MX36/MX36L

Online Manual

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Before You Start

This Online Manual will introduce to the user how this product is installed. All useful information will be described in later chapters. Please keep this manual carefully for future upgrades or system configuration changes. This Online Manual is saved in PDF format, we recommend using Adobe Acrobat Reader 4.0 for online viewing, it is included in Bonus CD disc or you can get free download from Adobe web site.

Although this Online Manual is optimized for screen viewing, it is still capable for hardcopy printing, you can print it by A4 paper size and set 2 pages per A4 sheet on your printer. To do so, choose File > Page Setup and follow the instruction of your printer driver.

Thanks for the help of saving our earth.
Thank you for choosing AOpen MX36/MX36L. The MX36/MX36L is Intel® Socket 370 motherboard (M/B) based on the Micro ATX form factor featuring the VIA Apollo PM133/PL133 chipset. As high performance chipset built in the M/B, the MX36/MX36L can support Intel® Socket 370 series Pentium III™ & Celeron™ processor and 133MHz Front Side bus (FSB). In the AGP performance, it has one AGP slot (MX36 only) and supports AGP 1X/2X/4X mode and pipelined split-transaction long burst transfer up to 1066MB/sec. According to different customer’s requirements, SDRAM, VCM (Virtual Channel Memory) and ECC Registered DRAM can be applied to the MX36/MX36L and the maximum memory size can be up to 512MB. The on-board IDE controller supports Ultra DMA 33/66 mode and the transfer rate up to 66MB/s. Besides, the on-board AC97 CODEC chip with provides high performance and magic surround stereo sound to let people enjoy working with MX36/MX36L. Now, enjoy all features from AOpen MX36/MX36L.
**Feature Highlight**

**CPU**

Supports Intel® Socket 370 Pentium III® & Celeron® 300MHz~1GHz+ with 66/100/133MHz Front Side Bus designed for Socket 370 technology.

**Chipset**

The VIA Apollo PM133/PL133 is a high performance, cost-effective and energy efficient chipset for the implementation of computer system with 66/100/133MHz CPU FSB frequencies and based on 64-bit Socket 370 CPU. The VIA Apollo PM133/PL133 integrates VIA’s VT82C694X system controller and S3’s Savage4 2D/3D graphic accelerator into a single 552 BGA package. The VIA Apollo PM133/PL133 provides superior performance between the CPU, DRAM, AGP bus and PCI bus.

**Expansion Slots**

Including two 32-bit/33MHz, one AMR and one AGP 4X (MX36 only) slots. The PCI local bus throughput can be up to 132MB/s. The AMR (Audio/Modem Riser) slot provided from MX36/MX36L can support AMR interface for a Modem card.
Memory

The MX36/MX36L supports standard SDRAM and VCM, in a flexible mix/match manner. The SDRAM interface allows zero wait state bursting between the DRAM and the data buffers at 66/100/133MHz. The four banks of can be composed of an arbitrary mixture of 1M/2M/4M/8M/16MxN DRAMs. The DRAM controller can run at either the host CPU bus frequency (66/100/133MHz) or pseudo-synchronous to the CPU bus frequency with built-in PLL timing control.

Onboard S3 Savage4 Graphic Accelerator

The MX36/MX36L has an onboard VGA function, which provides full AGP 2.0 capability for maximum bus utilization including 1X2X/4X mode transfers, SBA (Side Band Addressing), Flush/Fence commands, and pipelined grants. The AGP 4X specification provides a new level of video display sophistication and speed. The AGP 4X video cards support data transfer rates up to 1066MB/s.
Ultra DMA 33/66 Bus Mater IDE

Comes with an on-board PCI Bus Master IDE controller with two connectors that supports four IDE devices in two channels, supports Ultra DMA 33/66, PIO Modes 3 and 4 and Bus Master IDE DMA Mode 4, and supports Enhanced IDE devices.

On-board AC97 Sound

MX36/MX36L uses the AD1885 AC97 sound chip. This on-board audio includes a complete audio recording and playback system.

Power Management/Plug and Play

The MX36/MX36L supports the power management function that confirms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. It also offers Plug-and-Play, which helps save users from configuration problems, thus making to system user-friendlier.

Hardware Monitoring Management

Supports CPU or system fans status, temperature and voltage monitoring and alert, through the on-board hardware monitor module and Aopen Hardware Monitoring Utility.
Enhanced ACPI

Fully implement the ACPI standard for Windows® 95/98/ME/NT/2000 series compatibility, and supports Soft-Off, STR (Suspend to RAM, S3), STD (Suspend to Disk, S4), WOM (Wake On Modem), WOL (Wake On LAN) features.

Super Multi-I/O

The MX36/MX36L provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. UART2 can also be directed from COM2 to the Infrared Module for the wireless connections.
Quick Installation Procedure

This page gives you a quick procedure on how to install your system. Follow each step accordingly.

1 Installing CPU and Fan
2 Installing System Memory (DIMM)
3 Connecting Front Panel Cable
4 Connecting IDE and Floppy Cable
5 Connecting ATX Power Cable
6 Connecting Back Panel Cable
7 Power-on and Load BIOS Setup Default
8 Setting CPU Frequency
9 Reboot
10 Installing Operating System (such as Windows 98)
11 Installing Driver and Utility
### Overview

**Motherboard Map**

- **Onboard AC’97 Sound**
- **WOL (Wake On LAN) Connector**
- **AUX-IN (White), TAD-IN (Green), CD-IN (Black) Connector**
- **AMR Slot**
- **Support 2\(^{nd}\) USB Port**
- **Chassis Fan Connector**
- **IrDA Connector**
- **COM2 Port Connector**
- **2Mbit Flash EEPROM BIOS**
  - with Virus Protection
- **32-bit PCI Slot x2**
- **CMOS Clear Jumper**
- **Front Panel Connector**
- **FDD Connector**
- **PC99 Colored Back Connector**
- **ATX Power Connector**
- **CPU Fan 1 Connector**
- **Low ESR Condensers**
- **4X AGP Slot (MX36 only)**
- **VIA Apollo PM133/PL133 (MX36/MX36L) Chipset with S3 Savage4 VGA Controller**
- **CPU Fan 2 Connector**
- **PC-100/133 DIMM Socket x2**
- **IrDA Connector**
- **Support 2\(^{nd}\) USB Port**
- **CPU FSB Frequency Select Jumper**
- **ATA 33/66 IDE Connector x2**
- **2Mbit Flash EEPROM BIOS**
  - with Virus Protection
**Overview**

**North Bridge**
- VIA PM133/PL133
- With S3 Savage4 Graphic Accelerator
- Socket 370 Intel Pentium III/Celeron CPU
- 66/100/133MHz FSB
- DIMM Socket x2
- AGP 4X Slot (MX36 Only)

**South Bridge**
- VIA VT82C686A
- Serial Ports
- USB Port x4
- 32-bit PCI Slot x2
- IDE Drive x4
- Ultra ATA 33/66
- PC-100/133 SDRAM/VCM Up to 512MB
- Primary Channel
- Secondary Channel
- 2MBit Flash EEPROM
- AC'97 Link
- Audio CODEC
- Modem CODEC
- Parallels Port
- Monitor

**Block Diagram**
(This page left blank intentionally for notes)
Hardware Installation

This chapter describes jumpers, connectors and hardware devices of this motherboard.

**Note:** Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component.

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist ground strap and attach it to a metal part of the system unit before handling a component. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.
Clear CMOS Data

You can clear CMOS to restore system default setting. To clear the CMOS, follow the procedure below.

1. Turn off the system and unplug the AC power.
2. Remove ATX power cable from connector PWR2.
3. Locate JP14 and short pins 2-3 for a few seconds.
4. Return JP14 to its normal setting by shorting pins 1 & pin2.
5. Connect ATX power cable back to connector PWR2.

Tip: When should I Clear CMOS?
1. Boot fail because of overclocking…
2. Forget password…
3. Troubleshooting…
CPU Installation

This motherboard supports AMD Athlon & Duron Socket 462 CPU. Be careful of CPU orientation.

1. Pull up the CPU socket level and up to 90-degree angle.
2. Locate Pin 1 in the socket and look for a black dot or cut edge on the CPU upper interface. Match Pin 1 and cut edge. Then insert the CPU into the socket.
3. Press down the CPU socket level and finish CPU installation.

**Note:** If you do not match the CPU socket Pin 1 and CPU cut edge well, it may damage the CPU.
Adjust FSB/PCI Clock

This jumper is used to specify the relationship of PCI and FSB clock. Generally speaking, if you are not an overclocker, we recommend you to set at the default setting.

FSB=66MHz  FSB=100MHz  FSB=133MHz  Auto Detection (Default)

JP1 FSB Select Jumper
PCI Clock = CPU FSB Clock / Clock Ratio

**AGP Clock = PCI Clock x 2**

<table>
<thead>
<tr>
<th>Clock Ratio</th>
<th>CPU (Host)</th>
<th>PCI</th>
<th>AGP</th>
<th>Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>2X</td>
<td>66</td>
<td>33</td>
<td>66</td>
<td>PCI x2 or x3</td>
</tr>
<tr>
<td>2X (Overclocking)</td>
<td>75</td>
<td>37.5</td>
<td>75</td>
<td>PCI x2 or x3</td>
</tr>
<tr>
<td>3X</td>
<td>100</td>
<td>33</td>
<td>66</td>
<td>PCI x2 or x3 or x4</td>
</tr>
<tr>
<td>3X (Overclocking)</td>
<td>112</td>
<td>37.3</td>
<td>75</td>
<td>PCI x2 or x3 or x4</td>
</tr>
<tr>
<td>4X</td>
<td>133</td>
<td>33</td>
<td>66</td>
<td>PCI x3 or x4</td>
</tr>
</tbody>
</table>

**Warning:** VIA 694X chipset supports maximum 133MHz FSB and 66MHz AGP clock, higher clock setting may cause serious system damage.
## Supported CPU Frequency

Core Frequency = CPU Bus Clock * CPU Ratio

Core Frequency = CPU FSB Clock * CPU Ratio

<table>
<thead>
<tr>
<th>CPU</th>
<th>CPU Core Frequency</th>
<th>FSB Clock</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celeron 300A</td>
<td>300MHz</td>
<td>66MHz</td>
<td>4.5x</td>
</tr>
<tr>
<td>Celeron 366</td>
<td>366MHz</td>
<td>66MHz</td>
<td>5.5x</td>
</tr>
<tr>
<td>Celeron 366</td>
<td>366MHz</td>
<td>66MHz</td>
<td>5.5x</td>
</tr>
<tr>
<td>Celeron 400</td>
<td>400MHz</td>
<td>66MHz</td>
<td>6x</td>
</tr>
<tr>
<td>Celeron 433</td>
<td>433MHz</td>
<td>66MHz</td>
<td>6.5</td>
</tr>
<tr>
<td>Celeron 466</td>
<td>466MHz</td>
<td>66MHz</td>
<td>7x</td>
</tr>
<tr>
<td>Celeron 500</td>
<td>500MHz</td>
<td>66MHz</td>
<td>7.5x</td>
</tr>
<tr>
<td>Celeron 533</td>
<td>533MHz</td>
<td>66MHz</td>
<td>8x</td>
</tr>
<tr>
<td>Celeron 566</td>
<td>566MHz</td>
<td>66MHz</td>
<td>8.5x</td>
</tr>
<tr>
<td>Celeron 600</td>
<td>600MHz</td>
<td>66MHz</td>
<td>9x</td>
</tr>
</tbody>
</table>

**Tip:** If your system hangs or fails to boot because of overclocking, simply use `<Home>` key to restore the default setting.
<table>
<thead>
<tr>
<th>Processor</th>
<th>Frequency</th>
<th>FSB</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pentium III 600E</td>
<td>600MHz</td>
<td>100MHz</td>
<td>6x</td>
</tr>
<tr>
<td>Pentium III 650E</td>
<td>650MHz</td>
<td>100MHz</td>
<td>6.5x</td>
</tr>
<tr>
<td>Pentium III 700E</td>
<td>700MHz</td>
<td>100MHz</td>
<td>7x</td>
</tr>
<tr>
<td>Pentium III 750E</td>
<td>750MHz</td>
<td>100MHz</td>
<td>7.5</td>
</tr>
<tr>
<td>Pentium III 800E</td>
<td>800MHz</td>
<td>100MHz</td>
<td>8x</td>
</tr>
<tr>
<td>Pentium III 850E</td>
<td>850MHz</td>
<td>100MHz</td>
<td>8.5x</td>
</tr>
<tr>
<td>Pentium III 533EB</td>
<td>533MHz</td>
<td>133MHz</td>
<td>4x</td>
</tr>
<tr>
<td>Pentium III 600EB</td>
<td>600MHz</td>
<td>133MHz</td>
<td>4.5x</td>
</tr>
<tr>
<td>Pentium III 667EB</td>
<td>667MHz</td>
<td>133MHz</td>
<td>5x</td>
</tr>
<tr>
<td>Pentium III 733EB</td>
<td>733MHz</td>
<td>133MHz</td>
<td>5.5</td>
</tr>
<tr>
<td>Pentium III 800EB</td>
<td>800MHz</td>
<td>133MHz</td>
<td>6x</td>
</tr>
<tr>
<td>Pentium III 866EB</td>
<td>866MHz</td>
<td>133MHz</td>
<td>6.5</td>
</tr>
<tr>
<td>Pentium III 933EB</td>
<td>933MHz</td>
<td>133MHz</td>
<td>7x</td>
</tr>
</tbody>
</table>
**CPU Jumper-less Design**

CPU VID signal and SMbus clock generator provide CPU voltage auto-detection and allows the user to set the CPU frequency through the BIOS setup, therefore no jumpers or switches are used. The disadvantages of the Pentium based jumper-less designs are eliminated. There will be no worry of wrong CPU voltage detection.

