AV7542 V1.0

VL-BUS

TRUE GREEN MAIN BOARD USER'S MANUAL

AV7542

GREEN MAIN BOARD

VER 1.0

AV7542
Mainboard Quick Reference

Ver. : 1.0

DATE : 07-20-1994

Trademarks

INTRODUCTION

The 486 motherboard is based on a 486 CPU and is ideal for building system that meet the requirements of current and future software applications, GUIs, and operating systems.

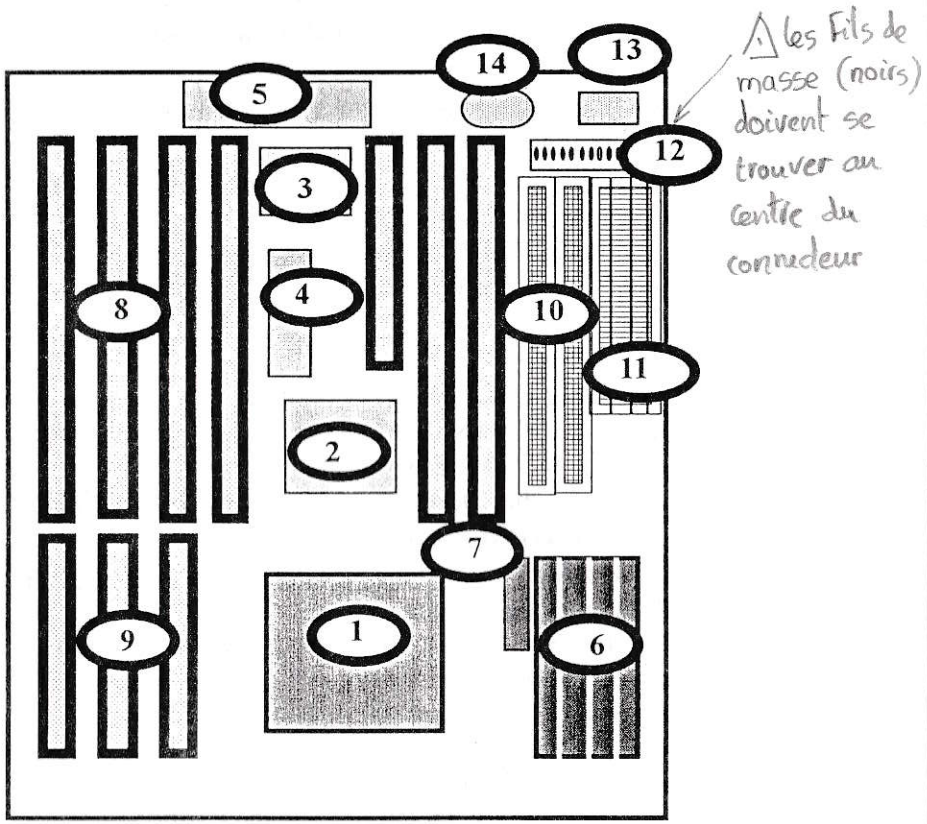
Table of Contents

===== **Features** =====

1. **Support all 486 family CPU.**
   A. Include INTEL 486/DX/DX2/SL/DX4
      AMD 486/DX SERIALS CYRIX 486 SERIALS
   B. Cover speed form 25Mhz to 100Mhz use clock generator Chip
2. **CHIPS:**
   A. Use SIS 471 Chips to implement system logic
   B. Use built-in Rtc in 85c407 Chips
3. **SRAM :**
   A. Direct Mapped Cache controller
   B. Supports 0K/256K/ 2nd level Cache
   C. Supports 11 Cache Write Back CPU(P24T/P24D/ M6/M7) System.
4. **DRAM :**
   A. Three Banks up to 128MB of DRAMS
   B. 1M/2M/4M/16MxN DRAM Type
   C. Supports 30/72 Btye SIMMS Module
   D. Supports Double-Sided Simms Module (72 PIN SIMM)
5. **Supports Power Management Mode :**
   A. Supports the SMM and the SMI
   B. CPU stop clock function
   C. Three Power saving states (Normal/Standby/Suspend)
   D. Long and Short system timers
   E. Supports the AMP control
   F. Supports Break Switch control
   G. Power saving also on NON-SMI CPU
   H. More system Event Monitoring and the Power Saving control
6. **Expansion SLOTS :**
   One 8-bat and Six 16 bat ISA Slots (Including two Master Mode & One Slave Mode VESA Local bus slots)
7. **BIOS :**
   Single AWARD BIOS (64kx8)
8. **DIMENSION :**
   2/3 Baby at Size (246 mm X 215 mm)
9. **WARRANTY :**
   One Year

