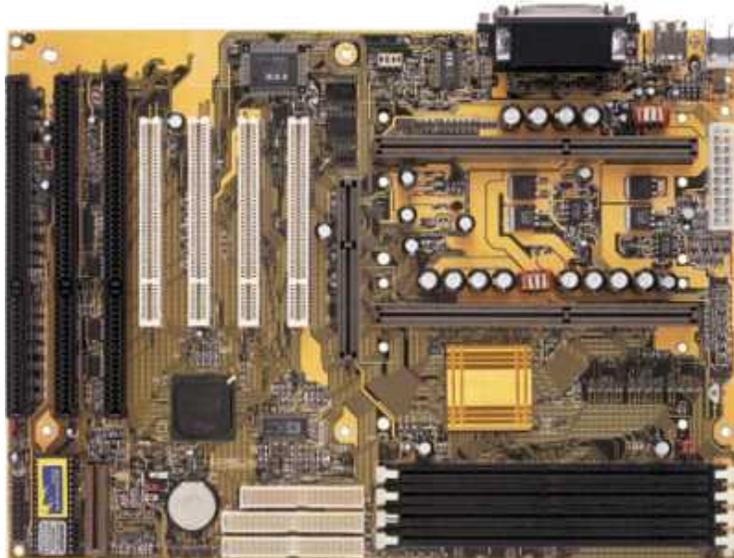


# Model M-720

440LX AGP/Dual Processor PII  
233 ~ 533 MHZ



By PcChips

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## Chapter 1 Introduction

This mainboard is a high-performance mainboard based on the advanced Pentium™ II microprocessor and featuring Accelerated Graphics Port (AGP) and the i440LX AGPset chipset. The mainboard offers a high degree of flexibility in configuration and is fully IBM PC/AT compatible.

### Key Features

The advanced features of the mainboard include:

- Intel i440LX AGPset chipset
- Supports Dual Pentium™ II 233 ~ 533 MHz CPUs at Slot1 x 2
- Supports upgradable I/O APIC module to operate Dual Pentium II™ processor
- Provides 4 DIMM sockets to support 8MB/16MB/32MB/64MB/128MB SDRAM/EDO memory modules up to 512MB
- Supports Accelerated Graphics Port (AGP) v1.0
- Supports Advanced Configuration Power Interface (ACPI) and Legacy PMU, fully compliant to PC97 & PC98
- PCI Bus Master IDE controller supports PIO Mode 0 to Mode 4, and the Ultra DMA/33 is at the maximum transfer rate of 33MB/sec and Bus Master IDE DMA Mode 2
- Supports 2.88MB, Iomega ZIP-100M, and IDE LS-120 FDD, bootable from floppy, HDD, CD-ROM, SCSI, NetWork, LS-120, ZIP, or others
- Provides one AGP Bus slot, four PCI Local Bus slots and three ISA Bus slots
- Provides ATX power which supports various functions, such as Suspend/Shutdown
- Onboard PCI Bus Master IDE interface supports 4 IDE devices with 2 channels
- Onboard super Multi-I/O chip supports 2 serial ports with 16550 fast UART compatible, 1 parallel port with EPP and ECP capabilities, and one floppy disk drive interface with 1Mb/s data transfer rate
- Supports PS/2 Mouse and Keyboard connectors, Universal Serial Bus (USB) interface, and Infrared connector
- Supports Fan Status Monitoring and Alarm, Temperature Monitor and Alert, Voltage Monitor and Alert, System Resources Alert, and Virus Write Protection through the optional LM78 compatible Hardware Monitor and Intel™ LANDESK Client Manager (LDCM) software
- System BIOS supports ChipAway Virus Designed by Trend that
  - guarantees a virus-free boot and a virus-free operating system;
  - guards against viruses hidden in preinstalled software and pre-shipped products;
  - offers built-in, hardware-based protection (no installation and configuration worries);
  - detects known and unknown boot viruses using Trend Micro's patented rule-based technology & no after service required
- Provides PC-cillin97 that
  - supports Macro Trap automatically detects and cleans all word macro viruses;
  - continuous protection from all possible virus sources; up-to-the-minute virus news and information;
  - automatic on-line pattern file updates; NCSA certified

### ***Unpacking the Mainboard & Static Electricity Precautions***

This Mainboard package contains the following items:

1. This Mainboard
2. Device Driver
3. This User's Guide
4. The Slot1 holder

The mainboard is easily damaged by static electricity.

Follow the precautions below while unpacking or installing the mainboard.

1. Do not remove the mainboard from its original package until you are ready to install it.
2. Frequently ground yourself to discharge any static electric charge that may build up in your body while working on installation and/or configuration. For example, you may ground yourself by grasping an unpainted portion of the system's metal chassis.
3. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.
4. Handle the mainboard by its edges or by the mounting bracket to avoid touching its components.
5. Check the mainboard for damage. If any integrated circuit appears loose, press carefully to seat it firmly in its socket.
6. Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

## Chapter 2 Hardware

### *Hardware Configuration*

Before you install the mainboard into the system chassis, you may find it convenient to first configure the mainboard's hardware. This chapter describes how to set jumpers and install memory modules, and where to attach components.

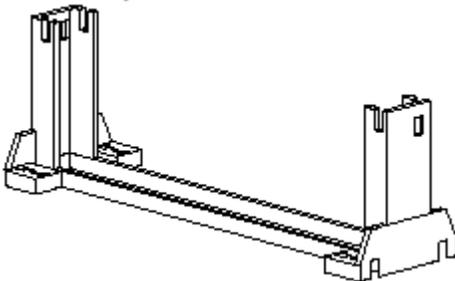
### ***CPU Installation***

This mainboard supports Intel Pentium™ II CPU using a Single Edge Contact (SEC) slot. Make sure that you have the following items (which should be included in the package) before doing any installation. All parts are labeled here with item numbers that will be referred to in the Installation Procedures section. Item 1 and 2 together are the retention mechanism, please refer to following procedures to complete your CPU installation.

- 1) 4 screws:



- 2) 1 retention clip:

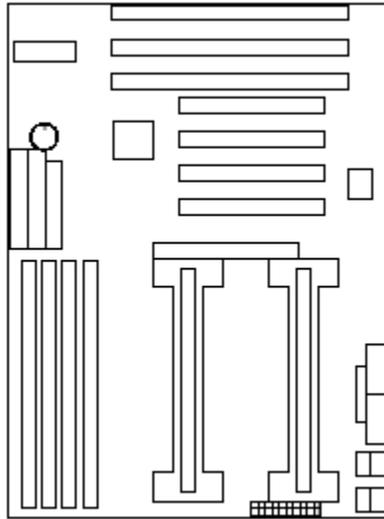


## Installation Procedures

Follow the following steps in order to install your Intel Pentium® II properly.

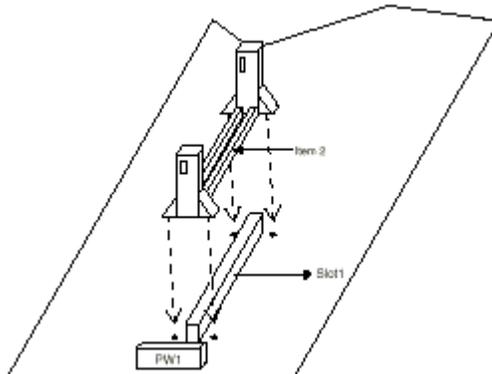
### Step 1:

Make sure that the mainboard is set the same direction as the following drawing before doing any installation.