![Diagram of CPU Jumper-less Design](image)

- **Intel Socket 370 Pentium III & Celeron CPU**
- **Clock Generator**
- **BIOS Controlled Circuit**
- **Power Regulator**

(Automatically generates CPU voltage)
Setting CPU Core Voltage

This motherboard supports CPU VID function. The CPU core voltage will be automatically detected and the range is from 1.3V to 3.5V. It is not necessary to set CPU Core Voltage.
CPU and Housing Fan Connector (With H/W Monitoring)

Plug in the CPU fan cable to the 3-pin FAN1 or FAN2 connector. If you have housing fan, you can also plug it on FAN3 connector.

Note: Some CPU fans do not have sensor pin, so that cannot support fan monitoring.
**DIMM Socket**

This motherboard has three 168-pin DIMM sockets that allow you to install PC100 or PC133 memory up to 1.5GB. The MX36/MX36L supports not only SDRAM but also VCM and PC-100 Registered DRAM.

---

**Tip:** The driving capability of new generation chipset is limited due to the lack of a memory buffer (to improve performance). This makes DRAM chip count an important factor to take into consideration when you install DIMMs. Unfortunately, there is no way that the BIOS can identify the correct chip count; you need to calculate the chip count by yourself. The simple rule is: **By visual inspection, use only DIMMs that are less than 16 chips.**
DIMM can be single side or double side; it has 64 bit data and 2 or 4 clock signals. We strongly recommend choosing 4-clock SDRAM for its reliability.

**Tip:** To identify 2-clock and 4-clock DIMM, you may check if there are traces connected to the golden finger pins 79 and 163 of the SDRAM. If there are traces, the SDRAM is probably 4-clock; otherwise, it is 2-clock.

**Tip:** To identify single-side or double-side DIMM, check golden finger pin 114 and pin 129. If there are traces connected to pin 114 and pin 129, the DIMM is probably double side; otherwise, it is single-side.
Attach the power LED, EMPI, speaker, power and reset switch connectors to the corresponding pins. If you enable “Suspend Mode” item in BIOS Setup, the ACPI & Power LED will keep flashing while the system is in suspend mode.

Locate the power switch cable from your ATX housing. It is 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked SPWR.
Attach the power LED, speaker, and reset switch connectors to the corresponding pins. If you enable **Power Management Setup > ACPI Suspend Type** in BIOS Setup, the ACPI & Power LED will keep flashing while the system is in suspend mode.

<table>
<thead>
<tr>
<th>Suspend Type</th>
<th>ACPI LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power on Suspend (S1)</td>
<td>Flashing for every second</td>
</tr>
<tr>
<td>Suspend to RAM (S3) or Suspend to Disk (S4)</td>
<td>The LED will be turned off</td>
</tr>
</tbody>
</table>

Locate the power switch cable from your ATX housing. It is 2-pin female connector from the housing front panel. Plug this connector to the soft-power switch connector marked **SPWR**.
ATX Power Connector

The ATX power supply uses 20-pin connector shown below. Make sure you plug in the right direction.
**AC Power Auto Recovery**

A traditional ATX system should remain at power off stage when AC power resumes from power failure. This design is inconvenient for a network server or workstation, without an UPS, that needs to keep power-on. This motherboard implements an AC Power Auto Recovery function to solve this problem.
**IDE and Floppy Connector**

Connect 34-pin floppy cable and 40-pin IDE cable to floppy connector FDC and IDE connector. The blue connector is IDE1 for clear identification. Be careful of the pin1 orientation. Wrong orientation may cause system damage.
IDE1 is also known as the primary channel and IDE2 as the secondary channel. Each channel supports two IDE devices that make a total of four devices. In order to work together, the two devices on each channel must be set differently to **Master** and **Slave** mode. Either one can be the hard disk or the CDROM. The setting as master or slave mode depends on the jumper on your IDE device, so please refer to your hard disk and CDROM manual accordingly.

**Warning:** The specification of the IDE cable is a maximum of 46cm (18 inches), make sure your cable does not exceed this length.

**Tip:** For better signal quality, it is recommended to set the far end side device to master mode and follow the suggested sequence to install your new device. Please refer to above diagram.
This motherboard supports ATA33 or ATA66 IDE devices. Following table lists the transfer rate of IDE PIO and DMA modes. The IDE bus is 16-bit, which means every transfer is two bytes.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Clock Period</th>
<th>Clock Count</th>
<th>Cycle Time</th>
<th>Data Transfer Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIO mode 0</td>
<td>30ns</td>
<td>20</td>
<td>600ns</td>
<td>((1/600\text{ns}) \times 2\text{byte} = 3.3\text{MB/s})</td>
</tr>
<tr>
<td>PIO mode 1</td>
<td>30ns</td>
<td>13</td>
<td>383ns</td>
<td>((1/383\text{ns}) \times 2\text{byte} = 5.2\text{MB/s})</td>
</tr>
<tr>
<td>PIO mode 2</td>
<td>30ns</td>
<td>8</td>
<td>240ns</td>
<td>((1/240\text{ns}) \times 2\text{byte} = 8.3\text{MB/s})</td>
</tr>
<tr>
<td>PIO mode 3</td>
<td>30ns</td>
<td>6</td>
<td>180ns</td>
<td>((1/180\text{ns}) \times 2\text{byte} = 11.1\text{MB/s})</td>
</tr>
<tr>
<td>PIO mode 4</td>
<td>30ns</td>
<td>4</td>
<td>120ns</td>
<td>((1/120\text{ns}) \times 2\text{byte} = 16.6\text{MB/s})</td>
</tr>
<tr>
<td>DMA mode 0</td>
<td>30ns</td>
<td>16</td>
<td>480ns</td>
<td>((1/480\text{ns}) \times 2\text{byte} = 4.16\text{MB/s})</td>
</tr>
<tr>
<td>DMA mode 1</td>
<td>30ns</td>
<td>5</td>
<td>150ns</td>
<td>((1/150\text{ns}) \times 2\text{byte} = 13.3\text{MB/s})</td>
</tr>
<tr>
<td>DMA mode 2</td>
<td>30ns</td>
<td>4</td>
<td>120ns</td>
<td>((1/120\text{ns}) \times 2\text{byte} = 16.6\text{MB/s})</td>
</tr>
<tr>
<td>UDMA 33</td>
<td>30ns</td>
<td>4</td>
<td>120ns</td>
<td>((1/120\text{ns}) \times 2\text{byte} \times 2 = 33\text{MB/s})</td>
</tr>
<tr>
<td>UDMA 66</td>
<td>30ns</td>
<td>2</td>
<td>60ns</td>
<td>((1/60\text{ns}) \times 2\text{byte} \times 2 = 66\text{MB/s})</td>
</tr>
<tr>
<td>UDMA100</td>
<td>20ns</td>
<td>2</td>
<td>40ns</td>
<td>((1/40\text{ns}) \times 2\text{byte} \times 2 = 100\text{MB/s})</td>
</tr>
</tbody>
</table>

**Tip:** To achieve the best performance of Ultra DMA 66/100 hard disks, a special 80-wires IDE cable for Ultra DMA 66/100 is required.
IrDA Connector

The IrDA connector can be configured to support wireless infrared module, with this module and application software such as Laplink or Windows 95 Direct Cable Connection, the user can transfer files to or from laptops, notebooks, PDA devices and printers. This connector supports HPSIR (115.2Kbps, 2 meters) and ASK-IR (56Kbps).

Install the infrared module onto the IrDA connector and enable the infrared function from BIOS Setup, UART2 Mode, make sure to have the correct orientation when you plug in the IrDA connector.
WOL (Wake on LAN)

This feature is very similar as Wake On Modem, but it goes through local area network. To use Wake On LAN function, you must have a network card with chipset that supports this feature, and connect a cable from LAN card to motherboard WOL connector. The system identification information (probably IP address) is stored on network card and because there is a lot of traffic on the Ethernet, you need to install network management software, such as ADM, for the checking of how to wake up the system. Note that, at least 600mA ATX standby current is required to support the LAN card for this function.
Hardware Installation

Ethernet Card

M/B

WOL Connector

Ethernet
The MX36 provides an AGP 4x slot. The AGP 4x is a bus interface targeted for high-performance 3D graphic. AGP supports only memory read/write operation and single-master single-slave one-to-one only. AGP uses both rising and falling edge of the 66MHz clock, for 2X AGP, the data transfer rate is 66MHz x 4bytes x 2 = 528MB/s. AGP is now moving to AGP 4x mode, 66MHz x 4bytes x 4 = 1056MB/s.
**AMR (Audio/Modem Riser)**

AMR is a riser card that supports sound or modem function. Because CPU computing power is getting stronger, the digital processing job can be implemented in main chipset and share CPU power. The analogical conversion (CODEC) circuit requires a different and separate circuit design, it is put on AMR card. This motherboard implements sound CODEC on board (can be disabled by JP12), but reserve AMR slot for the option of modem function. Note that you can still use PCI modem card.
PC99 Color Coded Back Panel

The onboard I/O devices are PS/2 Keyboard, PS/2 Mouse, serial ports COM1 and COM2, Printer, four USB, AC97 sound and game port. The view angle of drawing shown here is from the back panel of the housing.

- **Speaker Out:** To External Speaker, Earphone or Amplifier.
- **Line-In:** Comes from the signal sources, such as CD/Tape player.
- **MIC-In:** From Microphone.
- **Game Port:** For 15-pin PC joystick, game pad or MIDI devices.
**COM2 Connector**

This motherboard provides two serial ports. One of them are on back panel connector, the other is on the up-middle area of this motherboard. With proper cable, you can connect it to the backplane of chassis.
Support 2\textsuperscript{nd} USB Port

This motherboard supports four USB ports. Two of them are on back panel connector, the other two are on the left-bottom area of this motherboard. With proper cable, you can connect them to front panel.
**CD Audio Connector**

This *black* connector is used to connect CD Audio cable from CDROM or DVD drive to onboard sound.
Modem Audio Connector

This connector is used to connect Mono In/Mic Out cable from internal modem card to onboard sound circuit. The pin 1-2 is Mono In, and the pin 3-4 is Mic Out. Please note that there is no standard for this kind of connector yet, only some internal modem cards implement this connector.
Video-Audio-IN Connector

This white connector is used to connect MPEG Audio cable from MPEG card to onboard sound.
Front Panel Audio (Upgrade Optional)

If the housing has been designed with an audio port on the front panel, you'll be able to connect onboard audio to the front panel through this connector.
Battery-less and Long Life Design

This Motherboard implements Flash ROM and a special circuit that allows you to save your current CPU and CMOS Setup configurations without the need of a battery. The RTC (real time clock) can also keep running as long as the power cord is plugged. If you lose your CMOS data by accident, you can just reload the CMOS configurations from Flash ROM and the system will recover as usual.

Auto switching to ATX standby power as long as AC power line is plugged. This smart design increases battery life if you still plug battery on motherboard.
**Over-current Protection**

The Over Current Protection was very popular implemented on ATX 3.3V/5V/12V switching power supply. However, the new generation CPU uses different voltage that has regulator to transfer 5V to CPU voltage (for example, 2.0V), and makes 5V over current protection useless. This motherboard is with switching regulator onboard supports CPU over-current protection; in conjunction with 3.3V/5V/12V power supply provide the full line over-current protection.
Note: Although we have implemented protection circuit try to prevent any human operating mistake, there is still certain risk that CPU, memory, HDD, add-on cards installed on this motherboard may be damaged because of component failure, human operating error or unknown nature reason. AOpen cannot guaranty the protection circuit will always work perfectly.
This motherboard implements a hardware monitoring system. As you turn on your system, this smart design will continue to monitor your system’s working voltage, fan status and CPU temperature. If any of these system’s status go wrong, there will be an alarm through the AOpen Hardware Monitoring Utility to warn the user.
Resettable Fuse

Traditional motherboard has fuse for Keyboard and USB port to prevent over-current or shortage. These fuses are soldered onboard that when it is broken (did the job to protect motherboard), user still cannot replace it and the motherboard is still malfunction.

With expensive Resettable Fuse, the motherboard can back to normal function after fuse did the protection job.
Year 2000 (Y2K)

Y2K is basically a problem of the identification of year code. To save storage space, traditional software uses only two digits for year identification. For example, 98 for 1998 and 99 for 1999, but 00 will be confused with 1900 and 2000.

There is an RTC circuit (Real Time Clock) in conjunction with 128 bytes of CMOS RAM data in the chipset of the motherboard. The RTC has only two digits and the CMOS has another 2 digits. Unfortunately, this circuit’s behavior is like this 1997 → 1998 → 1999 → 1900, that means it may have the Y2K problem. Below is a diagram of how applications work with the OS, BIOS and RTC. In order to keep the best compatibility in the PC industry there is a rule that applications must call the OS to get services and OS must call the BIOS, and then only BIOS is allowed to access the hardware (RTC) directly.
There is a Tick Routine (that goes live around every 50m sec) in the BIOS to keep record of date/time information. In general, the BIOS does not update the CMOS every time because the CMOS is a very slow device that degrades system performance. The Tick Routine of the AOpen BIOS has 4 digits for year coding, as long as applications and the operating system follow the rule to get date/time information. There will be no Y2K problem (such as NSTL’s test program). But unfortunately again, we found some test programs (such as Checkit 98) accesses RTC/CMOS directly. **This motherboard has hardware Y2K checking and protection that ensures risk free operation.**
**Low ESR Capacitor**

The quality of low ESR capacitor (Low Equivalent Series Resistance) during high frequency operation is very important for stability of CPU power. The location of where to put these capacitors is another know-how that requires experience and detail calculation.
The power circuit of the CPU core voltage must be checked to ensure system stability for high speed CPUs (such as the new Pentium III, or when overclocking). A typical CPU core voltage is 2.0V, so a good design should control voltage between 1.860V and 2.140V. That is, the transient must be below 280mV. Below is a timing diagram captured by a Digital Storage Scope, it shows the voltage transient is only 143mv even when maximum 18A current is applied.

