# TM-810LM
## All-In-One Mainboard

**Version: 1.0**

Warning: Never run the processor without the heatsink properly and firmly installed. Permanent Damage Will result!

# Copyright



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Printed in Taiwan

# Overview

The TM-810LM is a Pentium III Socket 370 based mainboard that utilizes Intel i810E chipset on All-In-One platform. It supports Intel PPGA (Plastic Pin Grid Array) Celeron up to 800 MHz and FC-PGA processor up to 966GHz.

This mainboard integrates a 3D AGP Graphics Accelerator, PCI 3D Sound System, 10 BaseT/100 BaseTX Network interface and V.90 Fax/Modem DAA Module. Additionally, there is a TV-Out and LCD Raiser slot onboard for outputting system Video to TV and LCD panel. This Flex-ATX size mainboard is also featured with PS/2 keyboard and mouse ports, a RJ-45 LAN port, two USB ports and a parallel port, a serial port and VGA port.

This all-in-one mainboard featured complete specifications to develop a powerful multimedia PC or workstation.

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# Introduction

## Specifications

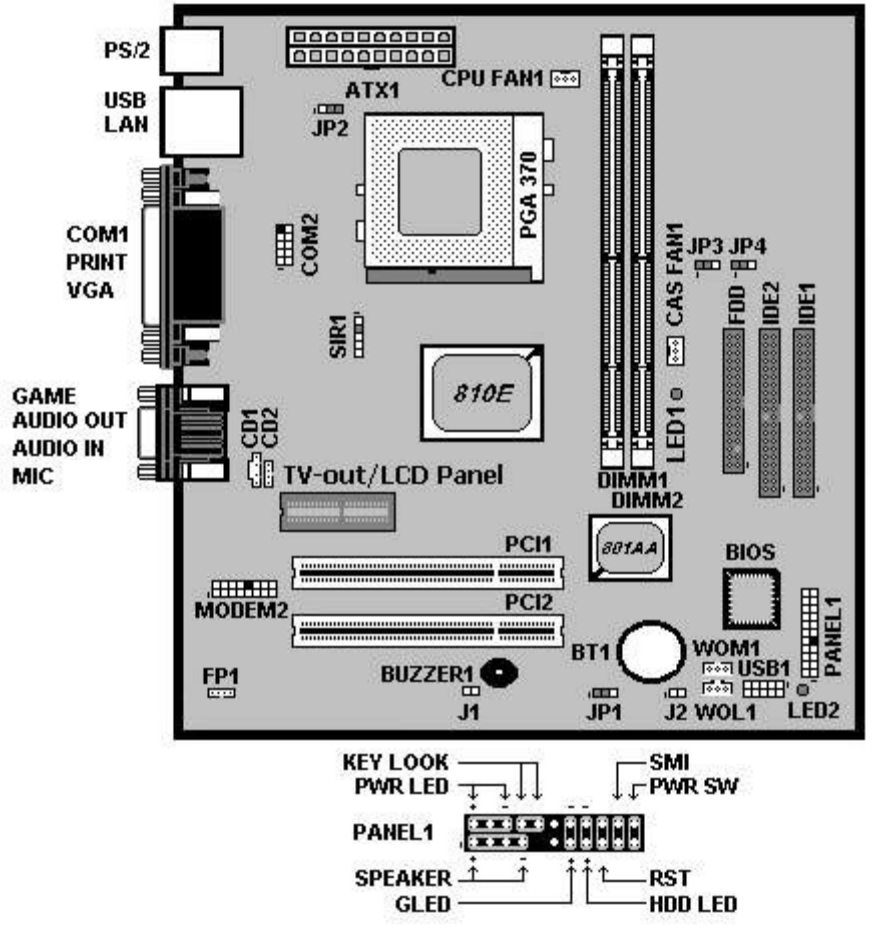
| | |
|---|---|
| **System Chipset** | Intel i810e chipset. |
| **CPU** | Supports 66MHz Clock PPGA Celeron up to 800 MHz and and 100, 133 Clock FC-PGA up to 966 MHz. |
| **Memory** | Supports 2 x DIMM of 66, 100 and 133 MHz memory maximum up to 512MB. |
| **VGA On Board** | *3D AGP Graphics Accelerator optimized for smooth 2D and 3D video.<br>*Shared memory architecture does not require dedicated video memory.<br>*Supports hardware DVD Accelerator and Direct DVD to TV playback.<br>*Supports high resolutions up to 1600x1200 16M colors. |
| **Sound On Board** | *16 bit Codec for full-duplex playback & recording<br>*Complies with PC98 audio specs.<br>*Direct Sound 3D & 4-channel speakers.<br>*Built-in 32 ohm earphone buffer & 3D surround sound.<br>*Provides MPU-401 Game/MIDI port and legacy Sound Blaster 16 supported.<br>*Downloadable Wave-Table Synthesizer supports Direct Music.<br>*Stereo Mixer supports analog mixing from CD-Audio and line In. |