### Step 2:

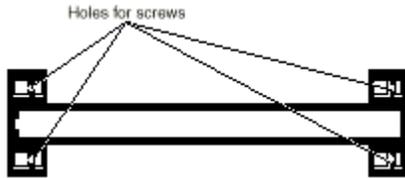
There are 2 sets of small holes along Slot 1 of your motherboard: two on the top and two on the bottom. Snap the retention clip (2) right into those 2 sets of holes



If the retention clip is installed incorrectly, you will not be able to insert the retention clip into the CPU and in this situation, you might need to rotate the retention clip by 180°.

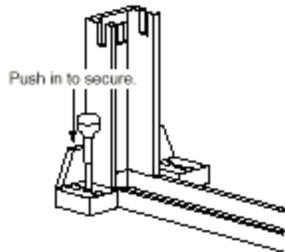
**Step 3:**

Find the hole in each corner of the retention clip then insert the 4 screws from the top of the motherboard.



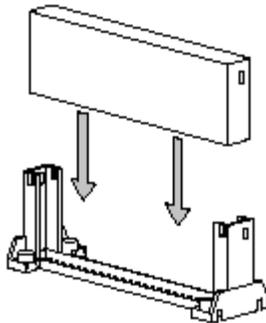
**Step 4:**

Then simply push the screws downward to secure the retention clip. Push in to secure.



**Step 5:**

Flatten the two latches on the side of CPU. Insert the CPU into the retention clip. Lock the two latches to secure the CPU.



## Mainboard Component Locations

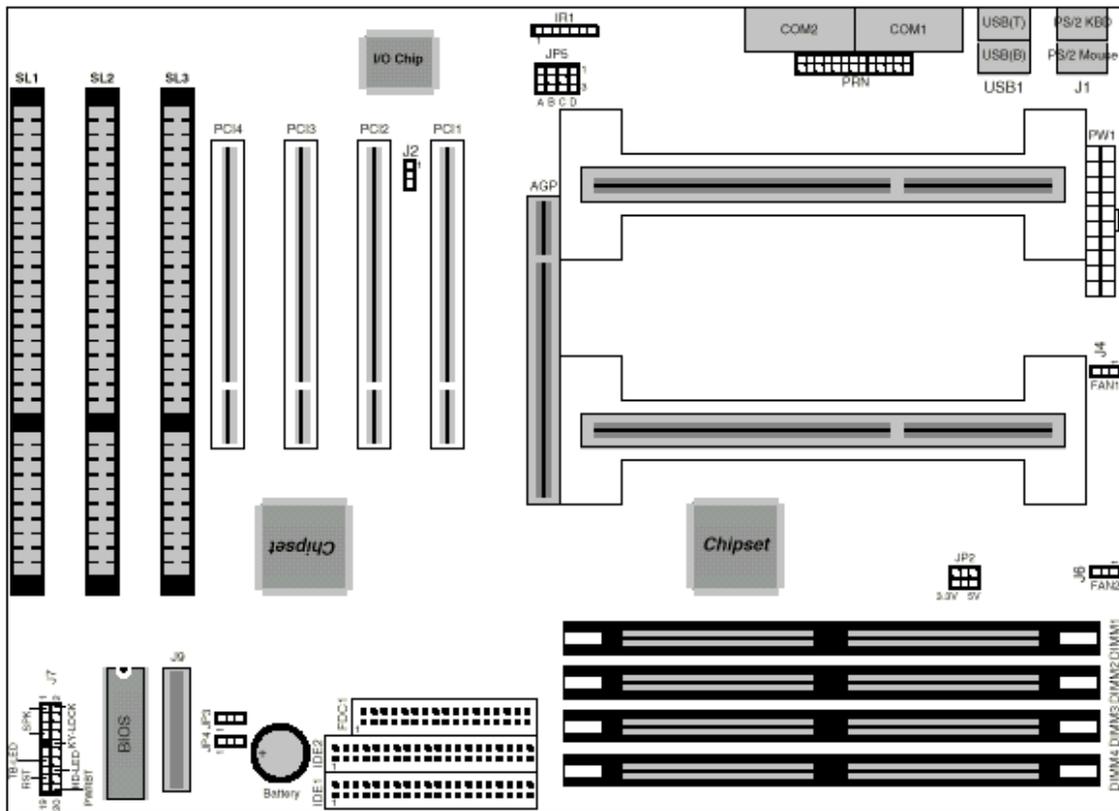


Figure 2–1. Mainboard Component Locations

### Connectors

Attach system components and case devices to the mainboard via the mainboard connectors. A description of each connector pins follows. See Figure 2E1 for the location of the connectors on the mainboard.

*Note:* Make sure that the power is turned off before making any connection to the board.

#### PW1 – ATX Style Power Connector

The ATX power supply provides a single 20-pin connector.

| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | 3.3V        | 11  | 3.3V        |
| 2   | 3.3V        | 12  | -12V        |
| 3   | Ground      | 13  | Ground      |
| 4   | +5V         | 14  | PS-ON       |
| 5   | Ground      | 15  | Ground      |
| 6   | +5V         | 16  | Ground      |
| 7   | Ground      | 17  | Ground      |
| 8   | Power OK    | 18  | -5V         |
| 9   | 5VSB        | 19  | +5V         |
| 10  | +12V        | 20  | + 5V        |

### Software Power-Off

Follow the steps below to use the "Software Power-Off Control" function in Windows 95 with ATX power supply.

1. Click the **START** button on the Windows 95 task bar.
2. Select **Shut Down The Computer** to turn off the computer. The message "It is now safe to turn off your computer." will not be shown when using this function.

### J7 (19, 20) (PWRBT) – Power Button & Suspend Switch Connector

When the system is turned off, push the power button to turn the system back on.

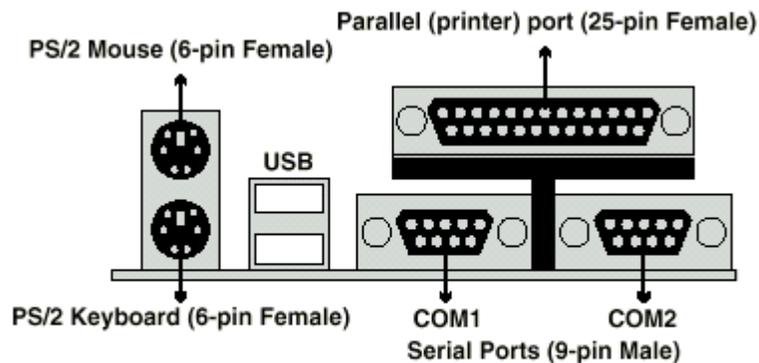
When the system is on, push the power button rapidly to switch the system to the Suspend mode, and, by pushing and holding the button for more than 4 seconds to turn the system completely off.

When the system is in the Suspend mode, push the power button rapidly to turn the system on.

### J9 – APIC Slot

While using Dual CPUs, you must insert APIC module into APIC Slot.

