

MV008 USER'S MANUAL  
OPTi 3/486DX VLB/ISA MOTHERBOARD

Warning

=====

To ensure the reliability of the computer. DO NOT reconfigure the board while the power is ON.  
If you wish to reconfigure the board, make sure that the power to the system is turned OFF before changing any hardware setting such as jumpers or DIP switch setting.

Checklist

=====

Your 3486VL2M package contain the following.

- OPTi 3486VL2M Cache Motherboard.
- User's Manual.

ABOUT THIS MANUAL

=====

This manual is designed to provide the basic information necessary for the end user to understand and properly use of the 3/486 VLB Cache Motherboard. The motherboard ensure superlative performance and complete compatibility with software written for IBM PC/AT 80286 type, 80386 type and 80486 type of processor.

TRADEMARKS

=====

Intel(TM), 386DX(TM), 387DX(TM), i486(TM), DX2(TM), 486SX(TM) and 487SX(TM) are trademarks of Intel Corporation.

IBM(TM), IBM PC(TM) and IBM AT(TM) are registered trademarks of International Business Machines Corporations.

AMD is a registered trademark of Advanced Micro Devices, Inc.

AM 386 is a trademark of Advanced Micro Devices, Inc.

WEITEK(TM) is a trademark of WEITEK Corporation.

MS-DOSTM is a registered trademark of Microsoft Corporation.

AMI is registered trademark of American Megatrend Inc.

Motherboard Features

=====

- \* Support Intel 80386DX, 486SX, DX-25/33/90/DX2 and Overdrive. It also support AMD 386DX/DXL Microprocessor.
  - \* Support Intel, Cyrix, IIT 387 & 487f3X Numeric Processor.
  - \* Copy-Back Direct-Mapped Cache with 64KB /128KB /256KB.
  - \* 32MB Expandable DRAM Memory. (256K, 1M, 4M SIMM Module)
  - \* Hidden refresh support to enhance system performance.
  - \* Video / System and Adapter card BIOS Shadow RAM.
  - \* Turbo / Normal Speed can be selected via Software or Hardware.
  - \* Battery Back-up Real Time Clock, Calendar and CMOS.
  - \* Six 16 bits, Two 8 bits ZSA slot including Two 32 bits VESA Master/Slave Local Bus slots.
- \* Dimensions: approximately 22 by 25 CM. 4 layers.

The board is compact (32 by 25 CM) a size sometimes referred as 2/3 Baby AT. It has seven mounting holes, one of which is double drilled. This allows the board to be mounted in a wide variety of cases.

Jumpers and Connectors Reference

=====

JP1	CMOS Reset
JP3	386 ATCLK Selector
JP4	MONO/COLOR Monitor Selector
JP5,JP6	CPU Type Selector
JP17,JP21	386 CPU Type Selector
JP12,JP14,JP16.JP20,JP30	VL-BUS Option
JP7,JP8,JP9,JP10	Cache Option
JP24,JP25	CPU Clock Selectnr
JP18,JP19	Clock Generator Frequency Selector
JP22	Turbo Switch Connector
JP23	Turbo LED Connector
JP11,JP13,JPIS	486 CPU Type Selector
J1	External Battery Connector
J2	Keyboard Connector
J3,J12	Power Supply Connector
J19	Keylock/Power LED Connector
J20	Speaker Connector
SWI	Reset Switch Connector

#### CMOS Reset JP1

=====

CMOS Reset is used to reset the CMOS. If you reset the CMOS all datas will be erase. To Reset CMOS place a jumper cap in pin 1 & 2, turn on the power supply for 1 to 2 seconds then turn off the power supply. In this procedure the CMOS is reset, all the datas in the CMOS is erase. Place the jumper cap in pin 2 & 3 for CMOS charge, then run setup.