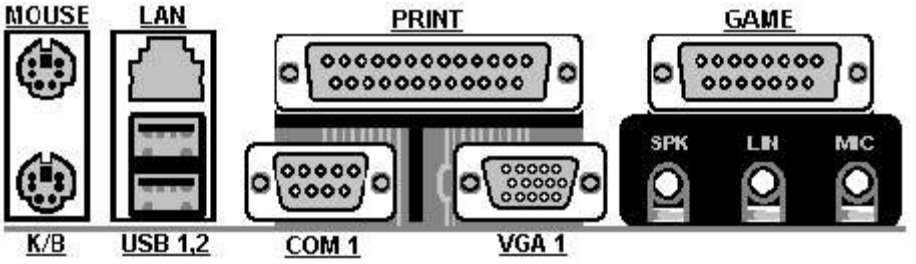
| | |
|---|---|
| **LAN On Board** | *Built-In 10BaseT-100BaseTX Ethernet LAN.<br>*LAN controller integrates Fast Ethernet MAC and PHY compliant with IEEE802.3u 100Base-TX, 10 Base-T and ANSI x3.263 TP-PMD standards.<br>*Compliant with ACPI 1.0 and the network Device Class Power Management 1.0<br>*High performance provided by 100Mpbs clock generator and data recovery circuit for 100Mbps receiver. |
| **Fax/Modem DAA Module attached** | *56Kbps Fax/Modem DAA module<br>*Supports V.90, V.34, V.32bis, V.32, V.22bis, V.22<br>*Supports Auto Fallback and MNP5, V.42bis data compression with 115, 200-compatible Virtual UART.<br>*Requires 16MB RAM and Microsoft Windows 95/98/NT |
| **I/O** | *1 x high speed 16550 compatible serial ports, (2nd serial port available with extension bracket is optional)<br>*1 x Parallel Port support SPP/EPP/ECP standard mode.<br>*2 x onboard PCI IDE Ports, (32-bit data transfer) and Ultra ATA 33/66 modes.<br>* LS-120/ ZIP FDD, IrDA/ ASK IR/ Consumer IR.<br>2 x USB ports.<br>*Support two 360/720KB/1.2/1.44/2.88MB floppy disk devices.<br>*Two PS/2 port for keyboard and mouse. |
| **Hardware Monitoring** | Monitoring for CPU & System temperature, fan Speeds and mainboard voltages. |
| **BIOS** | AMI (Flash and PnP). |

| | |
|---|---|
| **Expansion slots** | 2x PCI Slots, 1 x slot for TV-Out and LCD Raiser. |
| **Dimension** | 4-layer PCB, size (23mm x 19mm). |
| **Bundled Software** | ***Super VB :** Provides anti-virus protection.<br>***Super Voice :** For data, FAX and voice communication.<br>***Gamut 2000:** Provides professional audio features.<br>***Media Ring Talk :** Provides PC to PC, or PC to phone internet communication.<br>***Corel WordPerfect Suite 8 :** A office application suite under Windows.<br>***3 DEEP :** Provides for adjust color, contrast and brightness of monitor. |
| **Package Contents** | *The mainboard<br>*The Manual<br>*CD Driver<br>*ATA 66 & FDD cables<br>*Fax/Modem DAA Module |
| **Optional Accessories** | *2nd Serial port extension bracket.<br>*TV-out Riser card. |

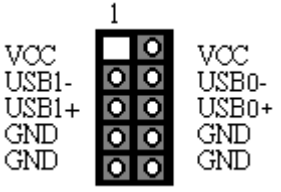
# Setup Guide

## A.Layout Diagram






- **USB1 : USB Connector**




- **SIR1 : Infrered Port (IrDA)**
  - **1 – VCC**
  - **2 – NC**
  - **3 – IRRx**
  - **4 – GND**
  - **5 - IRTx**

## B. Jumper Settings

When put a jumper cap on two pins to short, we name it **ON**. When remove jumper cap from two pins or just put on one pin, we name it **OFF**.