### External Connectors Location



### Side View

### FDC1 – Floppy Disk Drive Connector

### IDE1/IDE2 – Primary/Secondary IDE Connectors

**J7 – Jumper Block**

Pins (1, 3, 5, 7) (SPK) – Speaker Connector

| Pin | Description |
|-----|-------------|
| 1   | Data Out    |
| 3   | N.C.        |
| 5   | Ground      |
| 7   | +5V         |

Pins (2, 4, 6, 8, 10) (KY-LOCK) – Keylock & Power LED Connector

| Pin | Description |
|-----|-------------|
| 2   | LED Output  |
| 4   | N.C.        |
| 6   | Ground      |
| 8   | Keylock     |
| 10  | Ground      |

Pins (13, 14) (TB-LED) – Turbo LED Connector

| Pin   | Description |
|-------|-------------|
| 13(+) | Anode       |
| 14(-) | Ground      |

Pins (15, 16) (HD-LED) – HDD LED Connector

| Pin   | Description |
|-------|-------------|
| 15(+) | +5V         |
| 16(-) | Active Low  |

Pins (17, 18) (RST) – Reset Switch Connector

Attach the Reset push button cable to this connector.

| Pin   | Description  |
|-------|--------------|
| Open  | Normal Mode  |
| Close | Reset System |

Pins (19, 20) (PWRBT) – Power Button & Suspend Switch Connector

*Note – See Chapter 2 - Connectors for more info.*

| Pin   | Description                |
|-------|----------------------------|
| Open  | Normal Mode                |
| Close | Power On/Off<br>Or Suspend |

**Jumper Settings**

J2 – Wake-on-LAN Connector

| Pin | Description |
|-----|-------------|
| 1   | 5VSB        |
| 2   | Ground      |
| 3   | Wake Up     |

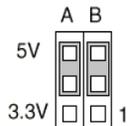
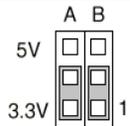
**J4/J6 (FAN 1/2) – CPU Fan Connector**

| Pin | Description |
|-----|-------------|
| 1   | Sensor      |
| 2   | +12V        |
| 3   | Ground      |

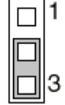
**I R1 – Infrared Module Connector**

| Pin | Description |
|-----|-------------|
| 1   | IRRXL       |
| 2   | Ground      |
| 3   | IRTX        |
| 4   | +5V         |
| 5   | IRRXH       |
| 6   | +5V         |
| 7   | Ground      |

**JP2 – Dimm Voltage Selector**

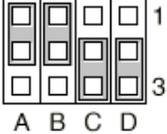
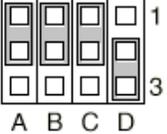
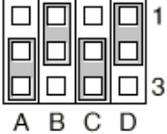
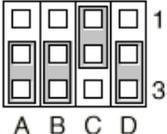
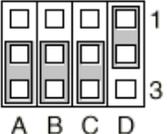
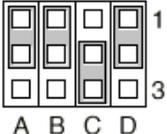
| Voltage        | Setting   |
|----------------|---|
| 5V             |   |
| 3.3V (default) |  |

**JP3 – CMOS Ram Clear Selector**

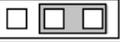
| Description          | Setting   |
|----------------------|---|
| Normal Mode          |  |
| Clear CMOS (default) |  |

*Note: Make sure that this jumper is set to Normal Mode before installing the mainboard.*

**JP5 – Cpu Speed Connector**

| PII    | Setting   | PII    | Setting   | PII    | Setting   |
|--------|---|--------|---|--------|---|
| 233MHz |  | 366MHz |  | 466MHz |  |
| 266MHz |  | 400MHz |  | 500MHz |  |
| 300MHz |  | 433MHz |  | 533MHz |  |
| 333MHz |  |        |   |        |   |

**JP4 – CPU Source Connector**

| From     | Setting  |
|----------|--|
| PIIX4    | 1<br> |
| I/O APIC | 1<br> |

*Note: This selector must be set to PIIX4 setting if there is no APIC module.*

## Memory Installation

The mainboard lets you add up to 512MB of system memory through DIMM sockets on the board. Four 168-pin DIMM sockets are divided into four banks: Bank 0, Bank 1, and Bank 2, Bank 3. The mainboard supports the following memory configurations.

| Bank  | Memory Module                     |
|---|-----------------------------------|
| Bank 0<br>DIMM1<br>(168-pin DIMM)                       | 4MB, 8MB, 16MB, 32MB, 64MB, 128MB |
| Bank 1<br>DIMM2<br>(168-pin DIMM)                       | 4MB, 8MB, 16MB, 32MB, 64MB, 128MB |
| Bank 2<br>DIMM3<br>(168-pin DIMM)                       | 4MB, 8MB, 16MB, 32MB, 64MB, 128MB |
| Bank 3<br>DIMM4<br>(168-pin DIMM)                       | 4MB, 8MB, 16MB, 32MB, 64MB, 128MB |
| Total System Memory = Bank 0 + Bank 1 + Bank 2 + Bank 3 |                                   |

**Notes:**

1. *The speed of all DIMM modules has to be faster than 70ns.*
2. *Use 2 DRAM types: Extend Data Out (EDO), or Synchronous DRAM (SDRAM) for DIMM socket.*

## Chapter 3 Bios Setup

This chapter explains how to configure the mainboard's BIOS setup program. The setup program provided with the mainboard is the BIOS from AML.

After you have configured the mainboard and have assembled the components, turn on the computer and run the software setup to ensure that the system information is correct.

The software setup of the system board is achieved through Basic Input-Output System (BIOS) programming. You use the BIOS setup program to tell the operating system what types of devices are connected to your system board.

The system setup is also called CMOS setup. Normally, you need to run system setup either if the hardware is not identical with information contained in the CMOS RAM, or if the CMOS RAM has lost power.

*Note: When installing newer BIOS into this mainboard, you must clear CMOS for a moment then set back to Normal Mode, or hold down the <End> key then power on to reboot the system.*

### Entering Bios Setup

To enter the BIOS Setup program:

1. Turn on or reboot the system. A screen appears with a series of diagnostic checks.
2. When "Hit <DEL> if you want to run SETUP" appears, press the <DEL> key to enter the BIOS setup program. The following screen appears:

AMIBIOS SIMPLE SETUP UTILITY - VERSION 1.1X  
(C)1997 American megatrends, Inc. All Rights Reserved

|  |                            |
|--|----------------------------|
| Standard CMOS Setup  | Peripheral Setup           |
| Advanced CMOS Setup  | Change Supervisor Password |
| Advanced Chipset Setup   | Auto-detect Hard Disks     |
| Power Management Setup   | Save Settings and Exit     |
| PCI/Plug and Play Setup  | Exit Without Saving        |
| Load Optimal Settings  |                            |
| Load Best Performance Settings   |                            |
| Esc: Quit    ↑↓→←:Select Item    (Shift) F2: Color    F5: Old values   |                            |
| F6: Optional values    F7: Best Performance values    F10: Save & Exit |                            |
| Standard CMOS set for changing time , date, hard disk type, etc        |                            |

3. Use your keyboard to choose options. Modify system parameters to reflect system options. Press Alt-H for Help.

### Default

Every option in the BIOS Setup contains two default values: Best default and the Optimal default value.

## Load Optimal Settings

The Optimal default values provide optimum system settings for all devices and system features.

## Load Best Performance Settings

The Best default values provide best performance settings for all devices and system features, but dependent used devices and we aren't guaranty that system run overnight on these settings.

