486-PVT

MAIN BOARD
User's Guide

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Overview

Based on the VIA GMC chipset, the 486-PVT mainboard combines an ISA/VL-bus platform. The VESA local bus which allows the system to run synchronously with the CPU improves the performance of disk I/O and dramatically speeds up graphics performance. This motherboard design delivers unsurpassed flexibility supporting SMM (System Management Mode) CPUs, multi-master operations and provides built-in power management features ideal for Green PCs.

Specifications

The 486-PVT mainboard comes with the following features:

- Supports Intel 80486SX/DX/IntelDX2™/IntelDX4™ /486 SL-Enhanced /Cyrix Cx486S/DX/DX2/DX2-V™ /AMD 486DXL/DXL4™ microprocessor in a PGA package
- VIA VT82C496G PC/AT chipset
- Optional Flash ROM
- Award BIOS
- Supports 128K/256K/512K direct-mapped write-back/write-through cache memory
- 72-pin SIMM sockets supports up to 128MB DRAM, provides page mode DRAM operation
- Supports system and video BIOS cacheable and shadow
- Supports decoupled DRAM refresh
- Optional built-in ZIF socket that accepts Intel's OverDrive™ processors namely - P24D, P24CT
- Optional regulator board for various S-series CPUs
- Supports seven 16-bit ISA expansion slots

JUMPER	486SX 486SL	486DX/DX2 DXSL/DX2SL Am486DX/DX4*	P24T* P24CT*	Cyrix 486SX	Cyrix 486DX 486DX2*	Cyrix 486DX-V* 486DX2-V*	P24D
JC1	2-3	1-2	1-2	2-3	1-2	1-2	1-2
JC2							
JC3	1-2	1-2	1-2	1-2	1-2	1-2	1-2
JC4	off	off	on	off	off	off	on
JC5	1-2	1-2	1-2	2-3	1-2	2-3	1-2

* A regulator board may be needed when using any of these CPUs. Please refer to page 2-8 for its installation.

JUMPER (RP 0Ω 8p4R)	486SX/DX/DX2/DX4 486SL Series	P24D P24CT	AM486DX/DX2/ DX4	Cyrix SX/DX/DX2 DX-V/DX2-V
RN16	off	off	off	on
RN17	off	on	off	off
RN18	off	off	on	off
RN19	on	on	off	off

JUMPER	PIN DEFINITION
J2	AMD 486 DX2 Plus clock select short speed-double open speed-triple
J12	AMD 486DX2-80V/DX4 on AMD DX2-80V off AMD DX4

Table 2-1. Jumper Setting for CPU Selection

→ **NOTE : Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.**

CPU Clock Jumper JK1-JK4

CLK 2	50 MHz	40 MHz	33.3 MHz	25 MHz
JK1	2-3	1-2	2-3 (default)	2-3
JK2	1-2	1-2	2-3 (default)	1-2
JK3	2-3	2-3	1-2 (default)	2-3
JK4	2-3	1-2	1-2 (default)	1-2

Table 2-2. CPU Clock Jumper Selection JK1-JK4

System Jumper Setting

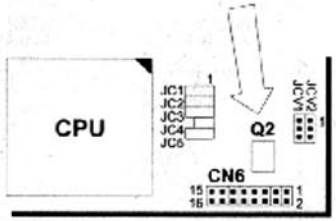
JUMPER	PIN DEFINITION
JCP	Password clear select open (default) short Clear password
JP1	Display type select open Mono/EGA/VGA (default) short Color
JP3	1-2 Intel_S, others 2-3 Cyrix_S

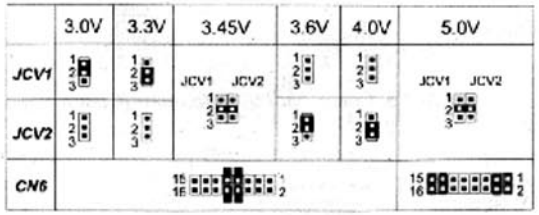
Table 2-3. System Jumper Setting

JUMPER	3.0V	3.3V	3.45V	3.6V	4.0V
JCV1	1-2	2-3	open	open	open
JCV2	open	open	open	1-2	2-3

Table 2-4.Multi-Voltage Jumper Selection

If Q2 is not onboard, follow the jumper setting below, instead Table 2-4.