Note: This diagram for example only, it may not be exactly the same as this motherboard.
Layout (Frequency Isolation Wall)

For high frequency operation, especially overclocking, layout is the most important factor to make sure chipset and CPU working in stable condition. The layout of this motherboard implements AOpen's unique design called “Frequency Isolation Wall”. Separating each critical portion of motherboard into regions where each region operates in a same or similar frequency range to avoid cross talk and frequency interference between each region's operations and condition. The trace length and route must be calculated carefully. For example, the clock trace must be equal length (not necessarily as short as possible) so that clock skew will be controlled within few a pico second ($1/10^{12}$ Sec).

Note: This diagram for example only, it may not be exactly the same as this motherboard.
(This page left blank intentionally for notes)
Driver and Utility

There are motherboard drivers and utilities included in AOpen Bonus CD disc. You don’t need to install all of them in order to boot your system. But after you finish the hardware installation, you have to install your operation system first (such as Windows 98) before you can install any drivers or utilities. Please refer to your operation system’s installation guide.

**Note:** Please follow recommended procedure to install Windows 95 and Windows 98.
Autorun Menu from Bonus CD Disc

You can use the autorun menu of Bonus CD disc. Choose the utility and driver and select model name.
Installing Windows 95

1. First, don’t install any add-on card except AGP card.
2. Install Windows 95 OSR2 v2.1, 1212 or 1214 version and later with USB support. Otherwise, you need to install USBSUPP.EXE.
3. Install the VIA 4 in 1 driver, which includes VIA AGP Vxd driver, VIA ATAPI Vendor Support driver and VIA registry (INF) program.
4. Finally, Install other add-on cards and their drivers.
Installing Windows 98

1. First, don’t install any add-on card except AGP card.
2. Enable USB Controller in BIOS Setup > Advanced Chipset Features > OnChip USB, to make BIOS fully capable of controlling IRQ assignment.
3. Install Window 98 into your system.
4. Install the VIA 4 in 1 driver, which includes VIA AGP Vxd driver, IRQ Routing, VIA ATAPI Vendor Support driver and VIA registry (INF) program.
5. Finally, Install other add-on cards and their drivers.
Installing Windows 98 SE, Windows ME & Windows 2000

If you are using Windows® 98 Second Edition, Windows® Millennium Edition or Windows® 2000, you do not need to install the 4-in-1 driver as the IRQ Routing Driver and the ACPI Registry are already incorporated into the operating system. Users with Windows® 98 SE may update the VIA Registry INF and AGP drivers by installing them individually.

Please refer to VIA Technologies Inc. for latest version of 4 in 1 driver:

http://www.via.com/
http://www.via.com/drivers/4in1420.exe
**Installing VIA 4 in 1 Driver**

You can install the VIA 4 in 1 driver *(IDE Bus master)* (For Windows NT use), VIA ATAPI Vendor Support Driver, VIA AGP, IRQ Routing Driver (For Windows 98 use), VIA Registry (INF) Driver) from the Bonus Pack CD disc Autorun menu.

**Warning:** If you want to uninstall the VIA AGP Vxd driver, please remove the AGP card driver first. Otherwise, the screen may go black at rebooting after the un-installation.

**Note:** Installing this Bus Master IDE driver may cause Suspend to Hard Drive failure.
Installing Onboard Sound Driver

This motherboard comes with a AC97 CODEC and the sound controller is in VIA South Bridge chipset. You can find the audio driver from the Bonus Pack CD disc Autorun menu.
Installing Hardware Monitoring Utility

You can install Hardware Monitoring Utility to monitor CPU temperature, fans and system voltage. The hardware monitoring function is automatically implemented by the BIOS and utility software. No hardware installation is needed.
**ACPI Suspend to Hard Drive**

ACPI Suspend to Hard Drive is basically controlled by Windows operation system. It saves your current work (system status, memory and screen image) into hard disk, and then the system can be totally power off. Next time, when power is on, you can resume your original work directly from hard disk within few seconds without go through the Windows booting process and run your application again. If your memory is 64MB, normally, you need to reserve at least 64MB HDD space to save your memory image.
When go into Suspend:

System Image & Status \(\rightarrow\) Hard Disk

Save into

When power-on next time:

System Image & Status \(\rightarrow\) Hard Disk

Restore within seconds
System Requirement

1. AOZVHDD.EXE 1.30b or later.
2. Delete config.sys and autoexec.bat.

Fresh installation of Windows 98 on a new system

1. Execute "Setup.exe /p j" to install Windows 98
2. After Windows 98's installation is complete, go to the Control Panel > Power Management.
   a. Set Power Schemes > System Standby to "Never".
   b. Click on "Hibernate" and select "Enable Hibernate Support" then "Apply".
   c. Click on the "Advanced" tab, you'll see "Hibernate" on "Power Buttons". Note that this option will only be seen after step b mentioned above has been completed, otherwise only "Standby" and "Shutdown" will be shown. Select "Hibernate" and "Apply".
3. Clean boot into DOS and run AOZVHDD utility.
   a. If you assign the whole disk to your Win 98 system (FAT 16 or FAT 32), please run "aozvhdd /c /file". Please remember sufficient free space has to be reserved in the disk, e.g. if you have 64 MB DRAM and 16 MB VGA card installed, the system needs at least 80 MB free space. The utility will locate the space automatically.
b. If you assign an individual partition for Win 98, please run "aovhd /c /partition". Of course, the system needs to provide unformatted an empty partition.

4. Reboot system.

5. You've already implemented ACPI Suspend to-Hard Drive. Click "Start > Shut Down > Standby" then the screen will go off immediately. And 1 minute or so will be taken for the system to save what's in the memory to the hard drive; the larger the memory size the longer this process will take.
Changing from APM to ACPI (Windows 98 only)

1. Run "Regedit.exe"
   a. Go through the following path
      
      HKEY_LOCAL_MACHINE
      SOFTWARE
      MICROSOFT
      WINDOWS
      CURRENT VERSION
      DETECT
   b. Select "ADD Binary" and name it as "ACPIOPTION".
   c. Right click and select Modify, add "01" after "0000" to make it "0000 01".
   d. Save changes.

2. Select "Add New Hardware" under Control Panel. Allow Windows 98 to detect new hardware. (It will find "ACPI BIOS" and remove "Plug and Play BIOS")

3. Reboot system.

4. Clean boot into DOS and run "AOZVHDD.EXE /C /File"
Changing from ACPI to APM

1. Run "Regedit.exe"
   a. Go through the following path
      HKEY_LOCAL_MACHINE
         SOFTWARE
         MICROSOFT
         WINDOWS
         CURRENT VERSION
         DETECT
         ACPI OPTION
   b. Right click and select "Modify, change "01" to "02" to make it "0000 02".

      Tip: "02" means Windows 98 is ACPI acknowledged but the ACPI function is disabled.

   c. Save changes.
2. Select "Add New Hardware" under Control Panel. Allow Windows 98 to detect new hardware. (It will find "Plug and Play BIOS" and remove "ACPI BIOS")

3. Reboot system.

4. Run "Add New Hardware" again and it will find "Advanced Power Management Resource".

5. Click "OK".

**Tip:** Currently we found only ATI 3D Rage Pro AGP card would support ACPI suspend to disk. Please refer to AOpen web site for latest update
ACPI Suspend to RAM (STR)

This motherboard supports ACPI Suspend to RAM function. With this function, you can resume your original work directly from DRAM without going through the Windows 98 booting process and run your application again. Suspend to DRAM saves your current work in the system memory, it is faster than Suspend to Hard Drive but requires power supplied to DRAM, while Suspend to Hard Drive requires no power.

When go into Suspend:

- System Image & Status in the DRAM
- Other System Devices

Backup by 3.3V Power

When power-on next time:

- System Image & Status in the DRAM
- Other System Devices

Power back to work
Power back to work
To implement ACPI Suspend to DRAM, please follow the procedures as below:

**System Requirement**

1. An ACPI OS is required. Currently, Windows 98 is the only choice. Please refer to ACPI Suspend to Hard Drive of how to setup Windows 98 ACPI mode.
2. The VIA 4 in 1 Driver must have been installed properly.

**Procedures**

1. Changed the following BIOS settings.
   
   BIOS Setup > Power Management Setup > **ACPI Function**: Enabled
   
   BIOS Setup > Power Management Setup > **ACPI Suspend Type**: S3.

2. Go to Control Panel > Power Management. Set “Power Buttons” to “Standby”.
3. Press power button or standby button to wake up the system.
AWARD BIOS

System parameters can be modified by going into BIOS Setup menu, this menu allows you to configure the system parameters and save the configuration into the 128 bytes CMOS area, (normally in the RTC chip or in the main chipset). To enter to BIOS setup menu, press <Del> when POST (Power-On Self Test) screen is shown on your monitor.

Note: Because the BIOS code is the most often changed part of the motherboard design, the BIOS information contained in this manual may be different with actual BIOS that come with your motherboard.
Enter BIOS Setup

After you finish the setting of jumpers and connect correct cables. Power on and enter the BIOS Setup, press <Del> during POST (Power-On Self Test). Choose "Load Setup Defaults" for recommended optimal performance.

**Warning:** Please avoid of using "Load Turbo Defaults", unless you are sure your system components (CPU, DRAM, HDD, etc.) are good enough for turbo setting.
**Standard CMOS Features**

The "Standard CMOS Features" sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and <PgUp> or <PgDn> to select the value for each item.

<table>
<thead>
<tr>
<th>CMOS Setup Utility</th>
<th>Copyright (C) 1984-2000 Award Software</th>
<th>Standard CMOS Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date</strong> <a href="">mm:dd:yy</a></td>
<td>Thu, Oct 12 2000</td>
<td><strong>Item Help</strong></td>
</tr>
<tr>
<td><strong>Time</strong> <a href="">hh:mm:ss</a></td>
<td>13 : 2 : 55</td>
<td></td>
</tr>
<tr>
<td><strong>IDE Primary Master</strong></td>
<td>Press Enter None</td>
<td><strong>Menu Level</strong></td>
</tr>
<tr>
<td><strong>IDE Primary Slave</strong></td>
<td>Press Enter None</td>
<td>Change the day, month,</td>
</tr>
<tr>
<td><strong>IDE Secondary Master</strong></td>
<td>Press Enter None</td>
<td>year and century</td>
</tr>
<tr>
<td><strong>IDE Secondary Slave</strong></td>
<td>Press Enter None</td>
<td></td>
</tr>
<tr>
<td><strong>Drive A</strong></td>
<td>1.44M, 3.5 in.</td>
<td></td>
</tr>
<tr>
<td><strong>Drive B</strong></td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>Video</strong></td>
<td>EGA/UGA</td>
<td></td>
</tr>
<tr>
<td><strong>Halt On</strong></td>
<td>All, But Keyboard</td>
<td></td>
</tr>
<tr>
<td><strong>Base Memory</strong></td>
<td>640K</td>
<td></td>
</tr>
<tr>
<td><strong>Extended Memory</strong></td>
<td>1024K</td>
<td></td>
</tr>
<tr>
<td><strong>Total Memory</strong></td>
<td>2048K</td>
<td></td>
</tr>
</tbody>
</table>

**Key Bindings**

- Tab/→:Move Enter:Select +/-PU/PD:Value F10:Save ESC:Exit F1:General Help
- F5:Previous Values F6:Fail-Safe Defaults F7:Turbo Defaults
Standard CMOS Features > Date (mm:dd:yy)
To set the date, highlight the Date parameter. Press <PgUp> or <PgDn> to set the current date. The date format is month, date, and year.

Standard CMOS Features > Time (hh:mm:ss)
To set the time, highlight the Time parameter. Press <PgUp> or <PgDn> to set the current time in hour, minute, and second format. The time is based on the 24-hour military clock.
Standard CMOS Setup > IDE HDD Auto-Detection

<table>
<thead>
<tr>
<th>IDE HDD Auto-Detection</th>
<th>Press Enter</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDE Primary Master</td>
<td>Auto</td>
</tr>
<tr>
<td>Access Mode</td>
<td>Auto</td>
</tr>
<tr>
<td>Capacity</td>
<td>0 MB</td>
</tr>
<tr>
<td>Cylinder</td>
<td>0</td>
</tr>
<tr>
<td>Head</td>
<td>0</td>
</tr>
<tr>
<td>Precomp</td>
<td>0</td>
</tr>
<tr>
<td>Landing Zone</td>
<td>0</td>
</tr>
<tr>
<td>Sector</td>
<td>0</td>
</tr>
</tbody>
</table>

This item lets the system to the HDD’s size, head... on this channel.
Standard CMOS Setup > IDE Primary Master/Slave & IDE Secondary Master/Slave

If you select “Manual”, you need to fill in all remaining fields, such as Access Mode, Capacity, Cylinder, Head, Precomp, Landing Zone and Sector on this selected item. If the item “Auto” is selected, only “Access Mode” can be set, the others will remain “0”. And when the system boots up, the system will detect the hard disk and configure it automatically. “None” means there is no device in the channel.

