This Cache Memory improves system performance by supporting the CPU with data when the 80486 Internal Cache does not have that required data.

If you have installed External Cache Memory, this feature should be set to **Enabled**. If you do not have any External Cache Memory or it appears faulty, set the External Cache Memory feature to **Disabled**.

2. System Boot Up Sequence

This feature allows you to select the first boot device that the BIOS will look for. This can be either the Floppy disk drive, option **A:**, **C:** or the Hard disk drive option **C:**, **A:**.

3. Main Memory Relocation

If you have limited System Memory (DRAM) and require an additional 256KB to run your application program, this feature should be set to **Enabled**. You will also need to disable the Shadow RAM features as the Shadow RAM shares the same physical memory location.

corrupted, or has lost battery back-up, the BIOS DEFAULTS will be automatically loaded.

Standard CMOS Setup

The STANDARD CMOS SETUP is normally used when first configuring your system, or when adding other devices. It allows you to set the date and time, hard and floppy disk drives, video display and keyboard.

The diagram below shows the STANDARD CMOS SETUP screen, which displays your selections and the key commands to use when modifying your system.

The required setting is selected by using the arrow keys to 'highlight' the parameter you want to change. The menu box will indicate the options available for that parameter. The Page Up and Page Down keys allow you to toggle through the available options, until the required option appears.

Diagram 4.2 - STANDARD CMOS SETUP Screen.

BIOS SETUP PROGRAM - STANDARD CMOS SETUP
(C) 1990 American Megatrends Inc., All Rights Reserved

Date(mn/date/year) :	Thu, November 29 1992	Base memory: 640KB	
Time(hour/mn/sec) :	14 : 30 : 30	Ext. memory: 3072KB	
Hard Disk C: type :	17	Cyln Head	877 5
Hard Disk D: type :	Not installed	WPcom	LZone Sect Size
Floppy drive A: :	1.44 MB, 3 1/2"	300	877 17 41MB
Floppy drive B: :	1.2 MB, 5 1/4"		
Primary display :	VGA/PGA/EGA		
Keyboard :	Installed		

This menu box will indicate the options available for the 'highlighted' parameter.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5
6	7	8	9	10	11	12

ESC:Exit ↓↑Sel F2/F3:Color PU/PD:Modify

NOTE:

Improper use of SETUP may cause problems. If your system hangs, reboot your system and enter SETUP by pressing the key.

Product Description

The 486-VL is a high performance; 486 Caching with VESA LOCAL BUS, PC/AT compatible main board, suitable for use in any equivalent personal computer.

The 486-VL supports the following CPUs with Cache memory options of up to 256Kbytes:

25Mhz 486SX
33MHz 486DX
50MHz 486DX and 486DX2
66MHz 486DX2
OverDrive Intel CPUs

The 486-VL employs a **chip upgrade architecture** which not only minimizes the overall cost of the system, but also maximizes the life-span of the system. The chip upgrade architecture allows a 486-VL system to start with the low cost 25Mhz 486SX Processor, which can be later upgraded to a 50Mhz 486DX or 66MHz 486DX2 Processor (both of which include a Maths Co-Processor) for superior performance.

The upgrade cost would only be that of the new CPU chip, crystal and possibly External Cache Memory.

Commencing with a performance of 11 million instructions per second for the 25MHz 486SX chip, the 486-VL can provide options of up to 28 million instructions per second with the 66Mhz 486DX2 chip; which also has a superior floating-point operation.

Hence, the 486-VL can satisfy a wide range of computing requirements for the user, and is designed to grow with the ever increasing needs that the user may develop.

486-VL MAINBOARD

Users Manual

Chapter 4

BIOS Setup

Specifications

The 486-VL Main board is a 486SX, 487SX, 486DX or 486DX2-based system board which comprises of the following features:

Intel 486SX, 486DX, 486DX2, OverDrive or P24T CPU with PQFP and PGA socket

CPU speed from 25MHz to 66MHz

On-chip 8KB four-way, set-associative Cache Memory

On-chip Floating Point Unit (except for 486SX CPU)

External Write-Back Cache Memory range of 0KB, 64KB, 128KB or 256KB



















Two VESA LOCAL BUS (VL-Bus) slots that support bus masters

Eight Expansion slots (16-bit) that can support 16-bit and 8-bit PC/AT Bus Expansion cards

Eight SIMM sockets for 70/80ns DRAM of 256 KB, 1 MB or 4 MB devices (allowing options for 1MB, 2MB, 4MB, 5MB, 8MB, 16MB, 17MB, 20MB or 32MB)