Connectors

The connectors allow the mainboard to connect electronically with other parts of the system. Some connectors have two pins, others have four or five pins. Some malfunction problems encountered with your system may be caused by loose or improper connections. Ensure that all connections are in place and firmly attached.

CONNECTOR	PIN-OUTS	SIGNAL NAME
CN1 PS/2 Keyboard Connector	1 2, 6 3 4 5	Keyboard data NC Ground + 5V Keyboard clock
CN4 Keyboard Connector	1 2 3 4 5	Keyboard clock NC Ground + 5V Keyboard clock
CN5 Power Connector	1 2, 10, 11, 12 3 4 5, 6, 7, 8 9	Power good + 5V + 12V - 12V Ground - 5V
CN6** 3.3V Daughter Board Connector	1, 3, 14, 16 2,4,13,15 5,12 6,11 7, 8, 9, 10	+3.3V + 5V Voltage switch signal + 12V Ground
J3 Green Status LED Connector	1 2	LED - LED +
J4* Green Power Supply Connector	1 2	Enable/disable power supply outlet Ground
J5 Turbo LED Connector	1 2	LED + LED -

Table 2-5. Connector Pin Definitions (Continued)

CONNECTOR	PIN-OUTS	SIGNAL NAME
J6 Turbo Switch Connector	1 2	Turbo signal Ground
J7 Reset Switch Connector	1 2	Ground Reset signal
J8 Speaker Connector	1 2 3 4	Speaker signal NC Ground + 5V
J9 Keylock and Power LED Connector	1, 2 3, 5 4	Power LED Ground Keyboard lock
J10 Hardware Sleep Connector	1 2	Hardware sleep signal Ground
J11 CPU Fan Connector	1 2 3	Ground + 12V Ground

* Insert two-pin connector wires from Green Power Supply into Connector J4.

** If you decide not to use the regulator board on the mainboard, the caps on pin 1-2, 3-4, 13-14, 15-16 of CN6 should be replaced.

Table 2-5. Connector Pin Definitions

VESA Bus Connector

The cache system board provides two high-performance VESA bus connectors, SL7 and SL8, for use with VESA peripherals. The VESA bus connector can be utilized for one Local Bus Master and one Local Bus Slave either (SL7) or (SL8). The following tables give the pin assignments for SL7 and SL8. Side A of the connector are pin outs on the board's component side while Side B are pin outs on the board's solder side. Jumpers JV1 and JV2 give more information on settings on the mainboard and the VL-bus controller.

JUMPER	PIN DEFINITION
JV1	High speed write select 1-2 One wait write 2-3 Zero wait write (default)
JV2	CPU speed select 1-2 Greater than 33MHz 2-3 Less than or equal to 33MHz (default)

Table 2-6. VL-Bus Controller Jumper Setting

SIDE A : PINS AND PIN-OUTS		SIDE B : PINS AND PIN-OUTS	
01	DAT01	01	DAT00
02	DAT03	02	DAT02
03, 10, 17, 24, 35,43, 51	Ground	03	DAT04
04	DAT05	04	DAT06
05	DAT07	05	DAT08
06	DAT09	06, 14, 22, 29, 38,49, 55	GROND
07	DAT11	07	DAT10
08	DAT13	08	DAT12
09	DAT15	09, 20, 32, 57	VCC
11	DAT17	10	DAT14
12, 27, 40, 53	VCC	11	DAT16
13	DAT19	12	DAT18
14	DAT21	13	DAT20
15	DAT23	15	DAT22
16	DAT25	16	DAT24
18	DAT27	17	DAT26
19	DAT29	18	DAT28
20	DAT31	19	DAT30
21	ADR30	21	ADR31
22	ADR28	23	ADR29
23	ADR26	24	ADR27
25	ADR24	25	ADR25
26	ADR22	26	ADR23
28	ADR20	27	ADR21
29	ADR18	28	ADR19
30	ADR16	30	ADR17
31	ADR14	31	ADR15
32	ADR12	33	ADR13
33	ADR10	34	ADR11
34	ADR08	35	ADR09
36	ADR06	36	ADR07
37	ADR04	37	ADR05
38	WBACK#	39	ADR03
39	BE0#	40	ADR02
41	BE1#	41	NC
42	BE2#	42	RESET#
44	BE3#	43	D/C#
45	ADS#	44	M/IO#
48	LRDY#	45	W/R#
49	LDEV0#	48	RDYRTN#
50	LREQ#	50	IRQ9
52	LGNT#	51	BRDY#
54, 55, 56	ID2, 3, 4	52	BLAST#
57	LKEN#	53, 54	ID0, 1
58	LEADS#	56	LCLK0
		58	LBS16#