- **JP1 : Clear CMOS Memory**

| | |
|---|---|
| **Pin 1-2 On** | **Normal Operation** |
| **Pin 2-3 On** | **Clear CMOS Memory** |

- **JP2 : Keyboard Power On Set Up**

When enable Keyboard Power On Set Up, you are able to Power On/Off via hot keys setting. However, the power supply must provide minimum **750mA on the +5VSB (+5V Standby)** for working normally.

| | |
|---|---|
| **Pin 1-2 On** | **Enable Keyboard Power On** |
| **Pin 2-3 On** | **Disable Keyboard Power On** |

- **JP3 : Set CPU Clock to 100 MHz**

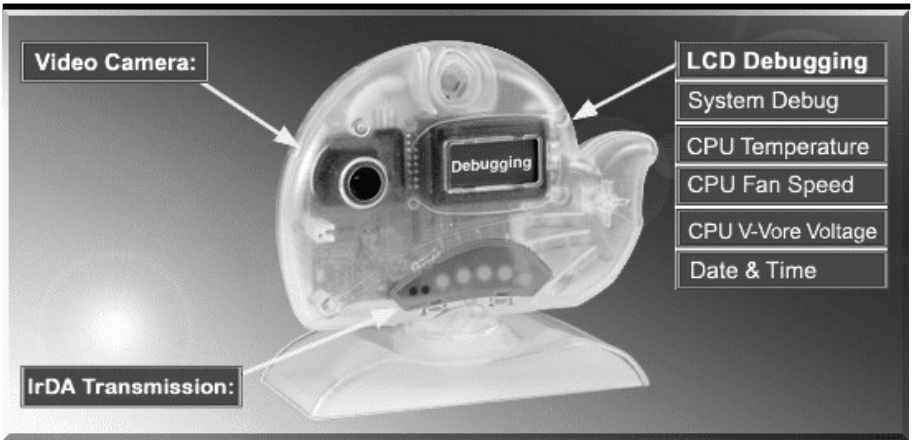
| | |
|---|---|
| **Pin 1-2 On** | **Normal Operation** |
| **Pin 2-3 On** | **Setting Clock to 100 MHz** |

**No matter what the CPU clock is 66 or 133 MHz, the CPU Clock is forced to run 100 MHz once Pin 2-3 is On.**

- **JP4 : Set CPU Clock to 133 MHz**

| | |
|---|---|
| **Pin 1-2 On** | **Normal Operation** |
| **Pin 2-3 On** | **Setting Clock to 133 MHz** |

**No matter what the CPU clock is 66 or 100 MHz, the CPU Clock is forced to run 100 MHz once Pin 2-3 is On.**




It's so valuable that you don't have to pay thrice to buy three fashionable devices of PC Camera, Debugging and IrDA ware now because we have integrated them into our EscoCAM in the shape of a lovely whale to escort your system. The whale is the king of the sea and the symbol of all-mighty power. With PC camera, Debug, CPU heat monitor and IrDA device built into the EscoCAM, we offers you the unbeatable solution to upgrade the value of your PC system.

### 1. PC Camera:

As video and audio email is gaining popularity, PC cameras are making inroads into PC systems and it will increasingly become a standard PC peripheral. In view of this strong market demand, we has timely launched its state-of-the-art PC cameras. Besides, our PC Camera is allowed to adjust the Focus of Camera via Keyboard or mouse instead of wheel. It's a patent design in PC Camera. Hope you enjoy this new technology.

### 2. External Debug :

When initializing system, LCD will check the peripherals of CPU, Chipset, DRAM, BIOS, Keyboard, CMOS, VGA card, Devices, FDD, HDD and Cache…Once peripherals were not been properly installed or defective, the LCD display will show out the detective place. After system successfully booted up, Time & Date, CPU Temperature, CPU V-Core Voltage, CPU Fan Speed will take turn to show out on the LCD display.

### Advantages of Debug Device For User:

In comply with fast development of IT and e-Commerce, the time of people

to stay together with PC is beyond what we can image. Eventually, prolonged use of PC is unavoidable to cause high defect rate. Especially, when warranty is over, user is not in a position to bargain the upraising repair cost. The worse is that users are always overcharged when they have don't have any sense about defect status. However, once PC system is equipped with basic debugging devices, user is able to easily understand how far the hardware problem going; thereby drastically minimize the time and cost from RMA.