Standard CMOS Setup > IDE Primary Master/Slave & IDE Secondary Master/Slave > Access Mode

The enhanced IDE feature allows the system to use a hard disk with a capacity of more than 528MB. This is made possible through the Logical Block Address (LBA) mode translation. The LBA is now considered a standard feature of current IDE hard disk on the market because of its capability to support capacity larger than 528MB. Note that if a HDD is formatted with LBA On, it will not be able to boot with LBA Off.

Tip: For an IDE hard disk, we recommend that you use the "Auto" to enter the drive specifications automatically
Standard CMOS Setup > Drive A/Drive B

These items select the floppy drive type. The available settings and types supported by the motherboard are listed to the left.

- None
- 360KB 5.25"
- 1.2MB 5.25"
- 720KB 3.5"
- 1.44MB 3.5" (Default)
- 2.88MB 3.5"

Standard CMOS Setup > Video

This item specifies the type of video card in use. The default setting is VGA/EGA. Since current PCs use VGA only, this function is almost useless and may be disregarded in the future.

- EGA/VGA (Default)
- CGA40
- CGA80
- Mono
**Halt On**

- No Errors
- All Errors
- All, But Keyboard (Default)
- All, But Diskette
- All, But Disk/Key

This parameter enables you to control the system stops in case of Power-On Self Test (POST) error.
Advanced BIOS Features Setup

This screen appears when you select the option "Advanced BIOS Features" from the main menu.

| Virus Warning | Disabled |
| CPU Internal Cache | Enabled |
| External Cache | Enabled |
| CPU L2 Cache ECC Checking | Enabled |
| Processor Number Feature | Enabled |
| Quick Power On Self Test | Disabled |
| First Boot Device | Floppy |
| Second Boot Device | HDD-0 |
| Third Boot Device | LS120 |
| Boot Other Device | Enabled |
| Swap Floppy Drive | Disabled |
| Boot Up Floppy Seek | Enabled |
| Boot Up NumLock Status | On |
| Gate A20 Option | Normal |
| Typematic Rate Setting | Disabled |
| Typematic Rate (Chars/Sec) | 6 |
| Typematic Delay (Msec) | 250 |
| Security Option | Setup |
| OS Select For DRAM > 64MB | Non-OS2 |

Item Help

Menu Level ▶

Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

↑↓←→:Move Enter:Select +/-PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Turbo Defaults
This is the lower half of “Advanced BIOS Features” submenu.
**Advanced BIOS Features > Virus Warning**

<table>
<thead>
<tr>
<th>Virus Warning</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td>Set this parameter to Enabled to activate the warning message. This feature protects the boot sector and partition table of your hard disk from virus intrusion. Any attempt during boot up to write to the boot sector of the hard disk drive stops the system and the following warning message appears on the screen. Run an anti-virus program to locate the problem.</td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>

! **WARNING !**

Disk Boot Sector is to be modified
Type "Y" to accept write, or "N" to abort write
Award Software, Inc.
Advanced BIOS Features > CPU Internal Cache

<table>
<thead>
<tr>
<th>CPU Internal Cache</th>
<th>Enabled (Default)</th>
<th>Disabled</th>
</tr>
</thead>
</table>

Enabling this parameter activates the CPU L1 cache. Disabling the parameter slows down the system. Therefore, we recommend that you leave it enabled unless you are troubleshooting a problem.

Advanced BIOS Features > External Cache

<table>
<thead>
<tr>
<th>External Cache</th>
<th>Enabled (Default)</th>
<th>Disabled</th>
</tr>
</thead>
</table>

Enabling this parameter activates the CPU L2 cache. Disabling the parameter slows down the system. Therefore, we recommend that you leave it enabled unless you are troubleshooting a problem.

Advanced BIOS Features > CPU L2 Cache ECC Checking

<table>
<thead>
<tr>
<th>CPU L2 Cache ECC Checking</th>
<th>Enabled (Default)</th>
<th>Disabled</th>
</tr>
</thead>
</table>

This item lets you enable or disable L2 Cache ECC checking.
**Advanced BIOS Features > Processor Number Feature**

<table>
<thead>
<tr>
<th>Processor Number Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
<td>This item is used to enable or disable Pentium III CPU Number Feature.</td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>

**Advanced BIOS Features > Quick Power On Self Test**

<table>
<thead>
<tr>
<th>Quick Power on Self-test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enable (Default)</td>
<td>This parameter speeds up POST by skipping some items that are normally checked.</td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>
Advanced BIOS Features > First/Second/Third Boot Device

**Boot Device**
- A (Second Boot Device Default); LS-120; C (Third Boot Device Default); SCSI; CDROM (First Boot Device Default); D; E; F; ZIP; LAN; Disable

This parameter allows you to specify the system boot up search sequence. The hard disk ID are listed below:
- C: Primary master
- D: Primary slave
- E: Secondary master
- F: Secondary slave
- Zip: IOMEGA ZIP Drive

Advanced BIOS Features > Boot other device

**Boot other device**
- Enabled (Default)
- Disabled

This item allows you to boot up the system from other bootable devices.
Advanced BIOS Features > Swap Floppy Drive

**Swap Floppy Drive**
- Enabled
- Disabled (Default)

This item allows you to swap floppy drives. For example, if you have two floppy drives (A and B), you can assign the first drive as drive B and the second drive as drive A or vice-versa.

Advanced BIOS Features > Boot Up Floppy Seek

**Boot Up Floppy Seek**
- Enabled
- Disabled (Default)

This item can enable tests floppy drives to determine whether they have 40 or 80 tracks.

Advanced BIOS Features > Boot Up NumLock Status

**Boot Up NumLock Status**
- On
- Off (Default)

Setting this parameter to On enables the numeric function of the numeric keypad. Set this parameter to Off to disregard the function. Disabling the numeric function allows you to use the numeric keypad for cursor control.
### Advanced BIOS Features > Gate A20 Option

<table>
<thead>
<tr>
<th>Gate A20 Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (Default)</td>
<td>If you change the setting to “Fast”, it will let chipset control Gate A20, and if you keep the default setting, a pin in the keyboard controller will control the Gate A20.</td>
</tr>
<tr>
<td>Fast</td>
<td></td>
</tr>
</tbody>
</table>

### Advanced BIOS Feature > Typematic Rate Setting

<table>
<thead>
<tr>
<th>Typematic Rate Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td>This item lets keystrokes repeat at a rate determine by the keyboard controller. When you enable this function, the typematic rate and typematic delay will be selected.</td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>

### Advanced BIOS Feature > Typematic Rate (Chars/Sec)

<table>
<thead>
<tr>
<th>Typematic Rate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 (Default); 8; 10; 12; 15; 20; 24; 30</td>
<td>This item lets you select the rate at which character repeats when you hold down a key.</td>
</tr>
</tbody>
</table>
Advanced BIOS Feature > Typematic Delay (Msec)

**Typematic Delay**
- 250 (Default); 500; 750; 1000

This item lets you select the delay timing before keystroke begin to repeat.

Advanced BIOS Features > Security Option

**Security Option**
- Setup (Default)
- System

The **System** option limits access to both the System boot and BIOS setup. A prompt asking you to enter your password appears on the screen every time you boot the system.

The **Setup** option limits access only to BIOS setup.

To disable the security option, select Password Setting from the main menu, don't type anything and just press <Enter>.

Advanced BIOS Features > OS Select For DRAM > 64MB

**OS Select For DRAM > 64MB**
- OS2
- Non-OS2 (Default)

This item lets you select “OS/2 only” if you are running OS/2 operation system with greater than 64MB of RAM on the system.
Advanced BIOS Features > Video BIOS Shadow

<table>
<thead>
<tr>
<th>Video BIOS Shadow</th>
<th>Enabled (Default)</th>
<th>Disabled</th>
</tr>
</thead>
</table>

This item allows you to change the video BIOS location from ROM to RAM. Relocate it to RAM enhance system performance as have more fast data access than ROM.

Advanced BIOS Features > C8000-CBFFF Shadow to DC000-DFFFF Shadow

<table>
<thead>
<tr>
<th>C8000-CBFFF Shadow to DC000-DFFFF Shadow</th>
<th>Enabled</th>
<th>Disabled (Default)</th>
</tr>
</thead>
</table>

This field is for shadowing other expansion cards with ROMs. Before installing other cards with ROMs, it is necessary to know which address the ROM use to shad them.
Advanced Chipset Features Setup

The "Advanced Chipset Features" includes settings for the chipset dependent features. These features are related to system performance.

Warning: Make sure you fully understand the items contained in this menu before you try to change anything. You may change the parameter settings to improve system performance. However, it may cause your system to be unstable if the setting is not correct for your system configuration.
This page is the lower half of Advanced Chipset Features submenu.

<table>
<thead>
<tr>
<th>System BIOS Cacheable</th>
<th>Disabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video RAM Cacheable</td>
<td>Disabled</td>
</tr>
<tr>
<td>Frame Buffer Size</td>
<td>8M</td>
</tr>
<tr>
<td>AGP Aperture Size</td>
<td>64M</td>
</tr>
<tr>
<td>AGP-4X Mode</td>
<td>Enabled</td>
</tr>
<tr>
<td>AGP Driving Control</td>
<td>Auto</td>
</tr>
<tr>
<td>AGP Driving Value</td>
<td>DA</td>
</tr>
<tr>
<td>OnChip USB</td>
<td>Enabled</td>
</tr>
<tr>
<td>USB Keyboard Support</td>
<td>Disabled</td>
</tr>
<tr>
<td>USB Mouse Support</td>
<td>Disabled</td>
</tr>
<tr>
<td>OnChip Sound</td>
<td>Auto</td>
</tr>
<tr>
<td>OnChip Modem</td>
<td>Auto</td>
</tr>
<tr>
<td>CPU to PCI Write Buffer</td>
<td>Enabled</td>
</tr>
<tr>
<td>PCI Dynamic Bursting</td>
<td>Enabled</td>
</tr>
<tr>
<td>PCI Master 0 WS Write</td>
<td>Enabled</td>
</tr>
<tr>
<td>PCI Delay Transaction</td>
<td>Disabled</td>
</tr>
<tr>
<td>PCI#2 Access #1 Retry</td>
<td>Enabled</td>
</tr>
<tr>
<td>AGP Master 1 WS Write</td>
<td>Disabled</td>
</tr>
<tr>
<td>AGP Master 1 WS Read</td>
<td>Disabled</td>
</tr>
</tbody>
</table>

Menu Level ▶
Advanced Chipset Features > Bank 0/1, 2/3 DRAM Timing

**Bank 0/1, 2/3 DRAM Timing**
- SDRAM 8/10ns (Default)
- Normal
- Medium
- Fast
- Turbo

This item controls timing point for latching SDRAM data. We recommend you leave on the default setting value.

Advanced Chipset Features > SDRAM Cycle Length

**SDRAM Cycle Length**
- 2
- 3 (Default)

This option controls the latency between SDRAM read command and the time that the data actually becomes available. If your system has unstable problem, please change the setting from 2 to 3.

Advanced Chipset Features > DRAM Clock

**DRAM Clock**
- Host Clock (Default)
- Host+33M
- Host-33M

This item allows you selecting DRAM working clock to Host clock, Host-33MHz or Host+33MHz.
**Advanced Chipset Features > Memory Hole**

<table>
<thead>
<tr>
<th>Memory Hole M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
</tr>
<tr>
<td>Disabled (Default)</td>
</tr>
</tbody>
</table>

This option lets you reserve system memory area for special ISA cards. The chipset accesses code/data of these areas from the ISA bus directly. Normally, these areas are reserved for memory mapped I/O card.

**Advanced Chipset Features > P2C/C2P Concurrency**

<table>
<thead>
<tr>
<th>P2C/C2P Concurrency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
</tr>
<tr>
<td>Disabled</td>
</tr>
</tbody>
</table>

This item can enable or disable the PCI to CPU/CPU to PCI concurrency.

**Advanced Chipset Features > Fast R-W Turn Around**

<table>
<thead>
<tr>
<th>Fast R-W Turn Around</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
</tr>
<tr>
<td>Disabled (Default)</td>
</tr>
</tbody>
</table>

Leave on the default setting for SDRAM compatibility.
Advanced Chipset Features > System BIOS Cacheable

<table>
<thead>
<tr>
<th>System BIOS cacheable</th>
<th>When set this item to “Enabled”, the contents of the F0000h system memory segment can be read from or written to cache memory. The contents of this memory segment are always copies from the BIOS ROM to system RAM for faster execution.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>

Advanced Chipset Features > Video RAM Cacheable

<table>
<thead>
<tr>
<th>Video RAM Cacheable</th>
<th>If you set this item to enable, it allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>

Advanced Chipset Features > Frame Buffer Size

<table>
<thead>
<tr>
<th>Frame Buffer Size</th>
<th>This item allows you to control the VGA frame buffer size. If you set the frame buffer size to 16MB, the system will share 16MB main memory to the VGA. The VGA frame buffer size will affect the graphic performance; bigger buffer size will get better performance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4M</td>
<td></td>
</tr>
<tr>
<td>8M (Default)</td>
<td></td>
</tr>
<tr>
<td>16M</td>
<td></td>
</tr>
<tr>
<td>32M</td>
<td></td>
</tr>
</tbody>
</table>
**Advanced Chipset Features > AGP Aperture Size (MB)**

<table>
<thead>
<tr>
<th>AGP Aperture Size (MB)</th>
<th>4; 8; 16; 32; 64 (Default); 128</th>
</tr>
</thead>
</table>

This option specifies the amount of system memory that can be used by the *Accelerated Graphic Port (AGP)*.