Table 2-7. SL15 Local Bus Connector Pin Assignment

SIDE A : PINS AND PIN-OUTS		SIDE B : PINS AND PIN-OUTS	
01	DAT01	01	DAT00
02	DAT03	02	DAT02
03, 10, 17, 24, 35, 43,51	Ground	03	DAT04
04	DAT05	04	DAT06
05	DAT07	05	DAT08
06	DAT09	06, 14, 22, 29, 38,49, 55	Ground
07	DAT11	07	DAT10
08	DAT13	08	DAT12
09	DAT15	09, 20, 32, 57	VCC
11	DAT17	10	DAT14
12, 27, 40, 53	VCC	11	DAT16
13	DAT19	12	DAT18
14	DAT21	13	DAT20
15	DAT23	15	DAT22
16	DAT25	16	DAT24
18	DAT27	17	DAT26
19	DAT29	18	DAT28
20	DAT31	19	DAT30
21	ADR30	21	ADR31
22	ADR28	23	ADR29
23	ADR26	24	ADR27
25	ADR24	25	ADR25
26	ADR22	26	ADR23
28	ADR20	27	ADR21
29	ADR18	28	ADR19
30	ADR16	30	ADR17
31	ADR14	31	ADR15
32	ADR12	33	ADR13
33	ADR10	34	ADR11
34	ADR08	35	ADR09
36	ADR06	36	ADR07
37	ADR04	37	ADR05
38	WBACK#	39	ADR03
39	BE0#	40	ADR02
41	BE1#	41	NC
42	BE2#	42	RESET#
44	BE3#	43	D/C#
45	ADS#	44	M/IO#
48	LRDY#	45	W/R#
49	LDEV1#	48	RDYRTN#
50	LREQ#	50	IRQ9
52	LGNT#	51	BRDY#
54, 55, 56	ID2, 3, 4	52	BLAST#
57	LKEN#	53, 54	ID0, 1
58	LEADS#	56	LCLK0
		58	LBS16#

Table 2-8. SL16 Local Bus Connector Pin Assignment

Regulator Board Installation

This section describes the installation of a regulator board on the mainboard, depending on the S-series CPU to be used.

If an onboard regulator is not present, a regulator may need to be installed before using any S-series processor. Please refer to the instructions below on how to install a regulator. Please also refer to page 2-2 for the correct CPU jumper selection.

→ **NOTE : If you do not intend to install a regulator on the mainboard, place jumper caps onto pins 1-2, 3-4, 13-14 and 15-16 of the CN6 connector.** If the CPU is 5 volts. Otherwise, refer to Mainboard setting 2-3

1. Remove jumpers from connector CN6.
2. Place the regulator board as shown on the figure below with the correct pin orientation.

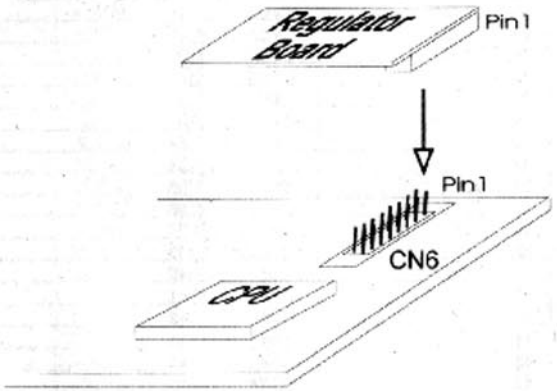


Figure 2-2. Regulator Board Installation

Memory Subsystem

The 486-PVT is equipped with the memory necessary for running all your applications. Memory comes in the form of DRAM (SIMMs) and cache SRAM. This chapter describes these two kinds of memory and gives instructions on how to install each kind on the mainboard.