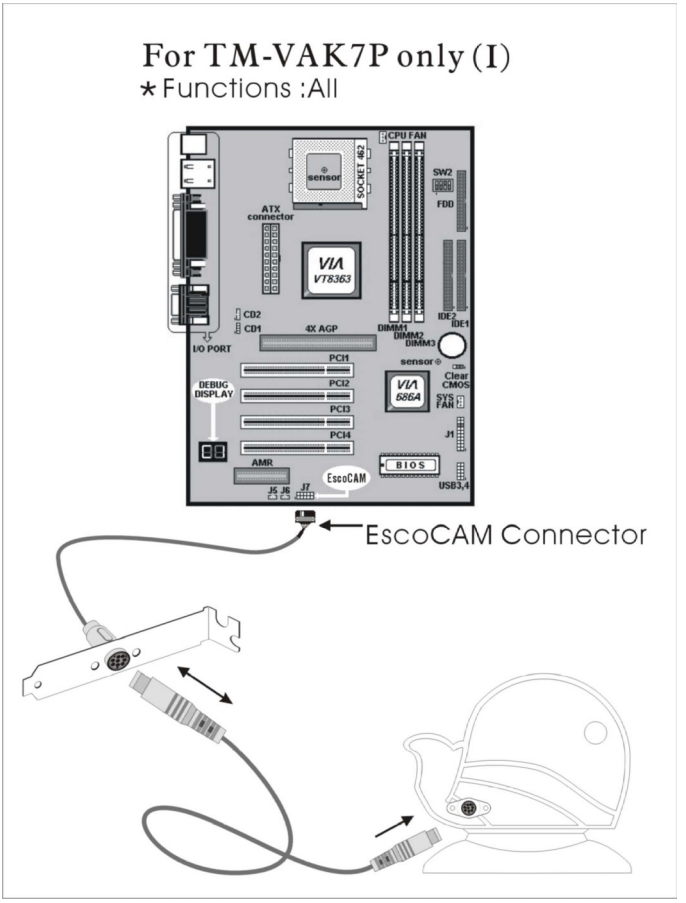
**3. Monitor CPU Temp. And FAN Working Status:**
Audio, video and multi-tasking functions call for faster and faster CPUs to improve system efficiency. However, faster CPUs will generate more heat which must be dissipated in a timely manner. Therefore, a more efficient fans to dissipate heat is as important as watch-out of fan working situation. In this Internet era, people are using their computers for longer and longer time which can easily cause overheat and damage to the CPU. Prolonged use of the computer will increase CPU temperature. It is therefore necessary to have a device to constantly monitor the CPU temperature, CPU fan speed and V-Core voltage and timely remind user.

**4. IrDA For Data Transmission :**
As more and more computers, notebook, mobile phone and PDA are installed with the IrDA device for wireless transmission, we add in this extra value in the EscoCAM.

## The Connection of EscoCAM

## I. For TM-VAK7 Mainboard :

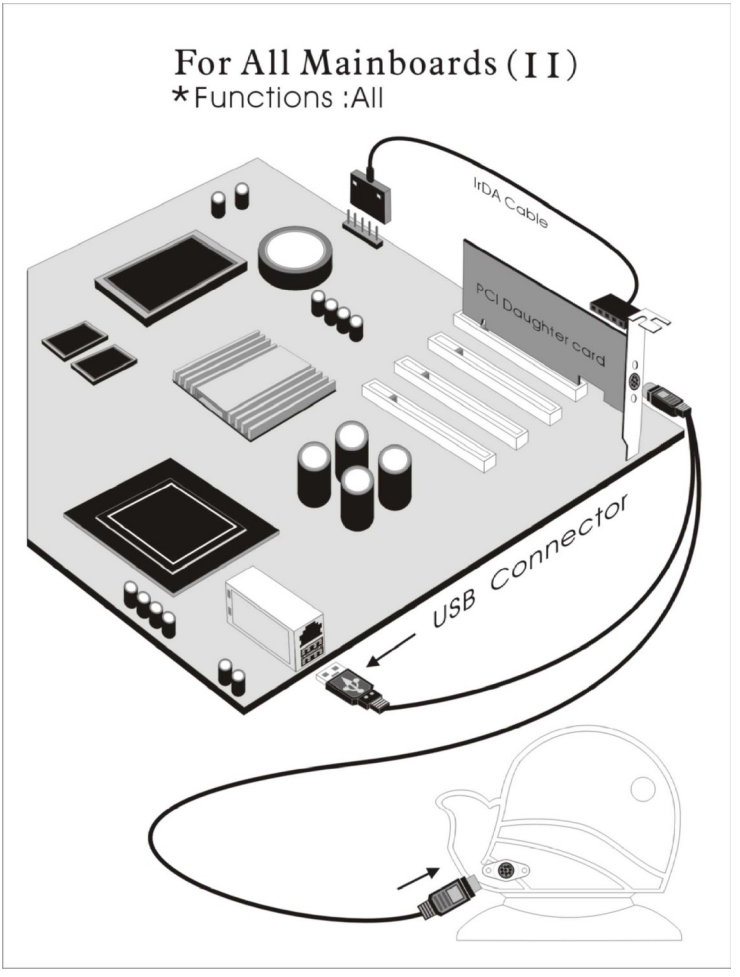
If you use TM-VAK7P, the most updated mainboard, it's already built-in all the circuit of **EscoCAM** so that user don't need a extra daughter card to connect it. The connection drawing as follows:



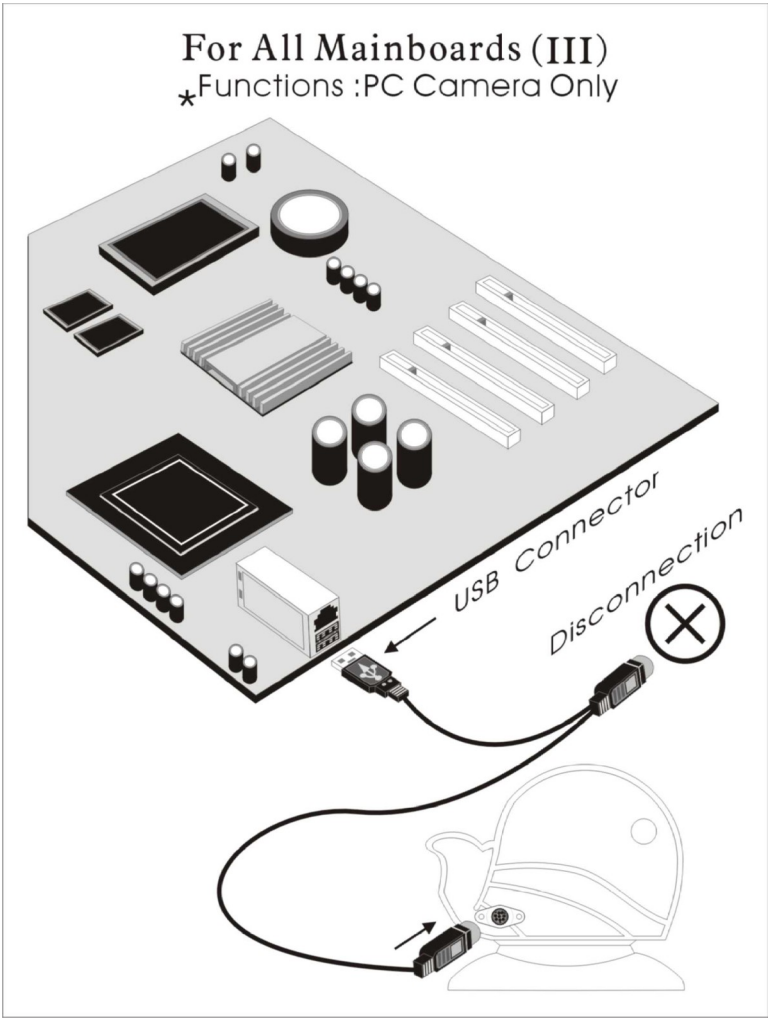

## II. For All Others Mainboards:

If the mainboard you used is not TM-VAK7, you need A PCI daughter card to

be inserted and make connection as follows:




**III. Or, if you just want use the function of PC Camera, the connection drawing as follows:**




## BIOS Update Note

Do not update the BIOS if no abnormalities occur. However, if BIOS update is needed, consult your dealer first. Prior to updating your BIOS, you are recommended to save the original BIOS values.

1. Download the AMI BIOS Flash Utility file (**AMIFL818.exe**)

2. Download the BIOS file used by your mainboard(**e.g., xxx.BIN**)

3. **Reboot** your system (but do not run **Himem.sys** and **Emm386.exe**) to execute the new BIOS program.

4. Execute these commands: **AMIFL818 xxx.BIN**

# BIOS Setup

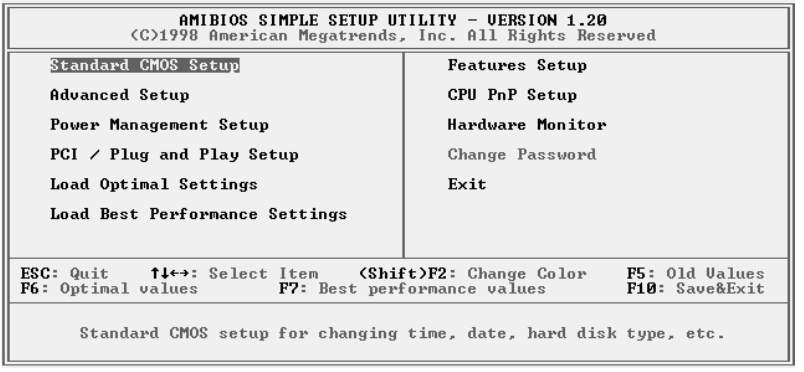
This Flash ROM BIOS has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

## Getting Help

The online description of the highlighted setup function is displayed at the bottom of the screen.

## The Main Menu

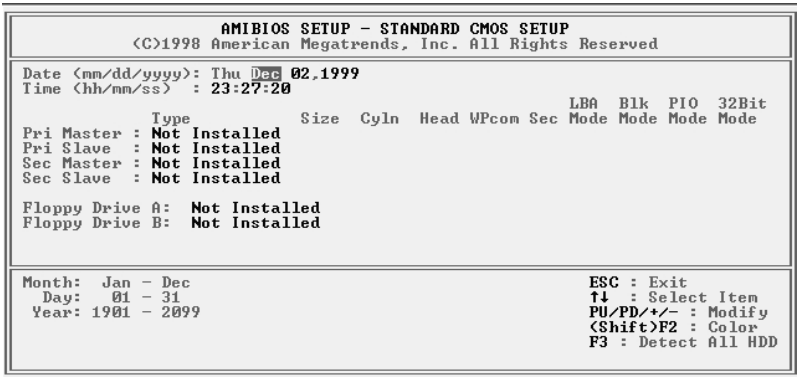
Once you enter BIOS CMOS Setup Utility, the Main Menu will appear on the Screen.. Use arrow keys to select the desired items, press <Enter> to select or enter a submenu.




## Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to

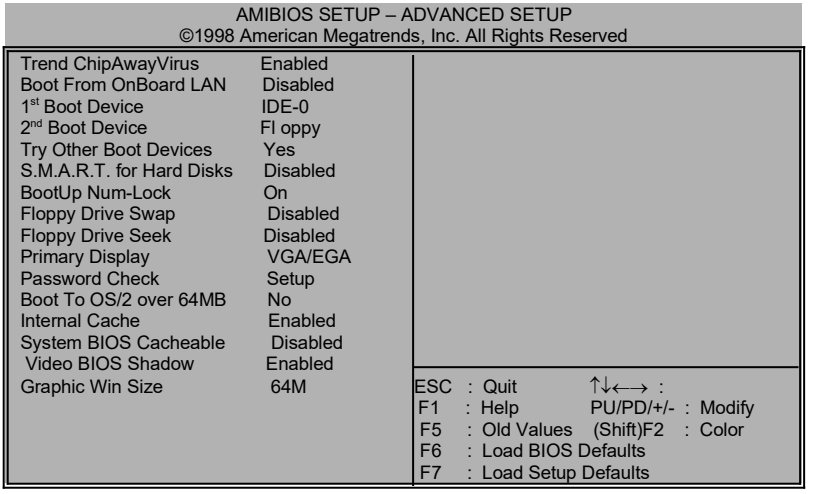
highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.




| | |
|---|---|
| **Date & Time** | Use these items to set the system date and time |
| **Pri Master**<br>**Pri Slave**<br>**Sec Master**<br>**Sec Slave** | Use these items to configure devices connected to the Primary and Secondary IDE channels. To configure an IDE hard disk drive, choose *Auto*. If the *Auto* setting fails to find a hard disk drive, set it to *User*, and then fill in the hard disk characteristics (Size, Cyls, etc.) manually. If you have a CD-ROM drive, select the setting *CDROM*. If you have an ATAPI device with removable media (e.g. a ZIP drive or an LS-120) select *Floptical*. |
| **Floppy Drive A**<br>**Floppy Drive B** | Use these items to set the size and capacity of the floppy diskette drive(s) installed in the system. |

## Advanced Setup

Use this page to set more advanced information about your system. Take some care with this page. Making changes can affect the operation of your computer.




| | |
|---|---|
| **Trend ChipAway Virus** | This mainboard has built-in virus protection in the firmware. Use this item to enable or disable the built-in virus protection. |
| **Boot From OnBoard LAN** | Use this item to enable or disable the function for Boot from onboard LAN. |
| **1st Boot Device 2nd Boot Device** | Use these items to determine the device order the computer uses to look for an operating system to load at start-up time. |
| **Try Other Boot Device** | If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations. |
| **S.M.A.R.T. for Hard Disks** | Enable this item if any IDE hard disks support the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) feature. |

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| **BootUp Num-** | This item determines if the Num Lock key is |

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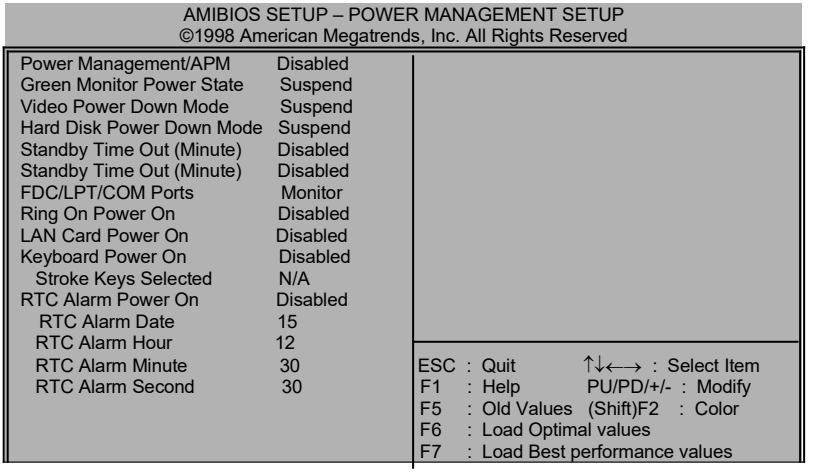
| **Lock** | active or inactive at system start-up time. |
| **Floppy Drive Swap** | If you have two diskette drives installed and you enable this item, drive A becomes drive B and drive B becomes drive A. |
| **Floppy Drive Seek** | If you enable this item, your system will check all floppy disk drives at start up. Disable this item unless you are using an old 360KB drive. |
| **Primary Display** | Use this item to determine the display devices for the primary display of your computer. |
| **Password Check** | If you have entered a password for the system, use this item to determine if the password is required to enter the Setup Utility (*Setup*) or required both at start-up and to enter the Setup Utility (*Always*). |
| **Boot to OS/2 > 64MB** | Enable this item if your system is featured more than 64MB. |
| **Internal Cache** | Leave this item enabled since all the processors have internal cache memory. |
| **System BIOS Cacheable** | If you enable this item, a segment of the system BIOS will be cached to main memory for faster execution. |
| **Graphics Win Size** | This item determines the operation of the onboard graphics adapter. We recommend that you leave this item at the default value. |