Physical Size - small baby AT

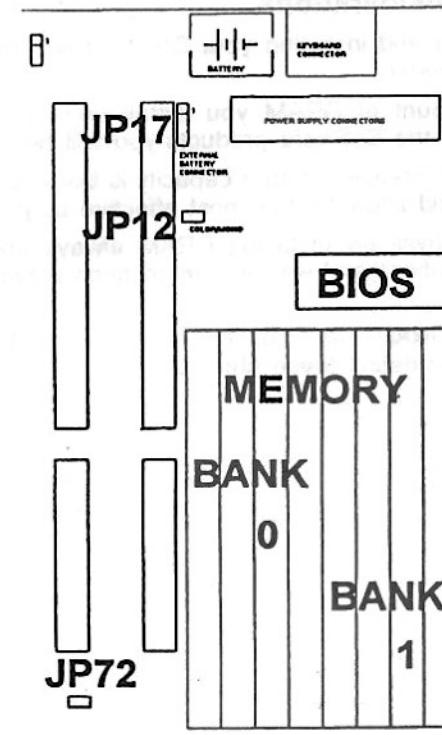
Diagram 3.3 - DRAM Configurations

DRAM	Bank 0	Bank 1	
1MB			
2MB			256KB SIMM
4MB			
5MB			1MB SIMM
8MB			
16MB			4MB SIMM
17MB			
20MB			
32MB			

Board Layout

1. Battery (BT1,JP16,JP17)
2. Keyboard Connector
3. Power Supply Connectors
4. Video Color/Mono (JP12)
5. Expansion Slots
6. Licensed AMI BIOS (U16)
7. Memory Banks - DRAM SIMM
8. Frequency (JP72)
9. Oscillator Crystal (OSCI)
10. Surface Mounted 486SX/DX CPU (U1)
11. CPU Selection Jumpers (JP1-4)
12. 486SX/DX/DX2, 487SX, P24T CPU Socket (U2)
13. VL-Bus Slots
14. Cache Jumpers (JP7,JP8)
15. Cache Memory Banks (U4 TAG,U6-13 DATA)
16. VL-Bus Jumpers (JP33,JP89,ID2,ID3)
17. Case Connectors:
 - Reset Switch
 - Turbo LED
 - Turbo Switch
 - Speaker
 - Power LED/Keylock

Diagram 3.2 - DRAM SIMM Sockets



1. DRAM Capacity

The 486-VL allows a selective range of 1MB to 32MB on the system board. The DRAM should consist of 80ns or better devices, with Fast Page mode.

The types of DRAM SIMM available consist of either 256 KB, 1 MB or 4 MB devices. The amount of DRAM you can install depends on the type of DRAM SIMM devices used. Different capacity of DRAM SIMMs can be used in the two Banks. All possible configurations of DRAM type and Memory capacities are shown in the diagram next page.

Board Features

1. 80486SX/DX/DX2 CPU

The 486-VL uses Intel 486SX, 487SX, 486DX and 486DX2 microprocessors. The Intel P24T will also be supported when it is available. The overall speed of the system will depend on which CPU option you have.

The 486-VL Main board allows the installation of either a surface mounted PQFP packaging 486 CPU or a socket mounted PGA packaging 486 CPU on the system board.

The 486-VL Main board allows the installation of a surface mounted PQFP packaging 486 CPU on the system board. The procedure for disable the surface mounted CPU when installing a PGA socket mounted CPU chip is described in the CPU Select in Chapter 2.

2. Cache Memory Banks - SRAM

The 486-VL Main board can have up to 256Kbyte of Secondary Cache Memory installed on the system board, using the SRAM (Static-column Random Access Memory) DIP sockets.

The range of memory available depends on the type of SRAM DIPs used.

The following types of SRAM DIPs are supported.

8Kx8 SRAM DIP.

32Kx8 SRAM DIP.

The options and procedure for installing and configuring your Cache SRAM are described in Chapter 3.

3. Memory Banks - DRAM

The 486-VL Main board can have up to 32 megabytes of DRAM (Dynamic Random Access Memory) installed on the system board, using the SIMM sockets.

The SRAM should consist of devices rated at the appropriate speeds. The table below indicates the recommended minimum SRAM speeds for both the DATA and TAG devices.

Oscillator Speed	TAG Speed	DATA Speed
25MHz	25ns	30ns
33MHz	20/25ns	25ns
50MHz	20ns	20/25ns

The SRAM Read/Write wait states are required to be set up depending on the Oscillator speed and the cache size. **The 128KB cache requires more wait states.** Refer to Chapter 4 for BIOS Advanced Chipset Setup.

If you do not intend installing Secondary Cache memory, select the **External Cache Memory** option in your BIOS Advanced CMOS Setup, to **Disabled**.

Refer to Chapter 4 for BIOS Software Program.

1. Cache Capacity

The 486-VL allows a selective range of 64KB to 256KB of Secondary Cache Memory on the system board.

The types of SRAM DIP available consist of either 64 K-bit (8Kx8), or 256 K-bit (32Kx8) devices. The amount of SRAM you can install depends on the type of DRAM DIP devices used. This will also determine the Banks that are to be used to locate the SRAM DIP devices.