Memory Locations

The board layout below shows the locations of the DRAM memory banks and the cache SRAM:

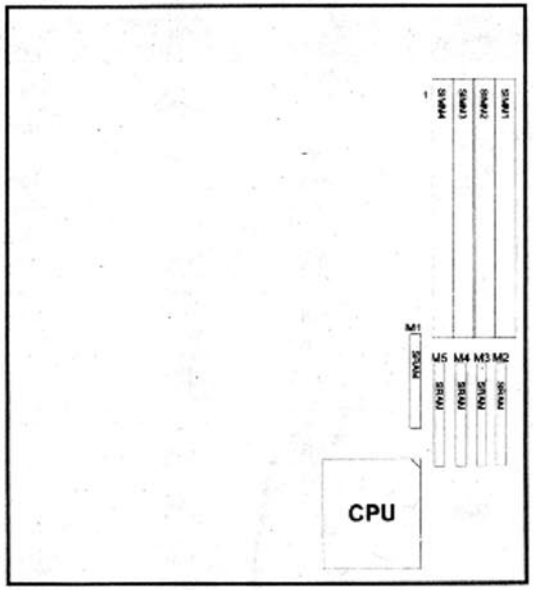


Figure 3-1. Cache and Memory Locations

Installing DRAM

SIMM Banks

The 486-PVT can accommodate on-board memory from 1 to 128MB using SIMMs (Single-In-Line Memory Modules). The mainboard has four memory banks — Bank 0, 1, 2, 3. Bank 0, 1, 2 and 3 can accept either a 1MB, 4MB, 16MB or 32MB on each SIMM socket.

DRAM Configuration

Memory can be installed in a variety of configurations, as shown in the next table:

TOTAL MEMORY	BANK 0 (72-PIN)	BANK 1 (72-PIN)	BANK 2 (72-PIN)	BANK 3 (72-PIN)
1MB	1MB			
		1MB		
			1MB	
2MB	1MB	1MB		
	1MB		1MB	
			1MB	1MB
		1MB	1MB	
3MB	1MB	1MB	1MB	
		1MB	1MB	1MB
	1MB		1MB	1MB
4MB	4MB			
		4MB		
			4MB	
	1MB	1MB	1MB	1MB
5MB	1MB	4MB		
	1MB		4MB	
	4MB	1MB		
	4MB		1MB	
		1MB	4MB	
		4MB	1MB	

Table 3 - 1. DRAM Configurations (Continued)

6MB	1MB	1MB	4MB	
	1MB	4MB	1MB	
	4MB	1MB	1MB	
		4MB	1MB	1MB
	4MB		1MB	1MB
7MB	1MB	4MB	1MB	1MB
	4MB	1MB	1MB	1MB
8MB	4MB	4MB		
	4MB		4MB	
			4MB	4MB
		4MB	4MB	
9MB	1MB	4MB	4MB	
	4MB	1MB	4MB	
	4MB	4MB	1MB	
		1MB	4MB	4MB
	1MB		4MB	4MB
10MB	1MB	1MB	4MB	4MB
	4MB	4MB	1MB	1MB
12MB	4MB	4MB	4MB	
		4MB	4MB	4MB
	4MB		4MB	4MB
13MB	1MB	4MB	4MB	4MB
	4MB	1MB	4MB	4MB
16MB		16MB		
			16MB	
	4MB	4MB	4MB	4MB
17MB	1MB	16MB		
	1MB		16MB	
		1MB	16MB	
		16MB	1MB	
18MB	1MB	1MB	16MB	
	1MB	16MB	1MB	
		16MB	1MB	1MB
19MB	1MB	16MB	1MB	1MB
20MB	4MB	16MB		
	4MB		16MB	
		4MB	16MB	
		16MB	4MB	

Table 3 - 1. DRAM Configurations (Continued)