## Setup Items

### Standard Setup

Choosing the item from the BIOS Setup main menu. All Standard Setup options are described in this section.

|  |   |
|--|---|
| <b>Date/Time</b>   | Select the Date/Time option to change the date or time. The current date and time are displayed. Enter new values through the displayed window.   |
| <b>Pri Master<br/>Pri Slave<br/>Sec Master<br/>Sec Slave</b> | Choose these icons to configure the hard disk drive named in the option. When you click on an icon, the following parameters are listed:<br>Type, LBA/Large Mode, Block Mode, 32Bit Mode, and PIO Mode.<br>All parameters relate to IDE drives except <b>Type</b> . Choose the <b>Type</b> parameter and select Auto BIOS automatically detects the IDE drive parameters and displays them. Choose on <b>LBA Mode</b> and choose <i>On</i> to enable support for IDE drives with capacities greater than 528MB. Click on <b>Blk Mode</b> and choose <i>On</i> to support IDE drives that use Blk Mode. Click on <b>32Bit Mode</b> and click on <i>On</i> to support IDE drives that permit 32-bit access. |
| <b>Floppy Drive A; B</b>                                     | Choose the Floppy Drive A or B icon to specify the floppy drives type. The settings are 360KB 5 1 / 4 ", 1.2MB 5 1 / 4 ", 720KB 3 1 / 2 ", 1.44MB 3 1 / 2 ", or 2.88MB 3 1 / 2 ".   |

### Advanced Setup

Choosing the item from the BIOS Setup main menu. All Advanced Setup options are described in this section.

|  |   |
|--|---|
| <b>Quick Boot</b>  | Set this option to <i>Enabled</i> to permit BIOS to boot within 5 seconds   |
| <b>1st Boot Device;<br/>2nd Boot Device;<br/>3rd Boot Device</b> | Set these options to select the boot sequence from different booting devices.   |
| <b>Try Other Boot Devices</b>                                    | Choose <i>Yes</i> or <i>No</i> to search other boot devices to boot up the system when all the options in the previous function failed. |
| <b>S.M.A.R.T for Hard Disks.</b>                                 | Choose <i>Enabled</i> or <i>Disabled</i> . This option allows you to utilize the S.M.A.R.T. function of HDD                             |
| <b>Floppy Drive Swap</b>   | This option allows you to swap floppy drives between A: and B:.   |
| <b>Floppy Drive Seek</b>   | Choose <i>Enabled</i> or <i>Disabled</i> . <i>Disabled</i> provides a faster boot and reduces the possibility of damaging the heads.    |
| <b>PS/2 Mouse Support</b>  | When this option is set to <i>Enabled</i> , BIOS supports a PS/2-type mouse.  |

|  |  |
|--|--|
| <b>Password Check.</b>   | <p>This option specifies the type of BIOS password protection that is implemented. The settings are:</p> <p><b>Setup:</b></p> <p style="padding-left: 40px;">The password prompt appears only when an end user attempts to run BIOS Setup.</p> <p><b>Always:</b></p> <p style="padding-left: 40px;">A password prompt appears every time the computer is powered on or rebooted.</p> <p>The BIOS password does not have to be enabled. The end user sets the password by choosing the Password icon on the BIOS Setup screen</p> |
| <b>Boot to OS/2 Over 64MB</b>  | <p>You need to set this option to Enabled when using the OS/2 operating system with installed DRAM which is greater than 64MB.</p>   |
| <b>Internal Cache</b>  | <p>This option selects to enable the internal cache or not. Choices are Disabled and Enabled.</p>  |
| <b>System BIOS Cacheable</b>   | <p>BIOS always copies the system BIOS from ROM to RAM for faster execution. Set this option to <i>Enabled</i> to permit the contents of the F0000h RAM memory segment to be written to and read from cache memory.</p>   |
| <b>C000, 16K Shadow;</b><br><b>C400, 16K Shadow;</b><br><b>C800, 16K Shadow;</b><br><b>CC00, 16K Shadow;</b><br><b>D000, 16K Shadow;</b><br><b>D400, 16K Shadow;</b><br><b>D800, 16K Shadow;</b><br><b>DC00, 16K Shadow.</b> | <p><b>Disabled:</b></p> <p style="padding-left: 40px;">The specified ROM is not copied to RAM.</p> <p><b>Enabled:</b></p> <p style="padding-left: 40px;">The contents of the ROM area are not only copied from ROM to RAM for faster execution, the contents of the RAM area can be written to or read from cache memory.</p> <p><b>Cached:</b></p> <p style="padding-left: 40px;">The contents of the ROM area are copied from ROM to RAM for faster execution</p>  |

## Chipset Setup

Choose the item from the BIOS Setup main menu. All Chipset Setup options are then displayed and are described in the following section:

|                                   |   |
|-----------------------------------|---|
| <b>Trend Chip Away Virus</b>      | <p>Set this option to enable the Trend ChipAway Virus function.</p>               |
| <b>Auto Configure DRAM Timing</b> | <p>Set this option to enable the Auto Configuration of DRAM Timing</p>            |
| <b>EDO DRAM Speed (ns)</b>        | <p>Based on the type of your EDO RAM, set this option to either 60ns or 70ns.</p> |
| <b>EDO Read Burst Timing</b>      | <p>Set this option to select the proper EDO DRAM Read Timing.</p>                 |
| <b>EDO Write Burst Timing</b>     | <p>Set this option to select the proper EDO DRAM Write Timing</p>                 |

|                                    |   |
|------------------------------------|---|
| <b>SDRAM CAS Latency</b>           | Set this option to select the proper SDRAM CAS Latency.   |
| <b>DRAM Integrity Mode</b>         | Choose Non-ECC, EC-Only, or ECC.<br><b>Non-ECC:</b> Has byte-wise write capability but no provision for protecting data integrity in the DRAM array.<br><b>EC-Only:</b> Data errors are detected but not corrected.<br><b>ECC:</b> Allows detection between single-bit and multiple-bit errors and recovery of single-bit errors. |
| <b>A.G.P. Aperture Size (64MB)</b> | Choose 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, or 256MB. Memory-mapped, graphics data structures can reside in the Graphics Aperture. Use the default setting.   |
| <b>8 bit I/O Recovery Time</b>     | This option specifies the length of a delay inserted between consecutive 8-bit I/O operations.  |
| <b>16 bit I/O Recovery Time</b>    | This option specifies the length of a delay inserted between consecutive 16-bit I/O operations.   |
| <b>On Board USB Function</b>       | Choose Enabled or Disabled. Set this option to enable the system BIOS USB (Universal serial Bus) functions.   |
| <b>USB Function for DOS</b>        | Choose Enabled or Disabled. Set this option to enable the passive release on the USB (Universal Serial Bus).  |

## Power Management Setup

Choosing the item from BIOS Setup main menu.

|  |  |
|--|--|
| <b>Power Management/ APM</b>                           | Set this option to enable power management features and APM (Advanced Power Management).   |
| <b>Green Monitor Power State</b>                       | This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power savings state after the specified period of display inactivity has expired                    |
| <b>Video Power Down Mode</b>                           | This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired.  |
| <b>Hard Disk Power Down Mode</b>                       | This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired.  |
| <b>Standby Time out (Minute)</b>                       | This option specified the length of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state.   |
| <b>Display Activity; Serial Port 1; Serial Port 2;</b> | When set to Yes, these options enable event monitoring on the specified hardware interrupt request line and the computer is in a power saving state, BIOS watches for activity on the specified IRQ line. The computer |

|  |   |
|--|---|
| <p><b>Parallel Port;<br/>Floppy Disk;<br/>Primary Master IDE;<br/>Primary slave IDE;<br/>Secondary Master IDE;<br/>Secondary Slave IDE</b></p> | <p>enters the full on power state if any activity occurs.</p>                           |
| <p><b>RTC Alarm Power On</b></p>   | <p>Set this option to enable the RTC Alarm to wake up the system which is Soft Off.</p> |
| <p><b>RTC Alarm Date;<br/>RTC Alarm Hour;<br/>RTC Alarm Minute;<br/>RTC Alarm Second</b></p>   | <p>Set these options to specify the RTC Alarm time on Date/Hour/Minute/Second.</p>      |

### PCI/PnP Setup

Choose the item from the BIOS Setup main menu.