**Advanced Chipset Features > AGP-4X Mode**

<table>
<thead>
<tr>
<th>AGP-4X Mode</th>
<th>Enabled (Default); Disabled</th>
</tr>
</thead>
</table>

If your AGP card supports 4x, select Enabled; otherwise, select Disabled.

**Advanced Chipset Features > AGP Driving Control**

<table>
<thead>
<tr>
<th>AGP Driving Control</th>
<th>Auto; Manual</th>
</tr>
</thead>
</table>

This option lets you select AGP driving control to “Auto” or “Manual”.

---

**Online Manual**

MX36/MX36L

AOpen®
Advanced Chipset Features > AGP Driving Value

**AGP Driving Value**
00 ~FF, DA is Default setting.

This option can be selected when you set the “AGP Driving Control” to “Auto”. The value can be set from DA to FF.

Advanced Chipset Features > OnChip USB

**OnChip USB**
Enabled (Default)
Disable

This item can let you enable or disable the USB controller.

Advanced Chipset Features > USB Keyboard Support

**USB Keyboard Support**
Enabled
Disable (Default)

This item lets you enable or disable the USB keyboard driver within the on-board BIOS. The keyboard driver simulates legacy keyboard command and let you use USB keyboard during POST or after boot if you don’t have the USB driver in the operation system.

**Note:** You cannot use both USB driver and USB legacy keyboard at the same time. Disable “USB Keyboard Support” if you have USB driver in the operation system. Turn off the system, set the External Controller to “Rescue” to read from rescue ROM.
### Advanced Chipset Features > USB Mouse Support

**USB Mouse Support**
- **Enabled**
- **Disable (Default)**

Select “Enabled” if your system contains a USB controller and you have a USB mouse.

### Advanced Chipset Features > OnChip Sound

**OnChip Sound**
- **Auto (Default)**
- **Disabled**

This item can let system auto-detection or disable the on-board AC 97 Audio CODEC.

### Advanced Chipset Features > OnChip Modem

**OnChip Modem**
- **Auto (Default)**
- **Disabled**

This item can let system auto-detection or disable the AC 97 modem function. If you disable it, an AMR modem card can’t work properly.
Advanced Chipset Features > CPU To PCI Write Buffer

| CPU to PCI Write Buffer | Enabled (Default) | Disabled |

This item lets you enable or disable CPU to PCI write buffer.

Advanced Chipset Features > PCI Dynamic Bursting

| PCI Dynamic Bursting | Enabled (Default) | Disabled |

If you enable the PCI dynamic bursting, it can increase data transferring performance.

Advanced Chipset Features > PCI Master 0 WS Write

| PCI Master 0 WS Write | Enabled (Default) | Disabled |

This option allows you to enable PCI master writing the data with no waiting.
Advanced Chipset Features > PCI Delayed Transaction

**PCI Delayed Transaction**
- Enabled
- Disabled (Default)

This option can latch the ISA signal to increase the PCI to ISA data transferring performance.

Advanced Chipset Features > PCI#2 Access #1 Retry

**PCI#2 Access #1 Retry**
- Enabled (Default)
- Disabled

This item lets you enable or disable the PCI#2 sending a retry signal to request PCI#1 stopping the data transferring.

Advanced Chipset Features > AGP Master 1 WS Write

**AGP Master 1 WS Write**
- Enabled
- Disabled (Default)

This item allows the AGP writes the texture data to the main memory directly.
Advanced Chipset Features > AGP Master 1 WS Read

**AGP Master 1 WS Read**
- Enabled
- Disabled (Default)

This item allows the AGP reads the texture data to the main memory directly.
Integrated Peripherals

The following screen appears if you select the option "Integrated Peripherals" from the main menu. This option allows you to configure the I/O features.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Integrated Peripherals

OnChip IDE Channel0          Enabled
OnChip IDE Channel1          Enabled
IDE Prefetch Mode            Enabled
Primary Master PIO           Auto
Primary Slave PIO            Auto
Secondary Master PIO          Auto
Secondary Slave PIO           Auto
Primary Master UDMA          Auto
Primary Slave UDMA           Auto
Secondary Master UDMA        Auto
Secondary Slave UDMA         Auto
Init Display First PCI Slot  PCI Slot
IDE HDD Block Mode           Enabled
Onboard PDD Controller       Enabled
Onboard Serial Port 1        Auto
Onboard Serial Port 2        Auto
UART 2 Mode                 Standard
  x IR Function Duplex       Half
  x TX.RX Inverting enable   No, Yes

F1-Prev:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Turbo Defaults
This page is the lower half of Integrated Peripherals submenu.

<table>
<thead>
<tr>
<th>Item Help</th>
<th>Menu Level</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>IDE HDD Block Mode</th>
<th>Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard FDD Controller</td>
<td>Enabled</td>
</tr>
<tr>
<td>Onboard Serial Port 1</td>
<td>Auto</td>
</tr>
<tr>
<td>Onboard Serial Port 2</td>
<td>Auto</td>
</tr>
<tr>
<td>UART 2 Mode</td>
<td>Standard</td>
</tr>
<tr>
<td>IR Function Duplex</td>
<td>Half</td>
</tr>
<tr>
<td>TX/RX inverting enable</td>
<td>No, Yes</td>
</tr>
<tr>
<td>Onboard Parallel Port</td>
<td>370/IRQ7</td>
</tr>
<tr>
<td>Onboard Parallel Mode</td>
<td>Normal</td>
</tr>
<tr>
<td>ECP Mode Use DMA</td>
<td>3</td>
</tr>
<tr>
<td>Parallel Port EPP Type</td>
<td>EPP1.9</td>
</tr>
<tr>
<td>Onboard Legacy Audio</td>
<td>Enabled</td>
</tr>
<tr>
<td>Sound Blaster</td>
<td>Disabled</td>
</tr>
<tr>
<td>SB I/O Base Address</td>
<td>220H</td>
</tr>
<tr>
<td>SB IRQ Select</td>
<td>IRQ 5</td>
</tr>
<tr>
<td>SB DMA Select</td>
<td>DMA 4</td>
</tr>
<tr>
<td>MPU-401</td>
<td>Disabled</td>
</tr>
<tr>
<td>MPU-401 I/O Address</td>
<td>330-333H</td>
</tr>
<tr>
<td>Game Port (200-207H)</td>
<td>Enabled</td>
</tr>
</tbody>
</table>

Integrated Peripherals > OnChip IDE Channel 0/1

<table>
<thead>
<tr>
<th>OnChip IDE Channel 0/1</th>
<th>This parameter lets you enable or disable the IDE device connected to the primary/secondary IDE connector.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
<td></td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>

Integrated Peripherals > IDE Prefetch Mode

<table>
<thead>
<tr>
<th>IDE Prefetch Mode</th>
<th>This item is used to enable and disable IDE prefetch mode.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>
### Integrated Peripherals > Primary Master/Slave PIO & Secondary Master/Slave PIO

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto (Default)</td>
<td>Activates the HDD speed auto-detect function. The PIO mode specifies the data transfer rate of HDD. For example: mode 0 data transfer rate is 3.3MB/s, mode 1 is 5.2MB/s, mode 2 is 8.3MB/s, mode 3 is 11.1MB/s and mode 4 is 16.6MB/s. If your hard disk performance becomes unstable, you may manually try the slower mode.</td>
</tr>
<tr>
<td>Mode 1</td>
<td></td>
</tr>
<tr>
<td>Mode 2</td>
<td></td>
</tr>
<tr>
<td>Mode 3</td>
<td></td>
</tr>
<tr>
<td>Mode 4</td>
<td></td>
</tr>
</tbody>
</table>

### Integrated Peripherals > Primary Master/Slave UDMA & Secondary Master/Slave UDMA

<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto (Default)</td>
<td>Allows you to set the Ultra DMA33 or Ultra DMA66 mode supported by the hard disk drive connected to your IDE connector.</td>
</tr>
<tr>
<td>Disable</td>
<td></td>
</tr>
</tbody>
</table>
**Integrated Peripherals > Init Display First**

**Init Display First**
- PCI Slot (Default)
- AGP

If you installed a PCI VGA card and an AGP card at the same time, this item lets you decide which one is the initial display card.

**Integrated Peripherals > IDE HDD Block Mode**

**IDE HDD Block Mode**
- Enabled (Default)
- Disabled

If your IDE hard drive supports “Block Mode”, you can select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

**Integrated Peripherals > Onboard FDD Controller**

**Onboard FDC Controller**
- Enabled (Default)
- Disabled

Setting this parameter to Enabled allows you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to Disabled if you want to use a separate controller card.
Integrated Peripherals > Onboard Serial Port 1 & Port 2

<table>
<thead>
<tr>
<th>Onboard Serial Port 1 &amp; Port 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto (Default)</td>
</tr>
<tr>
<td>3F8/IRQ4</td>
</tr>
<tr>
<td>2F8/IRQ3</td>
</tr>
<tr>
<td>3E8/IRQ4</td>
</tr>
<tr>
<td>2E8/IRQ3</td>
</tr>
<tr>
<td>Disabled</td>
</tr>
</tbody>
</table>

This item allows you to assign address and interrupt for the board serial port.

**Note:** If you are using network card, make sure that the IRQ do not conflict.
### UART Mode Select

<table>
<thead>
<tr>
<th>UART Mode Select</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard (Default)</td>
<td>Sets serial port 2 to operate in normal mode. This is the default setting.</td>
</tr>
<tr>
<td>HPSIR</td>
<td>This setting allows infrared serial communication at a maximum baud rate of 115K baud.</td>
</tr>
<tr>
<td>ASKIR</td>
<td>This setting allows infrared serial communication at a maximum baud rate of 19.2K baud.</td>
</tr>
</tbody>
</table>

This item is configurable only if the "Onboard Serial Port 2" is enabled. This allows you to specify the mode of serial port2.

### IR Function Duplex

<table>
<thead>
<tr>
<th>IR Function Duplex</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half (Default)</td>
<td>This item is used to select full duplex or half duplex of IR function.</td>
</tr>
<tr>
<td>Full</td>
<td>Normally, full duplex is faster, because it transmits data bi-direction at the same time.</td>
</tr>
</tbody>
</table>
**Integrated Peripherals > RxD, TxD inverting enable**

| RxD, TxD inverting enable | No, Yes (Default) | Yes, No | Yes, Yes | No, No |

This item is used to select RxD (Receive Data) and TxD (Transmit Data) mode for UART, for instance, IR device, modem, etc. Normally, we suggest you keep the default setting. Please see the documentation that comes with your device.

**Integrated Peripherals > Onboard Parallel Port**

| Onboard Parallel Port | 3BC/IRQ7 | 378/IRQ7 (Default) | 278/IRQ5 | Disabled |

This item controls the onboard parallel port address and interrupt.

**Note:** If you are using an I/O card with a parallel port, make sure that the addresses and IRQ do not conflict.
Integrated Peripherals > Parallel Mode

<table>
<thead>
<tr>
<th>Parallel Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (Default)</td>
</tr>
<tr>
<td>EPP</td>
</tr>
<tr>
<td>ECP</td>
</tr>
<tr>
<td>ECP/EPP</td>
</tr>
</tbody>
</table>

This item lets you set the parallel port mode. The mode options are Normal (SPP, Standard and Bidirectional Parallel Port), EPP (Enhanced Parallel Port) and ECP (Extended Parallel Port).

**SPP (Standard and Bidirectional Parallel Port)**

SPP is the IBM AT and PS/2 compatible mode.

**EPP (Enhanced Parallel Port)**

EPP enhances the parallel port throughput by directly writing/reading data to/from parallel port without latch.

**ECP (Extended Parallel Port)**

ECP supports DMA and RLE (Run Length Encoded) compression and decompression.

Integrated Peripherals > ECP Mode Use DMA

<table>
<thead>
<tr>
<th>ECP Mode Use DMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (Default)</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

This item lets you set the DMA channel of ECP mode.
Integrated Peripherals > Parallel Port EPP Type

<table>
<thead>
<tr>
<th>Parallel Port EPP Type</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>EPP1.7</td>
<td></td>
</tr>
<tr>
<td>EPP1.9 (Default)</td>
<td></td>
</tr>
</tbody>
</table>

This item lets you select EPP mode protocol.

Integrated Peripherals > Onboard Legacy Audio

<table>
<thead>
<tr>
<th>Onboard Legacy Audio</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
<td></td>
</tr>
<tr>
<td>Disable</td>
<td></td>
</tr>
</tbody>
</table>

This item lets you enable or disable on-board audio legacy.