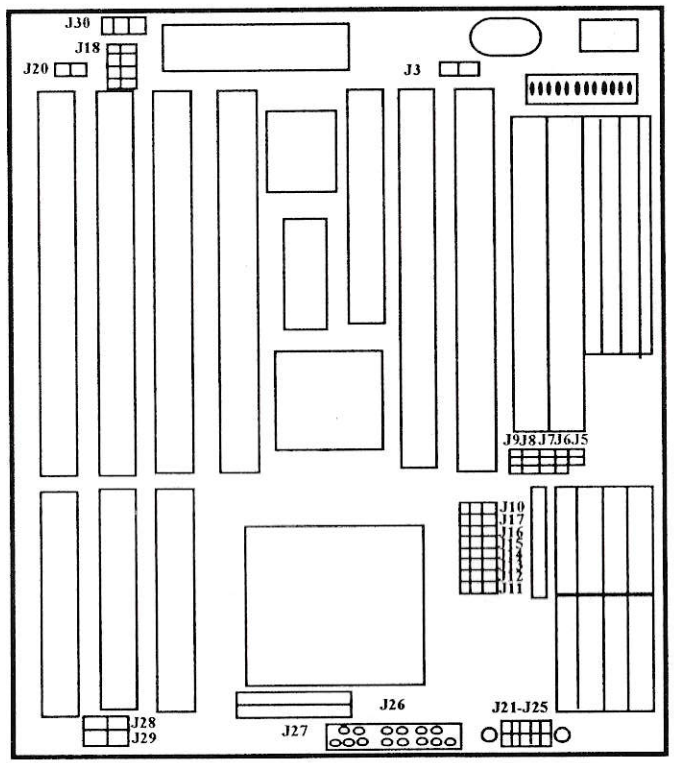
NOTE: *1. USING CLOCK GENERATOR FOR EASY-TO-UPGRADE/DOWN*

LAYOUT



⚠ les Fils de masse (noirs) doivent se trouver au centre du connecteur

1.i486 DX/SX/DX2 CPU or P24C CPU (Outer Socket)
2.SIS 85C471 Single Chip
3.SIS 85C407 Buffer
4.System BIOS
5.Keyboard Controller
6.Cache Data RAM
7.Cache Tag RAM
8.ISA slots
9.VESA Local Bus Slots
10.72 Pin SIMM Socket
11.30 Pin SIMM Socket
12.Power Connector
13.Keyboard Connector
14.Batty



J3 CMOS Data Reset Jumper

J7,J8,J9 DRAM Banks Selecting

J10,J11,J12,J13,J14,J15,J16,J17 CPU Configurating

J18 CPU Clock Selection

J20 SMI Out Connector

J21-25 Daughter-Board Connector ON 5V OFF 3.3V

J26 CPU Brand Select

J27 Case Device Connectors

HARDWARE CONFIGURATION

CPU Brand selecting : J26

Install the J26 (RP) for the defferent CPU Brand

Pin1 INTEL or AMD

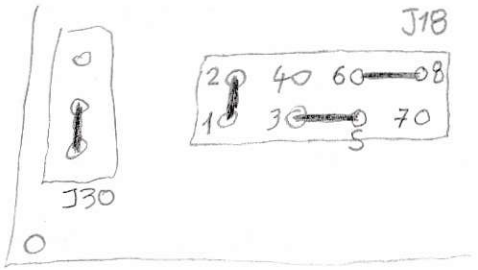
Pin2 CYRIX

CPU CONFIGURAING : J17,16,15,14,13,12 AND J10

J17	J16	J15	J14	J13	J12	J10	CPU
1-2	1-2	1-2	1-2	1-2	1-2	OPEN	DX/DX2/DX-SL/P24C
2-3	1-2	1-2	1-2	1-2	1-2	OPEN	SX/SX-SL
1-2	2-3	2-3	1-2	1-2	1-2	OPEN	P24T/P24D
1-2	1-2	2-3	2-3	2-3	2-3	2-3	AMD
2-3	1-2	2-3	OPEN	2-3	1-2	OPEN	CYRIX (M6)
1-2	1-2	2-3	OPEN	2-3	1-2	OPEN	CYRIX (M7)