|   |   |
|---|---|
| <p><b>Plug and Play Aware OS</b></p>                              | <p>Set this option to Yes if the operation system in this computer is aware of and follows the Plug and Play specification. Currently, only Windows 95 is PnP-aware.</p>  |
| <p><b>PCI VGA Palette Snoop</b></p>                               | <p>When this option is set to Enabled, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled).</p>   |
| <p><b>Allocate IRQ to PCI VGA</b></p>                             | <p>This option is used to allocate IRQ to PCI VGA. Recommendation is set to NO.</p>   |
| <p><b>OffBoard PCI IDE Card</b></p>                               | <p>This option specifies if an offboard PCI IDE controller adapter card is installed in the computer. You must specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller is installed. If an offboard PCI IDE controller is used, the onboard IDE controller is automatically disabled. If an offboard PCI IDE controller adapter card is installed in the computer, you must also set the <b>Offboard PCI IDE Primary IRQ</b> and <b>Offboard PCI IDE Secondary IRQ</b> options.</p> |
| <p><b>Pri. OffBoard PCI IDE IRQ;<br/>OffBoard PCI IDE IRQ</b></p> | <p>These options specify the PCI interrupt used by the Primary (or secondary) IDE channel on the offboard PCI IDE controller.</p>   |
| <p><b>DMA Channel 0, 1, 3, 5, 6, 7</b></p>                        | <p>These options specify the bus that the specified DMA channel is used on.</p>   |
| <p><b>IRQ3, 4, 5, 7, 9, 10, 11, 14, 15</b></p>                    | <p>These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.</p>  |
| <p><b>Reserved Memory Size</b></p>                                | <p>This option is designed to be used for reserving memory for the I/O card.</p>  |
| <p><b>Reserved Memory</b></p>                                     | <p>This option is designed to be used for reserving memory address for the I/O card.</p>  |

**Address****Peripheral Setup**

Choose the item from the BIOS Setup main menu.

|                                  |  |
|----------------------------------|--|
| <b>OnBoard FDC</b>               | This option enables the FDC (Floppy Drive Controller) on the motherboard or auto detects the FDC.  |
| <b>OnBoard Serial Port1.</b>     | This option specifies the base I/O port address of serial port 1   |
| <b>OnBoard Serial Port2.</b>     | This option specifies the base I/O port address of serial port 2   |
| <b>Serial Port2 Mode</b>         | This option specifies the serial port2 mode.<br><b>Normal:</b><br>The normal serial port mode is being used.<br><b>IrDA/ASKIR:</b><br>The serial port2 will be redirected to support IR function when this option is set to IrDA or ASKIR. |
| <b>Duplex Mode</b>               | This option shows up only when either IrDA or ASKIR is chosen in the previous option (Serial Port2 Mode).  |
| <b>OnBoard Parallel Port</b>     | This option specifies the base I/O port address of the parallel port on the motherboard  |
| <b>Parallel Port Mode</b>        | Depends on the type of your external device, which connects to this port to choose Normal, EPP, or ECP mode.   |
| <b>Parallel Port IRQ</b>         | This option specifies IRQ to parallel port.  |
| <b>Parallel Port DMA Channel</b> | This option is only available if the setting of the Parallel Port Mode option is EPP/ECP.  |
| <b>OnBoard IDE</b>               | This option specifies the channel used by the IDE controller on the motherboard.   |

**Change Supervisor Password**

This item lets you configure the system password which is required every time when the system boots up or an attempt is made to enter the Setup program. The password cannot be longer than six characters.

*Note: Keep a safe record of the new password. If you forget or lose the password, the only way to access the system is to discharge CMOS memory using Jumper JP3.*

**Auto-Detect Hard Disks**

If your system has an IDE hard drive, you can use this utility to detect its parameters and automatically enter them into the Standard CMOS Setup. This utility will autodetect up to four IDE devices.

**Save Settings and Exit**

Select this item to save the values entered during the current session and then exit the BIOS setup program.

**Exit Without Saving**

Select this item to exit the BIOS setup program without saving the values, which has been entered during the current session.

## Chapter 4 Bios Flash/Revisions

### How To Flash The BIOS?

What you should know before you flash the BIOS.

**PcChips** makes no warranties to the usability of any BIOS on our Web Site, FTP Site, or BBS and all bios upgrades are made available to the public on an "as-is" basis. Upgrading a BIOS without knowing the implications may cause serious adverse effects. Please do not upgrade a BIOS unless directed to do so by a qualified support technician. **PcChips** is not able to replace mis-used or damaged BIOS chips in the event of a BIOS flash failure. Please contact your dealer for replacements or warranty service

#### Step 1:

Never flash a BIOS while in Windows, when using Windows 95 or from a Windows 95 Dos session (AKA: Windows 95 Dos 7). Always flash from a clean dos 6.xx bootable disk without an autoexec.bat or config.sys file. To make a boot disk, please refer to your MS-DOS reference manual or hit the "F5" key when the message "Starting MS-DOS..." appears.

#### Step 2:

Download the new Award BIOS (\*.BIN) or the new AMI BIOS (\*.ROM) from the bios section of the website. Flash the BIOS with the Award/AMI flash utility from a clean MS DOS boot disk.

Flashing from Windows 95, a Windows 95 Dos (a.k.a.: DOS 7.0) session, or from inside Windows NT will cause problems. Flash ONLY from a clean MS-DOS boot diskette with no memory managers or drivers loaded.

#### Step 3:

At the command prompt, type the following (for AWARD BIOSs)

```
A:\ awdflash <filename.bin>  
      where the filename.bin is the BIOS file (i.e. 7200814s.bin)
```

or type the following if flashing an AMI BIOS

```
A:\ amiflash <filename.rom>  
      where the filename.rom is the BIOS file (i.e. 7200814s.rom)
```

**Note – For help with flash parm type in the following**

```
A:\<flash name> /?
```

then follow the on-screen prompts to complete the procedure. **After a successful flash, power down the system and clear the CMOS with the appropriate jumper** (Please refer to your manual for the proper jumper. Keep the jumper shorted for 5-10 seconds then remove the jumper and power the system on. This will clear any extraneous data which may have been kept from the previous version of the BIOS.

**Step 4:**

Setup your drive types and make sure that the BIOS settings are correct. If you need further assistance contact your dealer, visit the board manufacturer web page, the Award BIOS web site (www.award.com) or AMI Bios web site (www.megatrends.com) for more detailed information.

**Sample AMI/AWARD Flash Programs**

Flash EPROM Programming Utility  
 Copyright (C)1992-1997 American Megatrends Inc. Ver.6.34

=====

Usage: AMIFLASH ROM\_file\_name /<parameter1> /<parameter2> /<parameter.....>  
 Example: AMIFLASH AMIBIOS.ROM /A --> AUTO Detect/Programming Flash ROM

=====

<Parameter Lists>

- ?|H|h : Help
  - A|a : Auto Detect&Programming Flash ROM AND [Reboot]
  - B : Force Boot Block Programming
  - b : Do not program Boot Block
  - C|c : Do not clear CMOS, default is yes
  - I|i : Identification BIOS file is right for this system or not
  - L|l : Lists of all parts that is supported
  - P|p : Auto Detect&Programming Flash ROM
  - Q|q : Break utility after save BIOS function done
  - S|s : System halt after programming done
  - O|o : Flash function calls from BIOS file and then Restart utility
- F|f:[Filename] : If filename presented then save BIOS function can be enabled and implement immediately else disabled
- Sample: A. Save BIOS function Disabled  
 AMIFLASH /F  
 B. Save ROM data to "AMIBIOS.ROM"  
 AMIFLASH /F:AMIBIOS.ROM  
 C. Save ROM data to "AMIBIOS.ROM" and Quit utility  
 AMIFLASH /F:AMIBIOS.ROM /Q