Integrated Peripherals > Sound Blaster

<table>
<thead>
<tr>
<th>Sound Blaster</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>

This motherboard has a Sound Blaster Pro compatible on-chip audio. This item should be set to Enabled under DOS mode.
Integrated Peripherals > SB I/O Base Address

<table>
<thead>
<tr>
<th>SB I/O Base Address</th>
<th>This item lets you select the on-board audio I/O base address.</th>
</tr>
</thead>
<tbody>
<tr>
<td>220H (Default)</td>
<td></td>
</tr>
<tr>
<td>240H</td>
<td></td>
</tr>
<tr>
<td>260H</td>
<td></td>
</tr>
<tr>
<td>280H</td>
<td></td>
</tr>
</tbody>
</table>

Integrated Peripherals > SB IRQ Select

<table>
<thead>
<tr>
<th>SB IRQ Select</th>
<th>This item lets you select the on-board audio IRQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRQ 5 (Default)</td>
<td></td>
</tr>
<tr>
<td>IRQ 7</td>
<td></td>
</tr>
<tr>
<td>IRQ 9</td>
<td></td>
</tr>
<tr>
<td>IRQ 10</td>
<td></td>
</tr>
</tbody>
</table>
Integrated Peripherals > SB DMA Select

<table>
<thead>
<tr>
<th>SB_DMA Select</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMA 0; DMA 1 (Default); DMA 2; DMA 3</td>
<td>This item lets you select the on-board audio DMA.</td>
</tr>
</tbody>
</table>

Integrated Peripherals > MPU-401

<table>
<thead>
<tr>
<th>MPU-401</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
<td>This item can let you enable or disable the MPU-401 port compatible function.</td>
</tr>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
</tbody>
</table>

Integrated Peripherals > MPU-401 I/O Address

<table>
<thead>
<tr>
<th>MPU-401 I/O Address</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>330-333H (Default)</td>
<td>This item lets you select the MIDI port I/O address.</td>
</tr>
<tr>
<td>300-303H</td>
<td></td>
</tr>
<tr>
<td>310-313H</td>
<td></td>
</tr>
<tr>
<td>320-323H</td>
<td></td>
</tr>
</tbody>
</table>
**Integrated Peripherals > Game Port (200-207H)**

<table>
<thead>
<tr>
<th>Game Port (200-207H)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
<td>This item lets you enable or disable the on-board game port function.</td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>
**Power Management Setup**

The Power Management Setup screen enables you to control the motherboard green features. See the following screen.

<table>
<thead>
<tr>
<th>Item Help</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Menu Level</td>
<td></td>
</tr>
</tbody>
</table>

### CMOS Setup Utility - Copyright © 1984-2000 Award Software

#### Power Management Setup

- **ACPI function**: Enabled
- **Power Management**: Press Enter
- **ACPI Suspend Type**: S1<POS>
- **PM Control by APM**: Yes
- **Video Off Option**: Suspend -> Off
- **Video Off Method**: U/H SYNC+Blank
- **MODEM Use IRQ**: 3
- **Soft-Off by PWRBTN**: Instant-Off
- **Wake Up Events**: Press Enter

---

↑↓→←: Move Enter: Select +/-:PU/PD:Value F10:Save ESC:Exit F1:General Help 
F5:Previous Values F6:Fail-Safe Defaults F7:Turbo Defaults
Power Management > ACPI Function

**ACPI Function**
- Enabled (Default)
- Disabled

If your OS is ACPI enabled you have to set this item to Enabled, or there may be unexpected errors. If your OS is APM mode, you can remain the Disabled setting.

Power Management > Power Management

<table>
<thead>
<tr>
<th>Power Management</th>
<th>User Define</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDD Power Down</td>
<td>Disable</td>
<td>Menu Level</td>
</tr>
<tr>
<td>Doze Mode</td>
<td>Disable</td>
<td></td>
</tr>
<tr>
<td>Suspend Mode</td>
<td>Disable</td>
<td></td>
</tr>
</tbody>
</table>

F5:Previous Values F6:Fail-Safe Defaults F7:Turbo Defaults
Power Management > Power Management > Power Management

**Power Management**

- Max Saving
- Mix Saving
- User Define (Default)
- Disabled

This function allows you to set the default parameters of power-saving modes. Set to **Disable** to turn off power management function. Set to **User Define** to choose your own parameters.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Doze</th>
<th>Suspend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min Saving</td>
<td>1 hour</td>
<td>1 hour</td>
</tr>
<tr>
<td>Max Saving</td>
<td>1 min</td>
<td>1 min</td>
</tr>
</tbody>
</table>

Power Management > Power Management > HDD Power Down

**HDD Power Down**

- Disabled (Default)
- 1min to 15 min

This option lets you specify the IDE HDD idle time before the device enters the power down state.
Power Management > Power Management > Doze Mode

**Doze Mode**

Disabled (Default), 1 min, 2 min, 4 min, 8 min, 12 min, 20 min, 30 min, 40 min, 1 hour

This item lets you set the period of time after which the system enters into Doze mode. The system activity (or event) is detected by monitoring the IRQ signals or other events (such as I/O).

Power Management > Power Management > Suspend Mode

**Suspend Mode**

Disabled (Default), 1 min, 2 min, 4 min, 8 min, 12 min, 20 min, 30 min, 40 min, 1 hour

This item lets you set the period of time after which the system enters into Suspend mode. The Suspend mode can be **Suspend to RAM** or **Suspend to Hard Drive**, selected by "**ACPI Suspend Type**".

Power Management > ACPI Suspend Type

**ACPI Suspend Type**

S1
S3

This function allows you to select suspend types. S1 is Power On Suspend and S3 is Suspend to RAM.
Power Management > PM Controlled by APM

PM Controlled by APM
Yes (Default)
No

If "Max Saving" is selected, you can turn on this item, transfer power management control to APM (Advanced Power Management) and enhance power saving function. For example, stop CPU internal clock.

Power Management > Video Off Option

Video Off Option
Suspend → Off (Default)
All Modes → Off
Always On

This item lets you to decide whether the video is off in the suspend mode.

Power Management > Video Off Method

Video Off Method
V/H SYNC + Blank (Default)
DPMS Support
Blank Screen

This determines the way that monitor is off. Blank Screen writes blanks to video buffer. V/H SYNC+Blank allows BIOS to control VSYNC and HSYNC signals. This function applies only for DPMS (Display Power Management Standard) monitor. The DPMS mode uses DPMS function provided by VGA card.
Power Management > Modem Use IRQ

<table>
<thead>
<tr>
<th>Modem Use IRQ</th>
<th>This item lets you set an IRQ for the modem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (Default); 4; 5; 7; 9; 10; 11; NA</td>
<td></td>
</tr>
</tbody>
</table>

Power Management > Soft-off By PWR-Button

<table>
<thead>
<tr>
<th>Soft-off By PWR-Button</th>
<th>This is a specification of ACPI and supported by hardware. When Delay 4 sec is selected, the soft power switch on the front panel can be used to control power on, suspend and off. If the switch is pressed for less than 4 seconds during the system power-on, the system will go into suspend mode. If the switch is pressed for longer than 4 seconds, the system will be power-off. The default setting is Instant-Off. If Instant-Off is selected the soft power switch is only used to control power-on and power-off. Hence, there is no need to press it for 4 seconds and there is no suspend.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instant-Off (Default)</td>
<td>Delay 4 Sec</td>
</tr>
</tbody>
</table>
Power Management > Wake Up Events

<table>
<thead>
<tr>
<th>Item</th>
<th>Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>VGA</td>
<td>OFF</td>
</tr>
<tr>
<td>LPT &amp; COM</td>
<td>LPT/COM</td>
</tr>
<tr>
<td>HDD &amp; FDD</td>
<td>ON</td>
</tr>
<tr>
<td>PCI Master</td>
<td>OFF</td>
</tr>
<tr>
<td>Wake On PCI Card</td>
<td>Disabled</td>
</tr>
<tr>
<td>Wake On LAN</td>
<td>Disabled</td>
</tr>
<tr>
<td>Wake On Modem</td>
<td>Disabled</td>
</tr>
<tr>
<td>Wake On RTC Timer</td>
<td>Disabled</td>
</tr>
<tr>
<td>Date (of Month)</td>
<td>0</td>
</tr>
<tr>
<td>Time (hh:mm:ss)</td>
<td>0:0:0</td>
</tr>
<tr>
<td>IRQs Activity Monitoring</td>
<td>Press Enter</td>
</tr>
</tbody>
</table>

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Menu Level ▶▶
MX36/MX36L

Power Management > Wake Up Events > VGA

VGA
Off (Default)
On

This item can enable or disable the detection of VGA activities for power down state transition.

Power Management > Wake Up Events > LPT & COM

LPT & COM
LPT/COM (Default)
NONE
LPT
COM

This item can enable or disable the detection of LPT/COM port activities for power down state transition.

Power Management > Wake Up Events > HDD & FDD

HDD & FDD
On (Default)
Off

This item can enable or disable the detection of HDD/FDD activities for power down state transition.
### Power Management > Wake Up Events > PCI Master

<table>
<thead>
<tr>
<th><strong>PCI Master</strong></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off (Default)</td>
<td></td>
</tr>
<tr>
<td>On</td>
<td>This item can enable or disable the detection of PCI Master activities for power down state transition.</td>
</tr>
</tbody>
</table>

### Power Management > Wake Up Events > Wake On PCI Card

<table>
<thead>
<tr>
<th><strong>Wake On PCI Card</strong></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
<tr>
<td>Enabled</td>
<td>This item lets you specify enable or disable Wake On PCI Card function.</td>
</tr>
</tbody>
</table>

### Power Management > Wake Up Events > Wake On LAN/Ring

<table>
<thead>
<tr>
<th><strong>Wake On LAN/Ring</strong></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled (Default)</td>
<td></td>
</tr>
<tr>
<td>Enabled</td>
<td>This item lets you specify enable or disable Wake On LAN/Ring function.</td>
</tr>
</tbody>
</table>
Power Management > Wake Up Events > RTC Alarm Resume

**RTC Alarm Resume**
- Disabled (Default)
- Enabled

This item lets you specify enable or disable RTC alarm resume function.

Power Management > Wake Up Events > Date (of Month)

**Date (of Month)**
- 0 to 31

This item is displayed when you enable the “RTC Alarm Resume” option. Here you can specify what date you want to wake up the system. For example, setting to 15, the system will wake up on the 15th day of every month.

Power Management > Wake Up Events > Time (hh:mm:ss)

**Time (hh:mm:ss)**
- hh:mm:ss

This item is displayed when you enable the “RTC Alarm Resume” option. Here you can specify what time you want to wake up the system.
Power Management > Wake Up Events > Primary INTR

**Primary INTR**
On (Default)
Off

This item can let you enable or disable the wake up ability of a specified IRQ.

Power Management > Wake Up Events > IRQs Activity Monitoring

```
<table>
<thead>
<tr>
<th>IRQ</th>
<th>ON</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary INTR</td>
<td>ON</td>
<td></td>
</tr>
<tr>
<td>IRQ3</td>
<td>COM 2</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ4</td>
<td>COM 1</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ5</td>
<td>LPT 2</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ6</td>
<td>(Floppy Disk)</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ7</td>
<td>LPT 1</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ8</td>
<td>(RTC Alarm)</td>
<td>Disabled</td>
</tr>
<tr>
<td>IRQ9</td>
<td>(IRQ2 Redir)</td>
<td>Disabled</td>
</tr>
<tr>
<td>IRQ10</td>
<td>(Reserved)</td>
<td>Disabled</td>
</tr>
<tr>
<td>IRQ11</td>
<td>(Reserved)</td>
<td>Disabled</td>
</tr>
<tr>
<td>IRQ12</td>
<td>(PS/2 Mouse)</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ13</td>
<td>(Coprocessor)</td>
<td>Disabled</td>
</tr>
<tr>
<td>IRQ14</td>
<td>(Hard Disk)</td>
<td>Enabled</td>
</tr>
<tr>
<td>IRQ15</td>
<td>(Reserved)</td>
<td>Disabled</td>
</tr>
</tbody>
</table>
```

These items enable or disable the detection of IDE, floppy, serial, parallel and PCI IRQ activities for power down state transition.
**IRQs Activity Monitoring**

- IRQ3 (COM 2)
- IRQ4 (COM 1)
- IRQ5 (LPT 2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

These items can enable or disable the detection of devices activities by IRQs for power down state transition.
**PNP/PCI Configurations Setup**

The PNP/PCI Configurations Setup allows you to configure the PCI devices installed in your system. The following screen appears if you select the option "PNP/PCI Configurations" from the main menu.

![CMOS Setup Utility - Copyright (C) 1984-2000 Award Software PnP/PCI Configurations](image)

<table>
<thead>
<tr>
<th>PNP OS Installed</th>
<th>No</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reset Configuration Data</td>
<td>Disabled</td>
<td>Menu Level ▶</td>
</tr>
<tr>
<td>Resources Controlled By X IRQ Resources</td>
<td>Auto Press Enter</td>
<td>Select Yes if you are using a Plug and Play capable operating system. Select No if you need the BIOS to configure non-boot devices.</td>
</tr>
<tr>
<td>PCI/VGA Palette Snoop</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>Assign IRQ For VGA</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Assign IRQ For USB</td>
<td>Enabled</td>
<td></td>
</tr>
</tbody>
</table>

---

PNP/PCI Configuration > PnP OS Installed

<table>
<thead>
<tr>
<th>PnP OS Installed</th>
<th>Yes</th>
<th>No (Default)</th>
</tr>
</thead>
</table>

Normally, the PnP resources are allocated by BIOS during POST (Power-On Self Test). If you are using a PnP operating system (such as Windows 95), set this item to **Yes** to inform BIOS to configure only the resources needed for booting (VGA/IDE or SCSI). The rest of system resources will be allocated by PnP operating system.

PNP/PCI Configuration > Reset Configuration Data

<table>
<thead>
<tr>
<th>Reset Configuration Data</th>
<th>Enabled</th>
<th>Disabled (Default)</th>
</tr>
</thead>
</table>

In case conflict occurs after you assign the IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.