21MB	1MB	4MB	16MB	
	1MB	16MB	4MB	
	4MB	1MB	16MB	
	4MB	16MB	1MB	
22MB	4MB	16MB	1MB	1MB
24MB	4MB	4MB	16MB	
	4MB	16MB	4MB	
		16MB	4MB	4MB
25MB	1MB	16MB	4MB	4MB
28MB	4MB	16MB	4MB	4MB
32MB			16MB	16MB
	32MB			
		32MB		
		16MB	16MB	
33MB	1MB	16MB	16MB	
		1MB	16MB	16MB
	1MB		16MB	16MB
34MB	1MB	1MB	16MB	16MB
36MB	4MB	16MB	16MB	
		4MB	16MB	16MB
	4MB		16MB	16MB
37MB	1MB	4MB	16MB	16MB
	4MB	1MB	16MB	16MB
40MB	4MB	4MB	16MB	16MB
48MB		16MB	16MB	16MB
49MB	1MB	16MB	16MB	16MB
52MB	4MB	16MB	16MB	16MB
		32MB	32MB	
64MB		32MB	32MB	
65MB	1MB	64MB	32MB	
	1MB	32MB	32MB	
66MB	1MB	1MB	32MB	32MB
	1MB	32MB	1MB	32MB
	32MB	32MB	1MB	1MB
67MB	1MB	32MB	1MB	1MB
68MB	4MB	32MB	32MB	
	4MB	32MB	32MB	
		4MB	32MB	32MB
	32MB	32MB	4MB	

Table 3 - 1. DRAM Configurations (Continued)

69MB	1MB	4MB	32MB	32MB
	1MB	32MB	4MB	32MB
	4MB	1MB	32MB	32MB
	4MB	32MB	1MB	32MB
72MB	4MB	4MB	32MB	32MB
	4MB	32MB	4MB	32MB
	32MB	32MB	4MB	4MB
80MB	32MB	16MB	32MB	
	32MB	32MB	16MB	
81MB	1MB	16MB	32MB	32MB
	1MB	32MB	16MB	32MB
84MB	4MB	16MB	32MB	32MB
	4MB	32MB	16MB	32MB
96MB	32MB	32MB	32MB	
97MB	32MB	32MB	32MB	1MB
128MB	32MB	32MB	32MB	32MB

Table 3-1. DRAM Configurations

→ **NOTE : All memory banks accept double-RAS SIMM.**

Installation Instructions

→ **NOTE : Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.**

1. Locate the SIMM banks on the mainboard. Determine your desired configuration to be installed.
2. Swing each SIMM into its upright, locked position. When locking a SIMM in place, push on each end of the SIMM do not push in the middle.

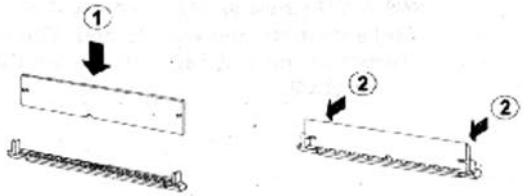


Figure 3-2. Installing a SIMM Module

→ NOTE : The SIMMs will only fit in one direction.

When adding RAM memory modules (SIMMs), it may be necessary to remove the existing SIMMs so you have enough room to install additional SIMMs.

Complete the following steps to remove a SIMM:

1. Carefully push out on the brackets securing each end of the SIMMs, while pushing out on the SIMM until it rests at a 45 degree angle. It is sometimes necessary to unlock an adjacent SIMM to allow enough working space.
2. Once the SIMM is unlocked and in its 45 degree position, lift the SIMM from it's socket.

Figure 3-3. Removing a SIMM Module

Cache Memory

The 486-PVT can accept cache memory of 128KB, 256KB, 512KB.

→ NOTE : Be sure to use the correct chips for the amount of cache memory you want to add. You must install both the correct Cache and Tag SRAM. Alter RAM type is the same as Tag RAM.

Installing Cache Memory

→ NOTE : Always observe static electricity precautions. See "Handling Precautions" at the beginning of this manual.

If you do not have the confidence to make the installation, better consult a service technician for assistance.

1. Locate the cache memory on the mainboard. See Figure 3-1 again.
2. Be guided by the Cache SRAM settings depending on your desired SRAM configuration.