CPU Clock Selection (For MX8315 clock generator) : J18

J18	CPU Installed
1-2	486DX/25 , 486DX2/50 , 486DX4/75
1-2,3-5,6-8	486DX/33 , 486DX2/66 , 486DX4/100
1-2 , 3-5	486DX/40
6-8	486DX/50



DRAM Banks Selecting : J7, J8 and J9

J7	J8	J9	DRAM	BANKS
1-2	1-2	1-2	BANK0	30PIN SIMMMODULE(DEFAULT)
			BANK1	72PIN SIMM MODULE
2-3	2-3	2-3	BANK0	72PIN SIMM MODULE
			BANK1	30PIN SIMM MODULE

Interal Clock Selecting : J11

J11	INTER	CLOCK
1-2	INTER	CLOCK = CLOCK
2-3	INTER	CLOCK = 1/2 CLOCK

VESA Selection : J28, J29

J28	J29	VESA Setting
OPEN	OPEN	VESA less than or equal to 33MHz
SHORT	SHORT	VESA greater than 33MHz

CMOS Data Reset Jumper : J3

J3	Setting
OPEN	Normal
SHORT	Reset CMOS

CONNECTORS

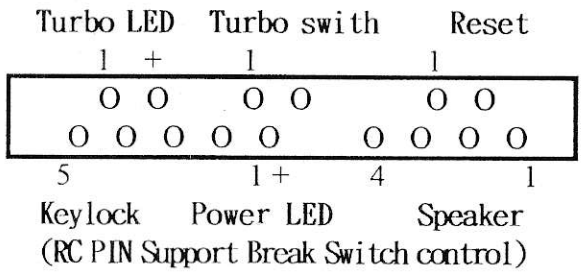
KERBOARD CONNECTOR : J1

POWER CONNECTOR : J2

SMI OUTPUT CONNECTOR : J20

Case Device Connectors : J27

The connector J27 attaches various case-mounted devices to the motherboard as in the diagram below. Refer to the following page for connector pin descriptions.



Cache Requirements

You need 20ns SRAM for Tag and 15ns Data .

	BANK 0	BANK 1	Tag
	U3 - U6	U10 - U13	U7
256K	32K8 x 4	32K8 x4	16k8x1 or 32k8x1
512K	128K8 x 4	Empty	32k8x 1

CPU Speed

You can switch the CPU speed between full speed and slow speed with the following commands:

<Alt> + <Ctrl> + <-> Slow speed

<Alt> + <Ctrl> + <+> Full speed

Normally you should use the full speed mode. In the above commands, you should use the plus(+) and minus(-) keys on the numeric keypad.

CPU DX/DX2 and DX4 Setting : J30

J30	CPU
1-2	DX/DX2
2-3	DX4

Memory Configuration

The mother borad supports three banks single-sided 1MB, 4MB, 16MB, and 64MB double-sided 2MB, 8MB, 32MB,fast-page-mode DRAM modules. The motherboard requires DRAM of at least 80ns RAS* access time.

SIMMs 1-4	SIMMs 8	SIMMs 7	J7,J8	TOTAL
1MB	EMPTY	EMPTY	1-2	4MB
4MB	EMPTY	EMPTY	1-2	16MB
1MB	4MB	EMPTY	1-2	8MB
1MB	16MB	EMPTY	1-2	20MB
4MB	16MB	EMPTY	1-2	32MB
1MB	4MB	4MB	1-2	12MB
1MB	4MB	16MB	1-2	24MB
1MB	16MB	16MB	1-2	36MB
4MB	16MB	16MB	1-2	48MB
1MB	4MB	8MB(D)	1-2	16MB
1MB	4MB	32MB(D)	1-2	40MB
4MB	16MB	32MB(D)	1-2	64MB
1MB	8MB(D)	EMPTY	1-2	12MB
1MB	32MB(D)	EMPTY	1-2	36MB
4MB	32MB(D)	EMPTY	1-2	48M

(D) = double sided DRAM ,all others are single sided DRAM.