PNP/PCI Configuration > Resources Controlled By

<table>
<thead>
<tr>
<th>Resources Controlled by</th>
<th>Auto (Default)</th>
<th>Manual</th>
</tr>
</thead>
</table>

Setting this option to Manual allows you to individually assign the IRQs and DMAs to the ISA and PCI devices. Set this to **Auto** to enable the auto-configuration function.
### PNP/PCI Configuration > IRQ Resource

<table>
<thead>
<tr>
<th>IRQ</th>
<th>Assigned To</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>PCI/ISA PnP</td>
<td>Legacy ISA for devices compliant with the original PC AT bus specification. PCI/ISA PnP for devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.</td>
</tr>
<tr>
<td>4</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>PCI/ISA PnP</td>
<td></td>
</tr>
</tbody>
</table>

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

**Interrupts assigned to**

- ** INTERRUPT 3, 4, 5, 7, 9, 10, 11, 12, 14, 15 ** assigned to
  - PCI/ISA PnP (Default)
  - Legacy ISA
### PNP/PCI Configuration > DMA Resource >

<table>
<thead>
<tr>
<th>DMA-0 assigned to</th>
<th>PCI/ISA PnP</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMA-1 assigned to</td>
<td>PCI/ISA PnP</td>
</tr>
<tr>
<td>DMA-3 assigned to</td>
<td>PCI/ISA PnP</td>
</tr>
<tr>
<td>DMA-5 assigned to</td>
<td>PCI/ISA PnP</td>
</tr>
<tr>
<td>DMA-6 assigned to</td>
<td>PCI/ISA PnP</td>
</tr>
<tr>
<td>DMA-7 assigned to</td>
<td>PCI/ISA PnP</td>
</tr>
</tbody>
</table>

**Item Help**

Legacy ISA for devices compliant with the original PC AT bus specification. PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
PNP/PCI Configuration > DMA Resource > DMA 0, 1, 3, 5, 6, 7 assigned to

<table>
<thead>
<tr>
<th>DMA 0, 1, 3, 5, 6, 7 assigned to</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCI/ISA PnP (Default)</td>
</tr>
<tr>
<td>Legacy ISA</td>
</tr>
</tbody>
</table>

When resources are controlled manually, assign each system DMA a type, depending on the type of device using the interrupt. Legacy ISA devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port1). PCI/ISA PnP devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

PNP/PCI Configuration > PCI/VGA Palette Snoop

<table>
<thead>
<tr>
<th>PCI/VGA Palette Snoop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled</td>
</tr>
<tr>
<td>Disabled (Default)</td>
</tr>
</tbody>
</table>

Enabling this item informs the PCI VGA card to keep silent (and to prevent conflict) when palette register is updated (i.e., accepts data without responding any communication signals). This is useful only when two display cards use the same palette address and plugged in the PCI bus at the same time (such as MPEG or Video capture card). In such case, PCI VGA is silent while MPEG/Video capture card is set to function normally.
PNP/PCI Configuration > Assign IRQ For VGA

<table>
<thead>
<tr>
<th>Assign IRQ For VGA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
<td></td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>

In case conflict occurs after you assign the IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.

PNP/PCI Configuration > Assign IRQs For USB

<table>
<thead>
<tr>
<th>Assign IRQ For USB</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabled (Default)</td>
<td></td>
</tr>
<tr>
<td>Disabled</td>
<td></td>
</tr>
</tbody>
</table>

In case conflict occurs after you assign the IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.
**PC Health Status**

As a hardware monitor chip built-in the **VIA VT82C686A Super South Bridge**, BIOS will automatically detect system health parameters such as CPU temperature, CPU fan speed, CPU voltage and voltage on the motherboard. Hence, from this data, the healthy status of system will be showed.
**Frequency/Voltage Control**

This option allows you to configure the CPU Front Side Bus (FSB) frequency.

<table>
<thead>
<tr>
<th>Option</th>
<th>Value</th>
<th>Item Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Detect DIMM/PCI Clk</td>
<td>Enabled</td>
<td></td>
</tr>
<tr>
<td>Spread Spectrum</td>
<td>Disabled</td>
<td></td>
</tr>
<tr>
<td>CPU Host Clock (CPU/PCI)</td>
<td>Default</td>
<td></td>
</tr>
</tbody>
</table>

**Controls:**
- ↑↓←→: Move
- Enter: Select
- +/-/PU/PD: Value
- F10: Save
- ESC: Exit
- F1: General Help
- F5: Previous Values
- F6: Fail-Safe Defaults
- F7: Turbo Defaults
Frequency/Voltage Control > Auto Detect DIMM/PCI Clock

**Auto Detect DIMM/PCI Clock**

- **Enabled (Default)**
- **Disable**

This item allows you enable or disable DIMM/PCI clock auto-detection function.

Frequency/Voltage Control > Spread Spectrum

**Spread Spectrum**

- **Enabled**
- **Disabled (Default)**

This item lets you enable or disable the spread spectrum modulate.
Frequency/Voltage Control > CPU Host Clock (CPU/PCI)

This item allows you modify the CPU FSB clock.

FSB x Ratio = CPU clock

---

**Notes:** If CPU speed detected does not match the CPU speed setup, it is probably caused by the CPU has a fixed FSB clock or ratio.

---

**Warning:** If you fail to reboot the system, please press `<Home>` key first and then press **Reset Button** at the same time.
Load Setup Defaults

The "Load Setup Defaults" option loads optimized settings for optimum system performance. Optimal settings are relatively safer than the Turbo settings. All the product verification, compatibility/reliability test report and manufacture quality control are based on "Load Setup Defaults". We recommend use this settings for normal operation. “Load Setup Defaults” is not the slowest setting for this motherboard. If you need to verify an unstable problem, you may manually set the parameter in the “Advanced BIOS Features” Setup and "Advanced Chipset Features” Setup to get slowest and safer setting.

![CMOS Setup Utility - Copyright (C) 1984-2000 Award Software](image)

- **Standard CMOS Features**
- **Advanced BIOS Features**
- **Advanced Chipset Features**
- **Integrated Peripherals**
- **Power Management**
- **PnP/PCI Configurations**
- **PC Health Status**

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Load Fail-Safe Defaults

Esc : Quit  F9 : Menu in BIOS  ↑↓←→ : Select Item  F10 : Save & Exit Setup
Load Turbo Defaults

The "Load Turbo Defaults" option gives better performance than "Load Setup Defaults". It is provided for the convenience of power user who wants to push the motherboard to get better performance. Turbo setting does not go through all the detail reliability and compatibility test, it is tested only with limited configuration and loading (for example, a system that contains only a VGA card and two DIMMs). Use Turbo setting only when you fully understand the items in Chipset Setup menu. The performance improvement of Turbo setting is normally around 3% to 5%, depending on the chipset and the application.
Set Supervisor Password

Password prevents unauthorized use of your computer. If you set a password, the system prompts for the correct password before boot or access to Setup.

To set a password:

1. At the prompt, type your password. Your password can be up to 8 alphanumeric characters. When you type the characters, they appear as asterisks on the password screen box.
2. After typing the password, press `<Enter>` key.

3. At the next prompt, re-type your password and press again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

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<tr>
<td>Esc : Quit</td>
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<tr>
<td>F10 : Save &amp; Exit Setup</td>
<td>↑ ↓ → ← : Select Item</td>
</tr>
</tbody>
</table>

Change/Set/Disable Password
To disable the password, just press <Enter> key when prompted to enter new password. The screen displays a message confirming that the password has been disabled.
Save & Exit Setup

This function automatically saves all CMOS values before leaving Setup.
Exit without Saving

Use this function to exit Setup without saving the CMOS value changes. Do not use this option if you want to save the new configuration.
**BIOS Upgrade**

By flashing your motherboard, you agree to accept the possibility of BIOS flash failure. If you motherboard is working and is stable, and there are no major bugs that were fixed by a latter BIOS revision, we recommend that you DO NOT try to upgrade your BIOS.

By doing so, you are taking a risk of BIOS flash failure. If you indeed intent on upgrading, PLEASE BE SURE to use the right BIOS revision for the right motherboard model.

AOpen Easy Flash is a little different than traditional flash method. The BIOS binary file and flash routine are linked together and you simply run a single commend to complete the flash process.

---

**Caution:** AOpen Easy Flash BIOS programs are designed to be compatible with the Award BIOS. At the date of this note, AOpen Easy Flash BIOS programs are not available for AMI BIOS. AMI BIOS appears mostly only on old 486 boards and some early Pentium boards. Please be sure to view the README compressed inside the BIOS package before upgrading, and follow upgrade instructions carefully. This will minimize the chance of flash failures.
Below are the steps for easy flashing procedures: (applies for Award BIOS ONLY)

1. Download new BIOS upgrade zip file from AOpen's web site. For example, MX36102.ZIP.
3. Save the unzipped file into a bootable floppy disk. For example, MX36102.BIN & MX36102.EXE
4. Reboot the system to DOS mode without loading any memory handler (such as EMM386) or device driver. It needs around 520K free memory spaces.
5. Execute A:> MX36102 and the program will do the rest of it.
   
   **DO NOT turn off the power during FLASH PROCESS until you are asked to!!**

6. Reboot system and press <Del> to enter BIOS setup, Choose "Load Setup Defaults", then "Save & Exit Setup". Done!

**Warning:** The new BIOS upgrade will permanently replace your original BIOS's settings and PnP information when flashing. You may need to reconfigure your BIOS setting and re-install Win95/Win98 as well as your add-on cards, so that your system can go back to work as normal.
(This page left blank intentionally for notes)
Overclocking

As a leading manufacturer in motherboard industry, AOpen always listens to what customers want and develop products to fit different user's requirements. Reliability, compatibility, leading technology and friendly features are our basic goals when designing motherboards. Other than above mentioned design criteria, there are power users who are always seeking to push the limitation of the system performance by overclocking which we call them "Overclocker".

This section is dedicated to overclockers.

This high performance motherboard is designed for maximum 100MHz CPU bus clock. But it comes with clock generator of 150MHz when we design it to accommodate future CPU bus clock. Our lab test results shown that 150MHz is achievable when proper setting and qualified components were presented, we feel quite comfortable overclocking to 150MHz. Not only that, this motherboard has full-range (CPU core voltage) settings and an option to adjust CPU core voltage. The CPU clock ratio can be up to 8x that supports almost all of Pentium III/Celeron CPUs in the future and provides flexibility for overclockers. For your reference, the following configurations are what we feel comfortable at 150MHz bus clock.

But not guaranty. 😊
Warning: The design of this product follows CPU and chipset vendor’s design guideline. Any attempts to push beyond product specification are not recommended and you are taking your own risk to damage your system or important data. Before doing overclocking, you must make sure your components are able to tolerate such abnormal setting, especially CPU, DRAMs, hard disks, and AGP VGA cards.

Tip: Note that overclocking may also cause thermal problem. Please make sure that the cooling fan and the heatsink were adequate to dissipate excessive heat that’s generated by overclocking the CPU.
VGA Card & Hard Disk

VGA and HDD is key components for overclocking, for your reference, the following list are what have been successful overclocked in our lab. Please note that AOpen can not guaranty they can be successful overclocked again. Please check the Available Vendor List (AVL) by link to our official website.

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Glossary

AC97

Basically, AC97 specification separates sound/modem circuit to two parts, digital processor and a CODEC for analogy I/O they are linked by AC97 link bus. Since digital processor can be put into motherboard main chipset, the cost of sound/modem onboard solution can be reduced.

ACPI (Advanced Configuration & Power Interface)

ACPI is the power management specification of PC97 (1997). It intends to save more power by taking full control of power management to operating system and bypass BIOS. The chipset or super I/O chip needs to provide standard register interface to operating system (such as Windows 98). This is a bit similar as the PnP register interface. ACPI defines ATX momentary soft power switch to control the power state transition.
**AGP (Accelerated Graphic Port)**

AGP is a bus interface targeted for high-performance 3D graphic. AGP supports only memory read/write operation and single-master single-slave one-to-one only. AGP uses both rising and falling edge of the 66MHz clock, for 2X AGP, the data transfer rate is $66\text{MHz} \times 4\text{byte} \times 2 = 528\text{MB/s}$. AGP is now moving to 4X mode, $66\text{MHz} \times 4\text{byte} \times 4 = 1056\text{MB/s}$. AOpen is the first company to support 4X AGP motherboards by both AX6C (Intel 820) and MX64/AX64 (VIA 694x), started from Oct 1999.

**AMR (Audio/Modem Riser)**

The [CODEC](#) circuit of AC97 sound/modem solution can be put on motherboard or put on a riser card (AMR card) that connects to motherboard through AMR connector.

**AOpen Bonus Pack CD**

A disc bundled with AOpen motherboard product, there are motherboard drivers, Acrobat Reader for [PDF](#) online manual and other useful utilities.
**APM (Advanced Power Management)**

Unlike ACPI, BIOS controls most APM power management functions. AOpen Suspend to Hard Drive is a good example of APM power management.

**ATA (AT Attachment)**

ATA is the specification of diskette interface. In 80’s, many software and hardware manufacturers instituted the ATA specification together. The AT is meaning International Business Machines Corporation (IBM) personal computer/AT’s bus structure.

**ATA/66**

ATA/66 uses both rising edge and falling edge but doubles UDMA/33 transfer rate. The data transfer rate is 4 times of the PIO mode 4 or DMA mode 2, 16.6MB/s x4 = 66MB/s. To use ATA/66, you need special ATA/66 IDE cable.

**ATA/100**

ATA/100 is a new IDE specification under developing. ATA/100 uses both rising edge and falling edge as ATA/66 but clock cycle time is reduced to 40ns. The data transfer rate is (1/40ns) x 2 bytes x 2 = 100MB/s. To use ATA/100, you need special 80-wire IDE cable, the same as ATA/66.
**BIOS (Basic Input/Output System)**

BIOS is a set of assembly routine/program that reside in EPROM or Flash ROM. BIOS controls Input/output devices and other hardware devices of motherboard. In general, to provide hardware independent portability, operation system and drivers is required to access BIOS without directly access hardware devices.