<Priority> I > O > A > S > P

|  |
|--|
| FLASH MEMORY WRITER V6.24<br>(C)Award Software 1998 All Rights Reserved  |
| AWDFLASH [(FLASH)[PATH][FILENAME]] [/Py,Pn]  |
| [(SAVE)[PATH][FILENAME]] [/Sy,Sn]<br>[(CLEAR CMOS)/[CC]] [(CLEAR PnP)/[CP]]<br>[(CLEAR DMI)/[CD]] [/?]   |
| [Py/Pn] PROGRAM BIOS ANSWER Y or N.<br>[Sy/Sn] SAVE OLDBIOS ANSWER Y or N.<br>[/?] FOR HELP !<br>EXAMPLE 1 : AWDFLASH NEWBIOS /Py SAVEBIOS /Sy<br>EXAMPLE 2 : AWDFLASH NEWBIOS SAVEBIOS /CC<br>EXAMPLE 3 : AWDFLASH NEWBIOS /Sn /CP /CD<br>EXAMPLE 4 : AWDFLASH /Pn SAVEBIOS |
| Error Message:   |

## Bios Revisions

### Release BIOS

File name : 990401S.rom  
Check Sum : **9A40H**  
Release Date : 04/01/1999 S  
ECN : SNG-990045  
Fix List:

### Release BIOS

File name : 990316S.rom  
Check Sum : **9C2DH**  
Release date :03/161999  
ECN :  
Fix List

1. Fix CPU L2 Cache Fail.

### Release BIOS

File name : 990303S.rom  
CheckSun : **4A8DH**  
Release Date : 03/03/1999 S  
ECN :SNG-99XXXX  
Fix List:

1. Support CPU Table To 533Mhz

### Release BIOS

File name : 0814S.rom  
Check Sum : **8A0E**  
Release Date : 08/14/1998 S  
ECN : SNG-98XXXX  
Fix List:

1. fix 0728S.rom file run 2 CPU on winnt fail.

### Release BIOS

File name : 0728S.rom  
Check Sum : **1DD2**  
Release Date : 07/28/1998 S  
ECN : SNG-98XXXX  
Fix List:

1. Support Celeron 300A/333 MHz (128K L2 Cache)

### Release BIOS

File name : 0701s.bin  
Check Sum : **8D3D**  
Release Date : 07/018/1998 S  
ECN :?  
Fix List:

### Release BIOS

File name : 0619S.rom  
Check Sum : **C613**  
Release Date : 06/19/1998 S  
ECN : SNG-98XXXX  
Fix List:

1. System hang after entering standby mode.
2. Support new PIIX4 version (82371 EB).

Release BIOS

File name : 0512S.ROM  
Check Sum : **D7E8**  
Release Date : 05/12/1998  
ECN : SNG-9800XX  
Fix list

1. Change CPU Show message "Deschutes" to "Pentium II"

Release BIOS

File name : 0423S.rom  
Check Sum : **10F4**  
Release Date : 04/23/1998  
ECN : SNG-9800XX  
Fix list:

1. support Celeron CPU

Release BIOS

File name : 0324s.rom  
Check Sum : **D357**  
Release date : 03/24/1998  
ECN  
Fix list:

- 1 COM 2 mouse PM Monitor function fail
- 2 sometime Boot fail (hang debug code A9H)

Release BIOS

File name : 0313S.rom  
Check Sum : **8C47**  
Release Date : 03/13/1998  
ECN  
Fix list:

- 1 fix Trend ChipAway Function Fail
- 2 Fix PS2 Mouse option Not Auto Release IRQ 12

Release BIOS

File name : 0306S.rom  
Check Sum : **3306**  
Release Date : 03/06/'98  
ECN  
Fix List:

- 1 V3000 AGP CARD install windows 95 Driver fail
- 2 Floppy Drive Swap Fail

Release BIOS

File name : 0303S.rom  
Check Sum : **1COE**  
Release Date : 03/03/'98  
M720 V1.2 BIOS

**Bios Revision Notes**

- 1 M720 uses 4k flash ROM
- 2 Always run a check sum program against the downloaded file.
- 3 Flash ROM Voltage and Block Size

| Brand                | Voltage | Block Size | Bios File      |
|----------------------|---------|------------|----------------|
| intel 28F001 BX-T120 | 12 V    | 4 K        | (xxxxxxx)s.bin |
| MX28F1000PL          | 12 V    | 16 K       | (xxxxxxx)l.bin |
| MX28F1000PC          | 12 V    | 16 K       | (xxxxxxx)l.bin |
| MX28F1000PPC         | 12 V    | 16 K       | (xxxxxxx)l.bin |
| SST 29EE010          | 12 V    | 4 K        | (xxxxxxx)s.bin |
| Winbond 29EE011      | 12 V    | 4 K        | (xxxxxxx)s.bin |
| ATMEL 29C010         | 12 V    | 4 K        | (xxxxxxx)s.bin |

## Chapter 5 AMIBIOS Beep Codes

Except for beep code #8, these codes are always fatal.

| BEEP/S | ERROR   |
|--------|---|
| 1      | No error – normal return from POST (Power On Self Test) |
| 2      | Parity error  |
| 3      | Base 64K memory failure                                 |
| 4      | Timer not operational                                   |
| 5      | Processor error   |
| 6      | 8042 - gate A20 failure                                 |
| 7      | Processor exception interrupt error                     |
| 8      | Display memory read/write failure                       |
| 9      | ROM checksum error                                      |
| 10     | CMOS shutdown register read/write error                 |
| 11     | Cache memory bad  |

For 2 beeps, or 3 beeps try reseating the memory first. If the error still occurs, replace the memory with known good chips.

For 4 beeps, 5 beeps, 7 beeps, or 10 beeps the system board must be sent in for repair.

For 6 beeps try reseating the keyboard controller chip. If the error still occurs, replace the keyboard chip. If the error persists, check parts of the system relating to the keyboard, e.g. try another keyboard, check to see if the system has a keyboard fuse.

8 beeps indicates a memory error on the video adapter. Replace the video card or the memory on the video card.

9 beeps indicates faulty BIOS chip(s). It is not likely that this error can be corrected by reseating the chips. Consult the motherboard supplier or an AMI product distributor for replacement part(s).

If no beeps are heard and no display is on the screen, The first thing to check is the power supply. Connect a LED to the POWER LED connection on the motherboard. If this LED lights and the drive(s) spin up then the power supply will usually be good.

Next, inspect the motherboard for loose components. A loose or missing CPU, BIOS chip, Crystal Oscillator, or Chipset chip will cause the motherboard not to function.

Next, eliminate the possibility of interference by a bad or improperly set up I/O card by removing all card except the video adapter. The system should at least power up and wait for a drive time-out. Insert the cards back into the system one at a time until the problem happens again. When the system does nothing, the problem will be with the last expansion card that was put in.

If the above suggestions fail to cause any change in the disfunction of the system, the motherboard must be returned for repair.