**** As the 30&72 pin module are installed Simultaneously, the J5 and J6 MUST BE set for pin 1-2 short.***

30-PIN SIMMs 72-PIN SIMMs JUMPERs

SIMMs1-4	SIMMs 8	SIMMs 7	J7,J8	TOTAL
EMPTY	1MB	EMPTY	2-3	1MB
EMPTY	4MB	EMPTY	2-3	4MB
EMPTY	16MB	EMPTY	2-3	16MB
EMPTY	1MB	1MB	2-3	2MB
EMPTY	1MB	4MB	2-3	5MB
EMPTY	4MB	4MB	2-3	8MB
EMPTY	1MB	16MB	2-3	17MB
EMPTY	4MB	16MB	2-3	20MB
EMPTY	16MB	16MB	2-3	32MB
EMPTY	64MB	64MB	2-3	128MB
EMPTY	2MB(D)	EMPTY	2-3	2MB
EMPTY	8MB (D)	EMPTY	2-3	8MB
EMPTY	32MB (D)	EMPTY	2-3	32MB
EMPTY	2MB (D)	16MB (D)	2-3	18MB
EMPTY	8MB (D)	16MB (D)	2-3	24MB
EMPTY	2MB (D)	8MB (D)	2-3	10MB
EMPTY	8MB (D)	8MB (D)	2-3	16MB
EMPTY	8MB (D)	32MB (D)	2-3	40MB
EMPTY	32MB (D)	32MB (D)	2-3	64MB

There are SIX DRAM sockets (SIMMS 1-4, SIMMs 7 and SIMMs 8) FOR 3 DRAM banks. Please refer to above table to setup your DRAM configuration.

BIOS Setup

Software setup is accomplished via Basic Input-Output System (BIOS) programming. You set up the BIOS program to tell the operating system what devices are connected to the motherboard.

===== AWARD BIOS Setup =====

The BIOS setup program provided with the main board is the AWARD BIOS .

1. Turn on or reboot the system. After a series of diagnostic check, the following message appears:

"Hit <DEL> if you want to run SETUP"

2. Choose an option and press <Enter>. Modify the system parameter to reflect the option installed in the system. (See the following sections for more information.)

3. Press <ESC> at anytime to return to the Main Menu.

4. In the Main Menu, choose SAVE & EXIT SETUP to save your change and reboot the system. Choosing

"EXIT WITHOUT SAVING"

ignores your changes and exits the program.

===== BIOS FEATURES SETUP =====

ROM ISA BIOS (2C4I8000)
BIOS FESTURES SETUP
AWARD SOFTWARE,INC.

Virus Warning	: Enabled	Video BIOS Shadow	:Enabled
External Cache	: Enabled		
Quick Power On Self Test	: Enabled	C8000-CFFFF Shadow	: Disabled
Boot Sequence	: C, A	D0000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DFFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	E0000-E7FFF Shadow	: Disabled
Boot Up NumLock Status	: On	E8000-EFFFF Shadow	: Disabled
Boot Up System Speed	: High		
IDE HDD Block Mode	: Disabled		
Gate A20 Option	: Fast		
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Char/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		

Esc : Quit Arrow Key: Select Item
F1 : Help PU/PD/+/- :Modify
F5 : Old Values (SHIFT)F2 :Color
F6 : Load BIOS Defaults
F7 : Load Setup Defaults

The following explains the options for each entry, and in the default settings (Setup Defaults) for this screen.

Virus Protection

The Virus Warning default setting is "Enabled". When enabled,this feature protects the boot sector and partition table of your hard disk. Any attempt to write to them will halt the system and cause a warning message to appear. If this happens, you can either allow the operation to continue, or stop it to use an anti-virus on a virus-free, bootable, floppy disk to reboot and investigate your system.

Cache Control

The **CPU Internal Cache** default setting is"Enabled". This setting enables the internal CPU cache. Turning the cache off will slow down the system. The BIOS default settings will disable it. Leave it enabled unless you are troubleshooting a problem.

The **External Cache** default setting is "Enabled". This setting enables the secondary cache. Leave it enabled unless you are troubleshooting a problem.

Boot Up Features

The **Quick Power On Self Test** default setting is "Enabled". If enabled, this will speed up the Power On Self Test (POST), by skipping some items that are normally checked during the POST. Once your system is functioning normally, you can use this feature to speed the boot up process.

The **Boot Sequence** default setting is "C: , A:". the other option is "A: , C:". The setting determines where the computer looks first for an operating system, the hard disk or the floppy drive.