**Bus Master IDE (DMA mode)**

The traditional PIO (Programmable I/O) IDE requires the CPU to involve in all the activities of the IDE access including waiting for the mechanical events. To reduce the workload of the CPU, the bus master IDE device transfers data from/to memory without interrupting CPU, and releases CPU to operate concurrently while data is transferring between memory and IDE device. You need the bus master IDE driver and the bus master IDE HDD to support bus master IDE mode.

**CODEC (Coding and Decoding)**

Normally, CODEC means a circuit that can do digital to analog conversion and also the analog to digital conversion. It is part of AC97 sound/modem solution.
**DIMM (Dual In Line Memory Module)**

DIMM socket has total 168-pin and supports 64-bit data. It can be single or double side, the golden finger signals on each side of PCB are different, that is why it was called Dual In Line. Almost all DIMMs are made by SDRAM, which operate at 3.3V. Note that some old DIMMs are made by FPM/EDO and only operate at 5V. Do not confuse them with SDRAM DIMM.

**ECC (Error Checking and Correction)**

The ECC mode needs 8 ECC bits for 64-bit data. Each time memory is accessed; ECC bits are updated and checked by a special algorithm. The ECC algorithm has the ability to detect double-bit error and automatically correct single-bit error while parity mode can only detect single-bit error.

**EDO (Extended Data Output) Memory**

The EDO DRAM technology is actually very similar to FPM (Fast Page Mode). Unlike traditional FPM that tri-states the memory output data to start the pre-charge activity, EDO DRAM holds the memory data valid until the next memory access cycle, that is similar to pipeline effect and reduces one clock state.
**EEPROM (Electronic Erasable Programmable ROM)**

Also known as E²PROM. Both EEPROM and Flash ROM can be re-programmed by electronic signals, but the interface technology is different. Size of EEPROM is much smaller than flash ROM.

**EPROM (Erasable Programmable ROM)**

Traditional motherboard stores BIOS code in EPROM. EPROM can only be erased by ultra-violet (UV) light. If BIOS has to be upgraded, you need to remove EPROM from motherboard, clear by UV light, re-program, and then insert back.

**EV6 Bus**

EV6 Bus in the technology of Alpha processor from Digital Equipment Corporation. EV6 bus uses both rising and falling clock edge to transfer data, similar as DDR SDRAM or ATA/66 IDE bus.

EV6 Bus Speed = CPU external bus clock x 2.

For example, 200 MHz EV6 bus is actually using 100 MHz external bus clock, but the equivalent speed is 200 MHz.
**FCC DoC (Declaration of Conformity)**

The DoC is component certification standard of FCC EMI regulations. This standard allows DIY component (such as motherboard) to apply DoC label separately without a shielding of housing.

**FC-PGA (Flip Chip-Pin Grid Array)**

FC means Flip Chip, FC-PGA is a new package of Intel for Pentium III CPU. It can plug into SKT370 socket, but require motherboard to add some signals on socket 370. That is, the motherboard needs to be redesigned. Intel is going to ship FC-PGA 370 CPU and phase out slot1 CPU.

**Flash ROM**

Flash ROM can be re-programmed by electronic signals. It is easier for BIOS to upgrade by a flash utility, but it is also easier to be infected by virus. Because of increase of new functions, BIOS size is increased from 64KB to 256KB (2M bit). AOpen AX5T is the first board to implement 256KB (2Mbit) Flash ROM. Now flash ROM size is moving to 4M bit on AX6C (Intel 820) and MX3W (Intel 810) motherboard. AOpen motherboard uses EEPROM for jumper-less and battery-less design.
**FSB (Front Side Bus) Clock**

FSB Clock means CPU external bus clock.

CPU internal clock = CPU FSB Clock x CPU Clock Ratio

**I²C Bus**

See [SMBus](#).
IEEE 1394

IEEE 1394 is a low-cost digital interface originated by Apple Computer as a desktop LAN and developed by the IEEE 1394 working group. The IEEE 1394 can transport data at 100, 200 or 400 Mbps. One of the solutions to connect digital television devices together at 200 Mbps. Serial Bus Management provides overall configuration control of the serial bus in the form of optimizing arbitration timing, guarantee of adequate electrical power for all devices on the bus, assignment of isochronous channel ID, and notification of errors. There are two type of IEEE 1394 data transfer: asynchronous and isochronous. Asynchronous transport is the traditional computer memory-mapped, load and store interface. Data requests are sent to a specific address and an acknowledgment is returned. In addition to an architecture that scales with silicon technology, IEEE 1394 features a unique isochronous data channel interface. Isochronous data channels provide guaranteed data transport at a pre-determined rate. This is especially important for time-critical multimedia data where just-in-time delivery eliminates the need for costly buffering.

Parity Bit

The parity mode uses 1 parity bit for each byte, normally it is even parity mode, that is, each time the memory data is updated, parity bit will be adjusted to have even count “1” for each byte. When next time, if memory is read with odd number of “1”, the parity error is occurred and this is called single bit error detection.
PBSRAM (Pipelined Burst SRAM)

For Socket 7 CPU, one burst data read requires four QWord (Quad-word, 4x16 = 64 bits). PBSRAM only needs one address decoding time and automatically sends the remaining QWords to CPU according to a predefined sequence. Normally, it is 3-1-1-1, total 6 clocks, which is faster than asynchronous SRAM. PBSRAM is often used on L2 (level 2) cache of Socket 7 CPU. Slot 1 and Socket 370 CPU do not need PBSRAM.

PC-100 DIMM

SDRAM DIMM that supports 100MHz CPU FSB bus clock.

PC-133 DIMM

SDRAM DIMM that supports 133MHz CPU FSB bus clock.

PCI (Peripheral Component Interface) Bus

Bus for the internal connection of peripheral devices, high-speed data channel between the computer and expansion card.
PDF Format

A file format for electronic document, PDF format is independent from platform, you can read PDF file under Windows, Unix, Linux, Mac ... with different PDF reader. You can also read PDF file by web browser such as IE and Netscape, note that you need to install PDF plug-in first (Included in Acrobat Reader).

PnP (Plug and Play)

The PnP specification suggests a standard register interface for both BIOS and operating system (such as Windows 95). These registers are used by BIOS and operating system to configure system resource and prevent any conflicts. PnP BIOS or operating system will automatically allocate the IRQ/DMA/Memory. Currently, almost all the PCI cards and most ISA cards are already PnP compliant.

POST (Power-On Self Test)

The BIOS self-test procedure after power-on, sometimes, it is the first or the second screen shown on your monitor during system boot.
RDRAM (Rambus DRAM)

Rambus is a memory technology that uses large burst mode data transfer. Theoretically, the data transfer should be high than SDRAM. RDRAM is cascaded in channel operation. For Intel 820, only one RDRAM channel is supported, 16-bit data per channel, and this channel may have maximum 32 RDRAM devices, no matter how many RIMM sockets.

RIMM (Rambus Inline Memory Module)

184-pin memory module that supports RDRAM memory technology. A RIMM memory module may contain up to maximum of 16 RDRAM devices.

SDRAM (Synchronous DRAM)

SDRAM is one of the DRAM technologies that allow DRAM to use the same clock as the CPU host bus (EDO and FPM are asynchronous and do not have clock signal). It is similar as PBSRAM to use burst mode transfer. SDRAM comes in 64-bit 168-pin DIMM and operates at 3.3V. AOpen is the first company to support dual-SDRAM DIMMs onboard (AP5V), from Q1 1996.
**Shadow E²PROM**

A memory space in Flash-ROM to simulate E²PROM operation, AOpen motherboard uses Shadow E²PROM for jumper-less and battery-less design.

**SIMM (Single In Line Memory Module)**

SIMM socket is only 72-pin, and is only single side. The golden finger signals on each side of PCB are identical. That is why it was called Single In Line. SIMM is made by FPM or EDO DRAM and supports 32-bit data. SIMM had been phased out on current motherboard design.

**SMBus (System Management Bus)**

SMBus is also called I2C bus. It is a two-wire bus developed for component communication (especially for semiconductor IC). For example, set clock of clock generator for jumper-less motherboard. The data transfer rate of SMBus is only 100Kbit/s, it allows one host to communicate with CPU and many masters and slaves to send/receive message.
**SPD (Serial Presence Detect)**

SPD is a small ROM or EEPROM device resided on the DIMM or RIMM. SPD stores memory module information such as DRAM timing and chip parameters. SPD can be used by BIOS to decide best timing for this DIMM or RIMM.

**Ultra DMA/33**

Unlike traditional PIO/DMA mode, which only uses the rising edge of IDE command signal to transfer data. UDMA/33 uses both rising edge and falling edge; the data transfer rate is double of the PIO mode 4 or DMA mode 2.

\[16.6\text{MB/s} \times 2 = 33\text{MB/s}\]

**USB (Universal Serial Bus)**

USB is a 4-pin serial peripheral bus that is capable of cascading low/medium speed peripherals (less than 10Mbit/s) such as keyboard, mouse, joystick, scanner, printer and modem. With USB, the traditional complex cables from back panel of your PC can be eliminated.
**VCM (Virtual Channel Memory)**

NEC’s Virtual Channel Memory (VCM) is a new DRAM core architecture that dramatically improves the memory system’s ability to service multimedia requirements. VCM increases memory bus efficiency and performance of any DRAM technology by providing a set of fast static registers between the memory core and I/O pins. Using VCM technology results in reduced data access latency and reduced power consumption.

**ZIP file**

Troubleshooting

Start

Turn off the power and unplug the AC power cable, then remove all of the add-on cards and cables, including VGA, IDE, FDD, COM1, COM2 and ...

Make sure if all jumper settings are correct.

Clear CMOS

Next
1. Install the VGA card. Then connect your monitor and keyboard.

2. Turn on the power and check if the power supply and CPU fan work properly.

   - Yes: Continue
   - No: The problem is probably caused by power supply or motherboard failure. Please contact your reseller or local distributor for repairing.
Press <Ctrl> and <Alt> key at the same time, hold them and then press <Del> to reboot the system.

Check if there is display?

Yes

No

Perhaps your **VGA card or monitor is defective.**

Check if the system reboots?

Yes

Next

No

It is very possible that your **keyboard is defective.**
During system rebooting, press <Del> to enter BIOS setup. Choose "Load Setup Default".

Turn off the system and re-connect IDE cable.

Check if the system can reboot successfully?

- **No**: The problem should be caused by the IDE cable or HDD itself.

- **Yes**: Re-install the operating system such as Windows 98.

**End**
Technical Support

Dear Customer,

Thanks for choosing AOpen products. To provide the best and fastest service to our customer is our first priority. However, we receive numerous emails and phone-calls worldwide everyday, it is very hard for us to serve everyone on time. We recommend you follow the procedures below and seek help before contact us. With your help, we can then continue to provide the best quality service to more customers.

Thanks very much for your understanding!

AOpen Technical Supporting Team

1. **Online Manual:** Please check the manual carefully and make sure the jumper settings and installation procedure are correct.
   

2. **Test Report:** We recommend to choose board/card/device from the compatibility test reports for assembling your PC.

FAQ: The latest FAQ (Frequently Asked Questions) may contain a solution to your problem.

Download Software: Check out this table to get the latest updated BIOS/utility and drivers.

News Group: Your problem probably had been answered by our support engineer or professional users on the news group.

Contact Distributors/Resellers: We sell our products through resellers and integrators. They should know your system configuration very well and should be able to solve your problem more efficiently than us. After all, their attitude of service is an important reference for you if next time you want to buy something else from them.
Contact Us: Please prepare detailed system configuration and error symptom before contacting us. The **part number**, **serial number** and **BIOS version** are also very helpful.

**Part Number and Serial Number**

The Part Number and Serial number are printed on bar code label. You can find this bar code label on the outside packing, on ISA/CPU slot or on component side of PCB. For example:

P/N: 91.88110.201  S/N: 91949378KN73

Part No.  Serial No.

P/N: 91.88110.201 is part number, S/N: 91949378KN73 is serial number.
Model name and BIOS version

Model name and BIOS version can be found on upper left corner of first boot screen (POST screen). For example:

MX36 R1.20 Jul.01.2000 AOpen Inc.

Award Plug and Play BIOS Extension v1.0A
Copyright © 1998, Award Software, Inc.

MX36 is model name of motherboard, R1.20 is BIOS version.
Product Registration

Thank you for choosing AOpen product. AOpen encourages you to spend few minutes in completing the following product registration. To register your product will ensure the high quality of services from AOpen. After the registration, you will:

- Have opportunities to play online slot machine and win a prize from AOpen by accumulating your bonuses for later prize exchange.
- Be upgraded to gold membership of Club AOpen program.
- Receive email notification about product safety alerts. Its purpose is to alert consumers quickly and conveniently when products contain technical issues.
- Receive email notification about latest product's announcements.
- Be able to personalize your AOpen web pages.
- Receive e-mail notification about latest BIOS/Driver/Software release information.
- Have opportunities to participate special product promotional programs.
- Enjoy higher service priority to receive technical assistance provided by AOpen specialists worldwide.
Be able to join the discussions of web-based news groups.

AOpen makes sure that the information you provide is encrypted, so that it cannot be read or intercepted by other people or companies. Further, AOpen will not disclose any of information you submitted under any conditions. Please consult our online privacy policy for further information on our company policy.

**Note:** If registering products purchased from different dealers/retails and/or purchased on different dates, please submit a separate form for each product.
Email: Send us email by going through the contact form below.

English  http://www.aopen.com.tw/tech/contact/techusa.htm
Chinese  http://w3.aopen.com.tw/tech/contact/techtw.htm
German  http://www.aopencom.de/tech/contact/techde.htm
Simplified Chinese  http://www.aopen.com.cn/tech/contact/techcn.htm

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