JP1 1-2 Reset CMOS  
 JP1 2-3 Charge CMOS

#### MONO/COLOR Monitor Selector JP4

=====

Mono/Color Monitor is used to select the type of Video display you are using. The choice are between CGA and MONO. CGA is only for a CGA display. Mono is for all other display including EGA, VGA and MONO. The default setting is MONO. Configuration as follows:

JP4 OPEN MONO  
 JP4 CLOSE COLOR

#### CPU Type Selector JP5 & JP6

=====

This mainboard is design with two type of CPU. 80386 and 80486 type. CPU type selector is used to select the type of CPU you are using. If you select 80386 type, please also set the setting of 386 CPU type. if you select 80486 type, please also set the setting of 486 CPU type.

CPU TYPE	JP5	JP6
80386	2-3	OPEN
80486	1-2	CLOSE

#### 386 ATCLK Selector JP3

=====

386 ATCLK is used to select the ATCLK used in 386 mode. if you used 40MHz CPU, set the 386 ATCLK selector to CLK2I/5. If you used 33MHz CPU, set the 386 ATCLK selector to CLK2I/4.

JP3 OPEN 386 ATCLK = CLK2I/5  
 JP3 CLOSE 386 ATCLK = CLK2I/4

386 CPU Type Selector JP17 & JP21

=====

There are different type of 386 CPU, 386CPU type selector is used to select the type of 386 CPU you are using. Set this setting if you select 80386 type in CPU type selector.

386 CPU TYPE	JP17	JP21
INTEL / AMD	OPEN	OPEN
CYRIX	CLOSE	CLOSE

VL-BUS OPTION

=====

CPU WPE	JP2 (ID0)	JP16 (ID1)
80386	OPEN	CLOSE
80486	CLOSE	OPEN

CPU SPEED	JP14 (ID2)	JP12 (ID3)
<=33 MHz	X	OPEN
> 33 MHz	X	CLOSE
0 WAIT STATE	OPEN	X
1 WAIT STATE	CLOSE	X

	JP26	JP27	JP28	JP29
VL-BUS WITH PAL	OPEN	OPEN	OPEN	OPEN
VL-BUS W/O PAL	CLOSE	CLOSE	CLOSE	CLOSE

Note: VL-BUS W/O PAL is only a Slave mode function. VL-BUS WITH PAL, Master/Slave mode function.

For Master/Slave mode function JP30 is set to 1 & 2 for 33MHz, JP30 is set to 2 & 3 for SOMHz.

Cache Option JP7, JP8, JP9, JP10

=====

size	JP7	JP8	JP9	JP10	(U42-U45)	(U31-U34)	U30	U29
64K	OPEN	OPEN	OPEN	2-3	8K*8	8K*8	8K*8	
128K	OPEN	CLOSE	CLOSE	1-2	32K*8		8K*8	
256K	CLOSE	CLOSE	CLOSE	2-3	32K*8	32K*8	8K*8	8K*8

The access time of Cache RAM and TAG RAM respect to system speed are as follows:

CPU Speed	CacheSRAM	TAGSRAM	DRAM		CACHE	
			Read	Write	Read	Write
25MHz	25ns	25ns	Ows	Ows	2-1-1-1ws	1ws
33MHz	25ns	15ns	2ws	1ws	3-2-2-2ws	1ws
33MHz	15ns	15ns	Ows	Ows	2-1-1-1ws	Ows
					2 Bank of Cache only	
40MHz	20ns	15ns	2ws	3ws	3-2-2-2ws	1ws
S0MHz	20ns	15ns	2ws	3ws	3-2-2-2ws	1ws

486 CPU Type Selector JP11, JP13, JP15

=====

486 CPU is used to select the different type of CPU. Configuration as follows :

CPU TYPE	JP11	JP13	JP15
486SX	OPEN	OPEN	2-3
486DX	1-2	CLOSE	1-2
487SX	2-3	CLOSE	1-2

#### CPU Clock Selector JP24 & JP25

=====

The Clock generator produce different clock frequency. CPU Clock selector is used to select for single or double clock frequency for of the CPU.