The **Swap Floppy Drive** default setting is "Disabled". When enabled, the BIOS will see the hardware Drive A: as Drive B: and hardware Drive B: as Drive A:. You can use this feature to boot from different size disks.

The**Boot Up Floppy Seek** default setting is "Disable". When enabled, the BIOS will check whether there is a 360KB floppy disk drive installed. Don't change the default setting, unless your system has a 360KB floppy disk drive.

Boot Up NumLock Status is a convenience feature. When the computer boots, this setting defines which function, the numeric values, or the cursor controls, will function on the numeric keypad of IBM-compatible keyboards. The extended keyboards supplied with most compatible system have separate cursor control key. It is there-fore unnecessary to use the numeric keypad to control the cursor. The default setting is " **ON** ".

Boot Up System Speed is a convenience feature. When the computer boots, this setting sets the CPU speed. The default setting is " **High** ".

The **IDE HDD Block Mode** default setting is "Disabled" This feature enhances hard disk performance by making multi-sector transfers, instead of one sector per transfer. Most IDE drives, except very early designs, can use this feature.

The **Gate A20 Option** default setting is "Fast". This is the optimum setting for this motherboard.

Keyboard Interface

The **Typematic Rate Setting** default setting is "Disabled". If enabled, you can set the typematic controls that follow.

The **Typematic Rate (Char /Sec)** controls the speed at which the system registers repeated keystrokes. The choices range from "6 to 30" characters per second (default is 6).

The **Typematic Delay (Msec)** controls the time between the disply of the first and second characters. There are four delay rate choices: "250ms, 500ms, 750ms, and 1000ms". (default is 250ms).

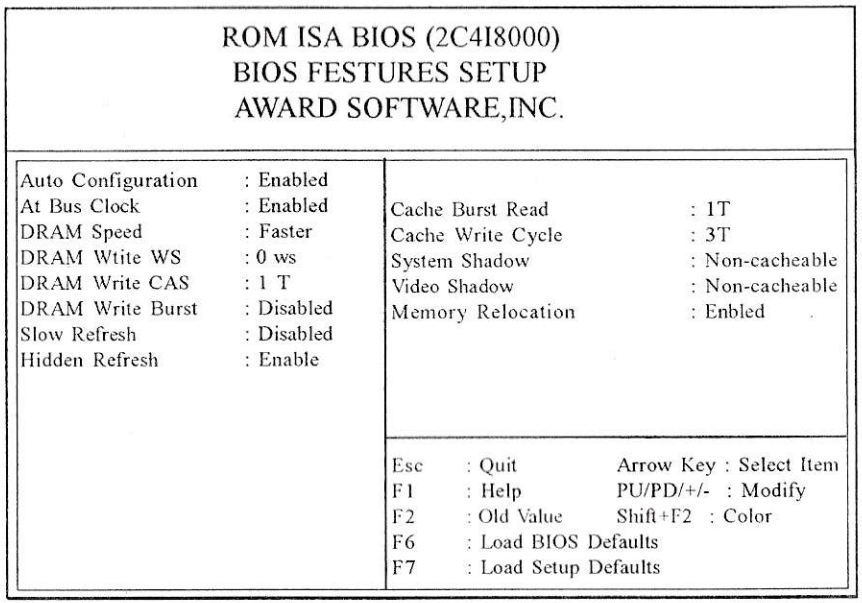
The **Security Option** controls the password Setting in the main screen. The default setting is ***Setup***. This will allow the system to boot, and use the password only to protect the Setup Utility configuration setting from being tampered with. The other setting, "System", uses the Password feature every time you boot up. You create a password by using the " HANGE PASSWORD " command from the main screen, as explained later in this section.

Shadow Control

The default setting for the Video BIOS Shadow is "Enabled". This copies the video display card BIOS into system DRAM to improve performance.

The next three lines, "C8000-CFFFF Shadow to E8000-EFFFF Shadow " are for shadow other expansion card ROMs. The default setting for these areas is "Disabled". If you have other expansion card with ROMs on them, you will need to knoew which specific addresses the ROMs using to shadow them. If you don't know, and cannot find out, you can enable all of the ROM shadow settings. This ensures that any ROMs present will be shadowed. It will also reduce the memory available by between 640KB and 1024KB.

After you have made your selections in the BIOS FEATURES SETUP press the <Esc> key to go back to the main screen . The next item is CHIPSET FEATURES SETUP.