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## Chapter 6 Hardware Compatibility Test Report

Configuration:

CPU : Intel Pentium II 300  
 BIOS : 03 / 03 / 98  
 VGA : SiS 6326 AGP  
 CD-ROM : VEUGO 620A  
 DRAM : SDRAM Fujitus 81117822A-100 32M  
 HDD : Seagate ST32532A  
 Sound card : ESS 1868

### 1.Cpu

| Brand | Model              | Result | Note |
|-------|--------------------|--------|------|
| Intel | Pentium II 300 MMX | OK.    |      |
|       | Pentium II 233 MMX | OK     |      |

Test Procedure:

Install Windows95

### 2.DRAM

| Type       | Brand   | Chip            | Total | Result | Note |
|------------|---------|-----------------|-------|--------|------|
| SDRAM DIMM | NEC     | D4516821G5      | 32M   | OK     |      |
|            | HATACHI | HM5216805TT10   | 32M   | OK     |      |
|            | FUJITUS | 81117822E-100NF | 32M   | OK     |      |
|            | SEC     | KM48S2020BT     | 64M   | OK     |      |
|            | NEC     | D4564841G5      | 128M  | OK     |      |
| EDO DIMM   | NEC     | 4218165-60      | 32M   | OK     |      |
|            | LGS     | GM71VS18163     | 32M   | OK     |      |

Test procedure:

Perform Winstone97

### 3.HDD

| Interface | Model                   | Size   | Result | Note      |
|-----------|-------------------------|--------|--------|-----------|
| IDE       | Quantum Fireball 1280A  | 1.2GB  | OK     |           |
|           | Quantum Fireball 1620AT | 1.6GB  | OK     | Ultra DMA |
|           | Quantum Bigfoot         | 2.5GB  | OK     |           |
|           | Quantum Bigfoot         | 4.3GB  | OK     |           |
|           | Seagate ST31276A        | 1.27GB | OK     |           |
|           | Seagate ST32532A        | 2.5GB  | OK     | Ultra DMA |
|           | Fujitus 3035AT          | 3.5GB  | OK     | Ultra DMA |
|           | MAXTOR 82160D2          | 2.1GB  | OK     | Ultra DMA |
| SCSI      | IBM DCAS-34330          | 3.6GB  | OK     |           |
|           | Seagate ST32272N        | 2.1GB  | OK-    |           |

Test Procedure:

1. Check the device compatibility
2. Read – write the file ( upper 1MB )
3. IF ultra DMA then test under win95

**4.CD-ROM**

| Interface | Model            | Speed | Result | Note |
|-----------|------------------|-------|--------|------|
| IDE       | HITACHI CDR-8130 | 8X    | OK     |      |
|           | VEUGO 620A       | 20X   | OK     |      |
|           | PHILIPS          | 24X   | OK     |      |
|           | Panasonic CR-584 | 12X   | OK     |      |
|           | Acer 620A-102    | 20X   | OK     |      |
|           | Pioneer DR-A24X  | 24X   | OK     |      |

Test Procedure:

1. Install driver under dos and read the file ( upper 1MB )
2. Play Xing under Windows95

**5.Display**

| Type | Interface | Model                         | Memory | Result | Note |
|------|-----------|-------------------------------|--------|--------|------|
| VGA  | PCI       | S3 Trio64+ 86C765             | 1M     | OK     |      |
|      |           | S3 Trio64 V2/DX 86C775        | 1M     | OK     |      |
|      |           | S3 ViRGE 86C325               | 1M     | OK     |      |
|      |           | SIS 6326                      | 2M     | OK     |      |
|      |           | MX 86251 3D FX                | 6M     | OK     |      |
|      |           | Trident 9865                  | 1M     | OK     |      |
|      |           | Cirrus Logic 5464             | 2M     | OK     |      |
|      |           | Cirrus Logic 5446             | 1M     | OK     |      |
|      | AGP       | Trident 3DImage 9750          | 4M     | OK     |      |
|      |           | SGS-THOMSON RIVA 128          | 4M     | OK     |      |
|      |           | SIS 6326                      | 4M     | OK     |      |
|      |           | ATI 3D RAGE PRO               | 4M     | OK     |      |
|      |           | Maxtor MillenniumII PowerDesk | 4M     | OK     |      |
|      |           | ATI PERMEDIA 2                | 8M     | OK     |      |
|      |           | S3 VIRGE/GX2                  | 4M     | OK     |      |

Test Procedure:

1. Install driver under ( Win 31.Win95.WinNT.OS/2 )
2. Change solution
3. Play Xing under ( Win31.Win95 )

**6.Sound card**

| Model                 | Result | Note |
|-----------------------|--------|------|
| CREATIVE AWE64 GOLD   | OK     |      |
| CREATIVE SB16 NON PnP | OK     |      |
| CMI 8330              | OK     |      |
| ESS 1868 PnP          | OK     |      |
| ESS 1869 PnP          | OK     |      |
| ESS ES1489            | OK     | PCI  |
| S3 Sonic              | OK     | PCI  |

Test Procedure:

1. Install driver under ( DOS.Win31.Win95 )
2. Play Xing under ( Win31.Win95 ) & GAME under ( DOS.Win95 )

7. SCSI card

| Interface | Model              | Result | Note |
|-----------|--------------------|--------|------|
| PCI       | Adaptec AHA-2940   | OK     |      |
|           | Adaptec AHA-2940UW | OK     |      |
|           | Adaptec AHA-3940UW | OK     |      |
|           | DC-390F            | OK     |      |
|           | DC-390U            | OK     |      |
|           | NCR 53C810         | OK     |      |
| ISA       | Adaptec AHA-1522A  | OK     |      |

Test Procedure:

1. Check the device compatibility of HDD or CD-ROM under ( DOS. Win31.Win95 )
2. Read – write the file ( upper 1MB )

8.LAN card

| Interface | Model         | Result | Note |
|-----------|---------------|--------|------|
| ISA       | CN650E UM9008 | OK     |      |
|           | Intel FA82595 | OK     |      |
|           | 3Com 3C509B   | OK     |      |
|           |               |        |      |
|           | Intel S82557  | OK     |      |
|           | MX 8713       | OK     |      |
|           | AMD WS-E300   | OK     |      |
|           | 3Com 3C590C   | OK     |      |

Test Procedure:

1. Verify related network functions under ( DOS. Win31.Win95 )
2. Read – write the file ( upper 1MB )

9.USB device

| Type             | Model   | Result | Note |
|------------------|---------|--------|------|
| Kodak Camera     | DC300   | OK     |      |
| Chicony keyboard | KU-8933 | OK     |      |
|                  |         |        |      |

Test Procedure:

Verify related USB functions

10.Other devices

| Type    | Model             | Result | Note               |
|---------|-------------------|--------|--------------------|
| Printer | HP DJ-670C        | OK     |                    |
| Modem   | DynaLink V1433VQE | OK     | External           |
|         | GVC F1128-v2      | OK     |                    |
|         | ZYXEL Elite 2864  | OK     |                    |
|         | FM-8818           | OK     | Internal           |
| Floppy  | Iomega ZIP Z100   | OK     | Internal IDE 100MB |
|         | LS-120 Fd-3120A   | OK     | Internal IDE 120MB |

|       |                       |    |       |
|-------|-----------------------|----|-------|
|       | NEC FD1231H           | OK | 1.44M |
| Mouse | Logitech serial mouse | OK |       |
|       | Logitech PS2 mouse    | OK |       |
|       |                       |    |       |
|       | HDD-LED               | OK |       |
|       | Power LED             | OK |       |
|       | FAN power             | OK |       |
|       | Speaker               | OK |       |
|       | Power button          | OK |       |
|       | Reset button          | OK |       |