CPU TYPE	JP24	JP25
486 SINGLE FREQUENCY	1-2	1-2
486 DOUBLE FREQUENCY	2-3	2-3
386 DOUBLE FREQUENCY	1-2	2-3

#### CLOCK Generator Frequency Selector JP18 & JP19

Clock Generator Frequency is used to select different frequency of the clock generator.

FREQUENCY	JP18	JP19
50MHz	CLOSE	OPEN
66MHz	OPEN	CLOSE
80MHz	OPEN	OPEN

#### Memory Configuration

=====

The system board Memory can be expanded from 1MB to 32MB. Memory can be installed by using 256K, 1M and 4M Simm RAM Module. Configuration as follows:

Memory Size	Bank 0	Bank 1
1MB	256K	
2MB	256K	256K
4MB	1M	
5MB	256K	1M
8MB	1M	1M
16MB	4M	
20MB	1M	4M
32MB	4M	4M

#### Connectors

=====

The system board have eight connectors. Six of them resemble jumper switch without caps.

~I

- J1 External Battery connector is used for the external battery.
- J2 This is used for inputting signal from the keyboard.
- J3, J12 Power supply connector is connected from the output of the power supply. Most of the power supply have two connector which will be connected to the mainboard. Each connector have six wires, two of the wires are black. To connect to the mainboard, make sure that the black wires is in the middle. Wrong connection will damage the mainboard.
- J19 Keylock and Power LED connector will be connected to your computer case. Keylock is used to lock the keyboard. Power LED will light up when you turn ON your power supply.
- J20 Speaker connector will be connected to the speaker of your computer case.
- SW1 Reset switch connector will be connected to the reset switch of your computer case. Resetting the system, it will restart the computer from self test without turning

off the power supply. This connector is always in OFF position.

JP22 Turbo switch connector will be connected to the turbo switch of your computer case. This is used to toggle the system speed between fast and slow processing speed.

JP23 Turbo LED connector will be connected to the Turbo LED of your computer case. The LED will light up when the system is running in high processing speed. (Note the polarity of the LED).

APPENDIX FOR 3486VB M/B JUMPER SETTING

=====

	JP6	JP5	JP18	JP19	JP24	JP25	JP30	JP20	JP16	JP12
386DX-33	OPEN	2-3	OPEN	CLOSED	1-2	2-3	2-3	OPEN	CLOSED	OPEN
386DX-40	OPEN	2-3	OPEN	OPEN	1-2	2-3	2-3	OPEN	CLOSED	OPEN
486SX-20	CLOSED	1-2	CLOSED	CLOSED	2-3	2-3	2-3	CLOSED	OPEN	OPEN
486SX-25	CLOSED	1-2	CLOSED	OPEN	2-3	2-3	2-3	CLOSED	OPEN	OPEN
486SX-33	CLOSED	1-2	OPEN	CLOSED	2-3	2-3	2-3	CLOSED	OPEN	OPEN
486DX-33	CLOSED	1-2	OPEN	CLOSED	2-3	2-3	2-3	CLOSED	OPEN	OPEN
486DX-40	CLOSED	1-2	OPEN	OPEN	2-3	2-3	2-3	CLOSED	OPEN	OPEN
486DX-50	CLOSED	1-2	CLOSED	OPEN	1-2	1-2	1-2	CLOSED	OPEN	CLOSED
486DX2/66	CLOSED	1-2	OPEN	CLOSED	2-3	2-3	1-2	CLOSED	OPEN	OPEN
486DX2/50	CLOSED	1-2	CLOSED	OPEN	2-3	2-3	1-2	CLOSED	OPEN	OPEN
486DLC33	OPEN	2-3	OPEN	CLOSED	1-2	2-3	2-3	OPEN	CLOSED	OPEN
486DLC40	OPEN	2-3	OPEN	OPEN	1-2	2-3	2-3	OPEN	CLOSED	OPEN

~~~~ END OF MANUAL ~~~~