The **Auto-Configuration** default is "Enabled". This item auto-matically configures the Advanced Chipset settings.

The **AT Bus Clock** default is CPU dependent. This setting is controled by the"Auto configuration" Function.

DRAM Setting and Write Controls

The **RAM Speed** default is controled by the " ***AUTO Configuration*** " Function.

The **RAM Write WS** default is controled by the " ***AUTO Configuration*** " Function.

The **DRAM Write CAS** default is controled by the " ***AUTO Configuration*** " Function Setting.

The **DRAM Write Burst** default is " Disabled ". This is the optimum setting for this mainboard.

The **Slow Refresh** default is " Disabled ". This is the optimum setting for this mainboard.

The **Hidden Refresh** default is " Enabled ". This is the optimum setting for this mainboard.

Cache Control

The **Internal Cache WB/WT** default is ***Write-Thru***. This is standard for most i486 CPU caches. P24D, P24D, CYRIX M6/M7/ DX2 CPUs can also use the " ***Write-Back***" cache scheme.

The **Cache Burst Read** default is CPU dependent. This is controled by the " ***AUTO Configuration*** " setting.

The **Cache Write Cycle** default is CPU dependent. This is controled by the " ***AUTO Configuration*** " setting.

The **System Shadow and Video Shadow** default setting are " Non-cacheable". These setting prevent the system and video BIOSes from being cached.

The **Memory Relocation** choose Enabled or Disabled. This option adds a few segments of 64KB size to memory above the 1M boundary when Enabled. The remapped memory size is related closely to the ***SHADOW RAM*** function.

===== POWER MANAGEMENT SETUP =====

ROM ISA BIOS (2C4I8000)
BIOS FESTURES SETUP
AWARD SOFTWARE,INC.

Power Management	:User Define		
PM Control By APM	:YES	IRQ3 (COM3)	:Diable
Video Off Method	:V/H sysnc+blank	IRQ4 (COM1)	:Disable
		IRQ5 (Lpt or Lan)	:Disable
PM TIMERS		IRQ6 (Flppy Disk)	:Disable
HDD Power Down	:Disable	IRQ7 (Lpt or Lan)	:Disable
		IRQ9 (Reserved)	:Disable
System Stand By	:10 Sec	IRQ10 (Reserved)	:Disable
System Suspend	:20Sec	IRQ11 (Reserved)	:Disable
		IRQ12 (PS2 Mouse)	:Disable
		IRQ13 (Coprocessor)	:Disable
PM EVENTS		IRQ14 (Hard Disk)	:Disable
Local Master	:Disable	IRQ15 (Reserved)	:Disable
Local Device	:Disable		
DMA Activities	:Disable		

Esc:Quit Arrow Key :Select Item
F1:Help PU/PD/+/- :Modify
F5:Old Values (SHIFT)F2:Color
F6:Load BIOS Defaults
F7:Load Setup Defaults

The settings on this screen are for the power management setup. They control the mainboard Green features. The video features of this setup work with Green monitors. They alos work with Non-green monitors using a Green power suppely connected to the SMI OUT pins, J20 IF you are using an DX CPU, then functions on this screen will work,but not stop CPU clock.

Control By APM : These setting cad greatly reduce your system energy consumption.

Video Off Method : V/H SYSNC single turn off.

Power Management : The power management setting controls the system standby, suspend, and IRQN Device Time features. There are five option.

User Define : Allow users to customize all timer setting and define individual HDD, system power management, and I/O power management Timer setting individually.

Max Saving : Is Useful for testing and demonstrating system performance.

Optimize : Is the recommanded setting for general use.

Min. Saving : Is useful for extended system use.

Disabled : Turn off all BIOS and operating system power saving functions.

HDD Standby Timer : Define HDD Standby Timer Settings rang from 1 min. to 15 min. and include " Disabled".

System Standby : Holds the CPU clock and suspends the video signal, settings range from 10 sec. to 3 hrs and include " disabled ".

System Suspend : Stops the CPU Internal clock and suspends the video signal, settings rang from 10 sec. to 3 hrs and include " Disabled ".

Local Master : This tells the program to monitor for activity on a ***VESA Bus Master card***.

Local Device : This is the program to monitor for activity on a *VESA Bus Slave card*.

DMA Activity : This is the optimum setting for the mainboard.