## Chapter 7 Software Compatibility Test Report

**Model: M720V1.2**  
**03/11/98**

**Date:**

| Item       | Oss / Test Utilities / Applications | Result | Note   |
|------------|-------------------------------------|--------|--|
| <b>1</b>   | <b>OS SETUP</b>                     |        | <b>hardware configuration refer Appendix A</b> |
| 1-1        | MS-DOS 6.22                         | OK     |  |
| 1-2        | Cwindows 3.1                        | OK     |  |
| 1-3        | Windows 95 OSR2                     | OK     |  |
| 1-4        | CWindows 95 OSR2                    | OK     |  |
| 1-5        | CWindows NT 4.0 server              | OK     |  |
| 1-6        | CWindows NT 4.0 workstation         | OK     |  |
| 1-7        | OS2 4.0                             | OK     |  |
|            |                                     |        |  |
| <b>2</b>   | <b>Test Utilities</b>               |        | <b>hardware configuration refer Appendix B</b> |
| 2-1        | QAPLUS 5.40 for DOS                 | OK     |  |
| 2-2        | QAPLAS 6.0 for Windows              | OK     |  |
| 2-3        | Check It 3.0                        | OK     |  |
| 2-4        | Norton Utility 8.0                  | OK     |  |
| 2-5        | AMIDIAG 5.4                         | OK     |  |
|            |                                     |        |  |
| <b>3</b>   | <b>Applications</b>                 |        | <b>Hardware configuration refer Appendix B</b> |
| <b>3-1</b> | <b>DOS</b>                          |        |  |
| 3-1-1      | HIMEM.SYS                           | OK     |  |
| 3-1-2      | EMM386.EXE                          | OK     |  |
| 3-1-3      | RAMDRIVE.SYS                        | OK     |  |
| 3-1-4      | MS-Mouse Ver 8.20                   | OK     |  |
| 3-1-5      | FORMAT.COM                          | OK     |  |
| 3-1-6      | SMARTDRV.EXE                        | OK     |  |
| 3-1-7      | MEMMAKER.EXE                        | OK     |  |
| 3-1-8      | DEFRAG.EXE                          | OK     |  |

|            |                             |    |  |
|------------|-----------------------------|----|--|
| 3-1-9      | SCANDISK.EXE                | OK |  |
| 3-1-10     | DOSKEY.COM                  | OK |  |
| 3-1-11     | FDISK.EXE                   | OK |  |
| 3-1-12     | McAfee Virus Scan           | OK |  |
| 3-1-13     | PE3                         | OK |  |
| 3-1-14     | Norton Utilities 8.0        | OK |  |
| 3-1-15     | DOOM II                     | OK |  |
|            |                             |    |  |
| <b>3-2</b> | <b>Windows</b>              |    |  |
| 3-2-1      | Winzip                      | OK |  |
| 3-2-2      | Winarj                      | OK |  |
| 3-2-3      | Win Probe 5.0               | OK |  |
| 3-2-4      | Ms Money 5.0                | OK |  |
| 3-2-5      | Ms Office 97                | OK |  |
| 3-2-6      | Ms Publisher for Win 95     | OK |  |
| 3-2-7      | Megaram 97                  | OK |  |
| 3-2-8      | Page maker 6.5              | OK |  |
| 3-2-9      | Xing 3.12                   | OK |  |
| 3-2-10     | Visio 4.1                   | OK |  |
| 3-2-11     | After Dark 4.0              | OK |  |
| 3-2-12     | AutoCAD r13c4               | OK |  |
| 3-2-13     | Delphi 3.0                  | OK |  |
| 3-2-14     | Pc-cillin 97                | OK |  |
| 3-2-15     | McAfee Virus Scan for Win95 | OK |  |
|            |                             |    |  |
| <b>3-3</b> | <b>Utility Test</b>         |    |  |
| 3-3-1      | Nu 8.0 System Information   | OK |  |
| 3-3-2      | Speed 2.0                   | OK |  |
| 3-3-3      | Speed 30                    | OK |  |
| 3-3-4      | Speedy                      | OK |  |
| 3-3-5      | Winstone 97                 | OK |  |
|            |                             |    |  |

|            |                            |    |  |
|------------|----------------------------|----|--|
| <b>3-4</b> | <b>Green Function Test</b> |    |  |
| 3-4-1      | Hardware Green Function    | OK |  |
| 3-4-2      | Windows 95 Green Function  | OK |  |
|            |                            |    |  |
| <b>4</b>   | <b>Performance</b>         |    | <b>Detail information refer<br/>Appendix C</b> |

## Appendix A – Hardware Configuration for Tested OS's

The hardware configuration list for installed OSs

1. The list of the OSs

|                             |
|-----------------------------|
| MS-DOS 6.22                 |
| Cwindows 3.1                |
| Windows 95 OSR2             |
| CWindows 95 OSR2            |
| CWindows NT 4.0 sever       |
| CWindows NT 4.0 workstation |
| OS2 4.0                     |

2. Configuration list

|               |   |
|---------------|---|
| Configuration | 1 , 2 , 3 , 4   |
| DRAM          | EDO NEC 4218165-60 32MB<br>SDRAM SEC KM48S2020BT 32MB |
| BIOS          | AMI 03/03/98  |
| VGA           | SIS 6326 AGP 4MB                                      |
| FDD           | NEC 1.44 MB FD1231H                                   |
| HDD           | Seagate ST31276A 1.2G                                 |
| CDROM         | HITACHI CDR-8130                                      |

|                 | CPU type       | DRAM type |
|-----------------|----------------|-----------|
| Configuration 1 | Pentium II 233 | EDO DRAM  |
| Configuration 2 |                | SDRAM     |
| Configuration 3 | Pentium II 300 | EDO DRAM  |
| Configuration 4 |                | SDRAM     |

## Appendix B – Hardware Configuration for Tested App’s

The hardware configuration list for Application

|               |   |
|---------------|---|
| Configuration |   |
| DRAM          | EDO NEC 4218165-60 32MB<br>SDRAM Fujitus 81117822E-100 32MB |
| BIOS          | AMI 03/03/98  |
| VGA           | SIS 6326 AGP 4MB  |
| FDD           | NEC 1.44 MB FD1231H   |
| HDD           | Quantum FireBall ST 1620AT                                  |
| CDROM         | Philips 24X   |

|                 | CPU type       | DRAM type |
|-----------------|----------------|-----------|
| Configuration 1 | Pentium II 233 | EDO DRAM  |
| Configuration 2 |                | SDRAM     |
| Configuration 3 | Pentium II 300 | EDO DRAM  |
| Configuration 4 |                | SDRAM     |

## Appendix C – Performance Test Results

Performance result Resolution 800 x 600 x 256 small font

Configuration BIOS : AMI 03/03/98  
 DRAM : EDO NEC 4218165-60 32MB  
 SDRAM SEC KM48S2020BT 32MB  
 HDD : Seagate ST31276A 1.2GB  
 VGA : SIS 6326 AGP

| CPU type             | Pentium II 233 |          | Pentium II 300 |          |
|----------------------|----------------|----------|----------------|----------|
|                      | SDRAM          | EDO      | SDRAM          | EDO      |
| Land Mark 2.0        |                |          |                |          |
| CPU                  | 1476.21        | 1476.21  | 1898.00        | 1898.00  |
| FPU                  | 4182.96        | 4182.96  | 5378.16        | 5378.16  |
| Video                | 14894.00       | 1489.00  | 14994.00       | 14994.00 |
| NU8                  |                |          |                |          |
| CPU Information      | 585.0          | 585.1    | 752.2          | 752.2    |
| Land Mark SPEED 3.0  |                |          |                |          |
| CPU                  | 7256.93        | 7264.82  | 9451.68        | 9338.48  |
| FPU                  | 4178.65        | 4178.83  | 5373.53        | 5371.62  |
| Video                | 20607.18       | 20431.68 | 24731.89       | 9218.51  |
| Land Mark            | 10631.54       | 10585.92 | 13234.86       | 8737.51  |
| SPEEDY 1.1           |                |          |                |          |
| Speed Mark           | 394.07         | 397.03   | 501.64         | 501.62   |
| Winstone 97          |                |          |                |          |
| Business Winstone 97 | 47.6           | 47.2     | 51.9           | 51.5     |
| High-End Winstone 97 | 22.6           | 22.4     | 25.3           | 24.9     |
| Xing                 |                |          |                |          |
| Original screen      | 74.9           | 69.6     | 76.7           | 73.2     |
| full screen          | 73.5           | 76.1     | 75.9           | 72.5     |