Correct orientation of the chips is necessary for the cache to operate properly. Normally, the chips have either a curved notch or a dot. This marker on the chip must be matched to the marker on the socket for correct alignment.

Install the chips individually as follows:

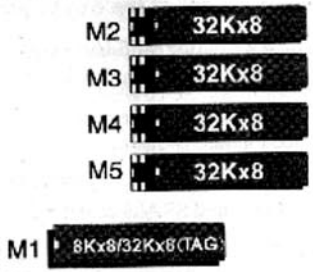
3. Align the chip with the marker on the socket. Press the chip onto the socket, ensuring that the pins on the chip are aligned with the corresponding connections on the socket.
4. Carefully apply enough pressure to partially seat the chip into the socket.

Ensure that all pins are properly aligned with the connectors and that there are no bent pins. If there are any bent pins, remove the chip, straighten the pin and repeat the process.

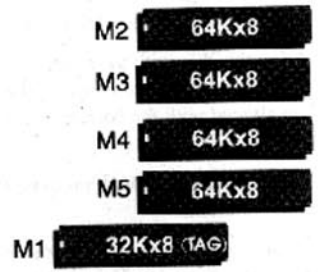
5. Press the chip completely into the socket so that the pins are properly seated.

Cache SRAM Specifications and Settings

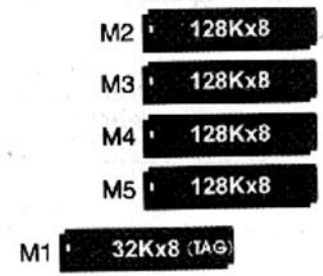
128K Cache SRAM



256K Cache SRAM



512K Cache SRAM



The cache size is jumper selectable. Below lists the jumper settings according to onboard cache size.

	128K	256K	512K
Bank 0	32K x 8	64k x 8	128k x 8
Tag RAM (M1)	8K x 8 / 32K x 8	32K x 8	32K x 8

Table 3-2. Cache Configuration Size

JUMPER	128K	256K	512K
JS1 (Jumper)	1-2	2-3	2-3
JS2 (Jumper)	1-2	1-2	2-3

Table 3-3. Cache Configuration Jumper

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Hard Disk Specifications

This appendix contains some technical information hard disk specifications. The IDE HDD AUTO DETECTION BIOS feature allows you to automatically setup the system without needing to provide this information.

CONNER

MODEL	CAPACITY	CYLINDER	HEAD	SECTOR
CP-30124	120MB	895	5	55
CP-30174	170MB	903	8	46
CFS-210A	213MB	685	16	38
CP-30344	340MB	904	16	46
CFN-340A	340MB	667	16	63
CFA-270A	270MB	524	16	63
CFA-540A	540MB	1048	16	63
CFA-1275A	1.2GB	2479	16	63

MAXTOR

MODEL	CAPACITY	CYLINDER	HEAD	SECTOR
7120A	120MB	1023	14	17
7131A	131MB	1002	8	32
7213A	213MB	683	16	38
7245A	245MB	967	16	31
7345A	345MB	790	15	57

QUANTUM

MODEL	CAPACITY	CYLINDER	HEAD	SECTOR
LPS-120AT	120MB	901	5	53
LPS-240AT	240MB	723	13	51
LPS-270AT	270MB	944	14	40
LPS-340AT	340MB	1011	15	44
LPS-540AT	540MB	1120	16	59
ELS-127AT	127MB	919	16	17
ELS-170AT	170MB	1011	15	22

SEAGATE

MODEL	CAPACITY	CYLINDER	HEAD	SECTOR
ST3144A	130MB	1001	15	17
ST3283A	240MB	978	14	35

WESTERN DIGITAL

MODEL	CAPACITY	CYLINDER	HEAD	SECTOR
AC2120	120MB	872	8	35
AC2170	170MB	1010	6	55
AC2200	212MB	989	12	35
AC2250	256MB	1010	9	55
AC2340	340MB	1010	12	55

PRIAM

MODEL	CAPACITY	CYLINDER	HEAD	SECTOR
S19	152MB	1024	15	17