6. Expansion Slots

The 486-VL Main board has eight 16-bit AT expansion slots mounted on the system board. These slots can be used for any PC/AT compatible cards that conform to either 16-bit data or 8-bit AT Bus data conventions.

16-bit Expansion Cards provide greater data transmission paths and consequently greater speed performances. 8-bit Expansion Cards have a shorter edge connector and are inserted in the "31-way" section of the expansion sockets.

Typical expansion cards for the 486-VL Main board include Hard/Floppy Disk Controllers, Communications Ports, Video and Network adapters.

7. VESA LOCAL BUS Slots

Two 32-bit VL-Bus directly interface to the 486 CPU and operate at the same frequency and in phase to the CPU clock. It is designed to optimize the systems performance.

Typical expansion cards for the VL-Bus are Video controllers, Hard Disk Controllers, Communications and Network adapters.

8. Power Supply Connectors

The 486-VL Main board requires a power supply capable of providing 200 Watts. The power supply should also provide a "power good" signal.

9. Battery

The 486-VL Main board has a Battery which maintains power to the CMOS ROM device. The CMOS ROM device stores your BIOS Setup Configuration.

Refer to Jumper settings in Chapter 2.

486-VL MAINBOARD

Users Manual

Chapter 3

Memory

System Features

The 486-VL Main board uses the CONTAQ 486WB single PC/AT chip set that operates high speed, low power 1.0um CMOS technology.

The 486-VL Main board can be switched from Turbo Speed using either hardware or software switching. To switch from Turbo Speed using key commands:

CTRL-ALT-SHIFT-Plus - Turbo Speed ON

CTRL-ALT-SHIFT-Minus - Turbo Speed OFF

The 486-VL supports System and Video BIOS shadowing, with the shadow RAM available in increments of 16KB.

The 486-VL allows 256KB Memory relocation.

The 486-VL supports Write-Back direct mapped cache.

The VESA LOCAL BUS implementation allows the systems to have much better performance in window graphics and data transfer I/Os. The systems performance can be largely increased by the installing of local bus add-on boards.

Turbo Jumper eraf is Turbo

If you want to reset the CMOS Data to its default value, close the pins 2&3 of the Jumper JP16 for few seconds.

5. Battery Select

This Jumper allows you to select the appropriate Battery for your system.

The external Battery connector is labelled JP17 and has four pins. The pin 1 is +6.8v and pins 3&4 are ground.

The Oscillator Crystal is inserted into socket OSC1.

Please ensure that the Oscillator Crystal frequency and the CPU frequency are matched. When changing the CPU to that of a different frequency, the Oscillator Crystal must also be changed.

Note: The BUS access speed is also dependant upon the CPU Clock Mode frequency. Refer to the **CPU Frequency in the BIOS Advanced CMOS Setup** to ensure correct selection.

2. VESA LOCAL BUS Select

The VESA LOCAL BUS is an interface that allows high-speed devices to interface directly to the local bus of the 486 type CPU. To setup the proper VL-Bus timing on your 486-VL mainboard to match the CPU speed and the VL-Bus cards, the following jumpers must be selected as shown in the following tables.

High Speed Write in VL-Bus:

High Speed Write	Zero Wait (<=33MHz)	One Wait (50MHz)
ID2	open	close

CPU Speed and VL-Bus:

CPU Speed	20/25MHz	33/50MHz
ID3	open	close

The 486-VL supports the VL Local Bus Master controllers. A local bus master device has the capability of initiating transfers of data on the local bus to get the best performance from the system.

General

This Chapter describes the procedures for selecting the system configurations of the 486-VL computer. This includes Jumper selections, connections to external devices and Processor selection.

These procedures will allow you to configure appropriate CPU options and optimize the performance of your 486-VL system.

All chips and associated devices must be correctly installed, including memory devices, prior to performing your software configuration.

The software configuration of your system is performed using the 486-VL BIOS Software Program, described in Chapter 4.

Jumpers

The 486-VL Main board has many Jumper switches that determine your system configuration. They are used to either enable, disable or select the appropriate features of the 486-VL Mainboard.

A Jumper switch operates by the "opening" or "closing" of the electrical path between two pins of the Jumper. This effectively alters the circuit to provide the feature required. To create an electrical "close" on a Jumper, a cover cap is placed over the two pins required. This forms the electrical connection. If there is no cover cap, the two pins are "open"; they are not electrically connected.

The appropriate Jumper options, to meet the requirements of your original configuration, will have been previously selected.

However, if you are about to change your configuration, read the following section carefully to determine which Jumpers may need alteration.

The Jumper selections for both Cache Memory and DRAM are described in Chapter 3.

The Jumper options include:

1. CPU Select - JP1,JP2,JP3,JP4,JP72
2. VESA LOCAL BUS - ID2,ID3,JP33,JP89
3. Video Mode Select - JP12
4. Discharge CMOS - JP16
5. Battery Select - JP17

Diagram 2.1 - Jumper Locations