# Power Management Setup

This page sets some of the parameters for system power management operation.

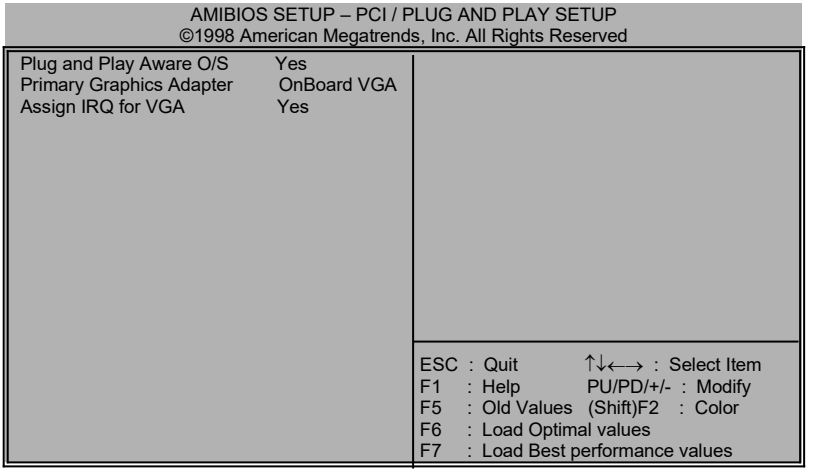



| | |
|---|---|
| **Power Management/APM** | Use this item to enable or disable a power management scheme. Both APM and ACPI are supported. |
| **Green Monitor Power State** | This sets the timeout for monitor Power Down. If the set time past without any activity on the monitor, it will enter into Power Down Mode. |
| **Video Power Down Mode** | This sets the timeout for graphics sub-system. If the set time past without any activity on the graphics, it will enter into Power Down Mode. |
| **Hard Disk Power Down Mode** | This sets the timeout for HDD Power Down. If the set time past without any activity on the HDD, it will enter into Power Down Mode. |
| **Standby Time Out (Minute)** | This sets the timeout for Standby mode in minutes. If the set time past without any system activity, the computer will enter into Standby mode. |
| **Suspend Time Out (Minute)** | This sets the timeout for Suspend mode in minutes. If the time selected past without any system activity, the computer will enter into |

| | |
|---|---|
| | Suspend mode. |
| **FDC/LPT/COM/ Ports** | If you select this item to Monitor, any activity on he floppy disk drive(s)/parallel port/serial port can rresume the system from a power saving mode. |
| **Ring On Power On** | The system can be turned off with a software command. When it's enabled , the system can automatically resume for an incoming call on the Fax/Modem. An ATX power supply is required for effecting this feature. |
| **LAN Card Power On** | The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is traffic on the network adapter. An ATX power supply is required for effecting this feature. |
| **Keyboard Power On** | If you enable this item as well as the Keyboard Power On jumer setting, you can turn the system on and off by pressing hot keys. |
| **Stroke Keys Selected** | If you enabled the Keyboard Power On, use this item to select the hot keys. |
| **RTC Alarm Power On** | When it's enabled, the system can automatically resume at a set date and time for wake-up alarm. An ATX power supply is required for effecting this feature. |

# PCI / Plug and Play Setup

This page sets some of the parameters for devices installed on the PCI bus and devices that use the system plug and play capability.




| | |
|---|---|
| **Plug and Play Aware O/S** | Enable this item when your O/S is supportive for Plug and Play such as Windows 95 or 98. |
| **Primary Graphics Adapter** | The Graphics OnBoard was set to be Primary. The default PCI onboard display is able to work simultaneously with the second display card installed in a PCI slot. |
| **Assign IRQ for VGA** | If this item is set to Yes, an IRQ will be assigned to VGA graphics system. If it's set to be No, an IRQ is released. |

## Load Best Performance Settings

When you press **<Enter>** on this item, a dialog box appears as below:

**Load Best Performance Defaults (Y/N) ? N**

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

## Load Optimized Defaults

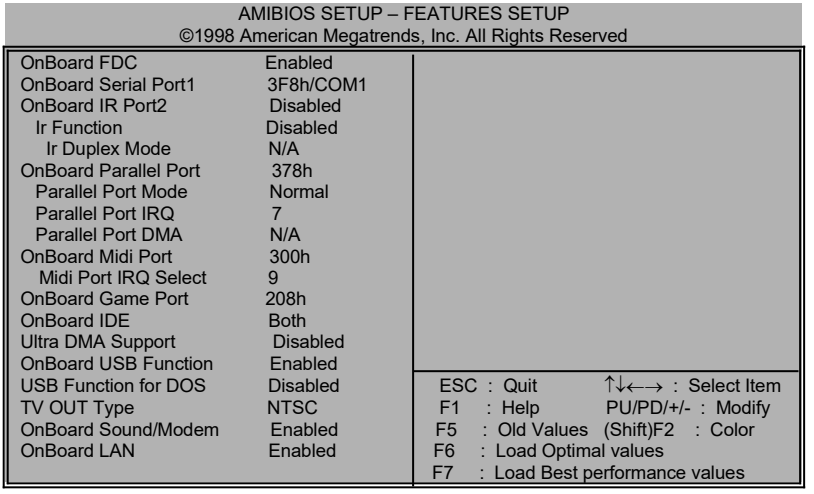
When you press **<Enter>** on this item you get a confirmation dialog box with a message likely to :

**Load Optimized Defaults (Y/N) ? N**

Pressing 'Y' loads the default values that are factory settings for optimal performance system operation.

## Features Setup

This page sets some of the parameters for peripheral devices connected to the system.



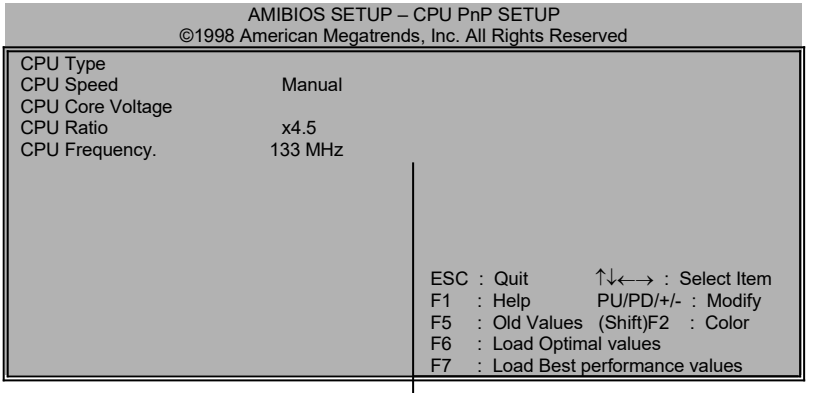

| | |
|---|---|
| **OnBoard FDC** | Enable or disable the onboard floppy disk drive interface. |
| **OnBoard Serial Port1** | Enable or disable the onboard COM1 serial port, and to assign a port address |
| **OnBoard Serial Port1** | Enable or disable the onboard COM2 serial port, and to assign a port address |
| **IR Function** | To define the protocol for an infrared port if you have installed an optional IR port. The choices are IrDA and ASKIR. |
| **IR Duplex Mode** | To define if the optional infrared port is full - duplex or half-duplex. |
| **OnBoard Parallel Port** | Enable or disable the onboard LPT1 parallel port, and to assign a port address. |

| | |
|---|---|
| **Parallel Port Mode** | For setting the parallel port mode. You can select SPP (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or ECP + EPP. |
| **Parallel Port IRQ** | Assign either IRQ 5 or 7 to the parallel port. |
| **Parallel Port DMA** | Assign a DMA channel to the parallel port. The options are 0, 1 and 3. |
| **Onboard Midi Port** | Enable or disable the onboard MIDI port, and to assign a port address. |
| **Midi Port IRQ** | For assigning an IRQ to the MIDI port. |
| **OnBoard Game Port** | Enable or Disable the Onboard Game Port, and to assign a port address. |
| **OnBoard IDE** | Enable or Disable either or both of the Onboard Primary and Secondary IDE channels. |
| **Ultra DMA Support** | For setting DMA to support IDE devices on the Primary or Secondary IDE channels. |
| **OnBoard USB Function** | Enable this item for using USB ports onboard. |
| **USB Function for DOS** | Enable this item for using USB onboard under a DOS environment. |
| **TV Out type** | TV Out kit support NTSC and PAL system. |
| **OnBoard Sound/Modem** | Enable or Disable onboard audio/modem. |
| **OnBoard LAN** | Enable or Disable onboard LAN device. |

## CPU PnP Setup

This page lets you manually configure the mainboard for the CPU. The system will automatically detect the kind of CPU that you have installed and make the appropriate adjustments to the items on this page.

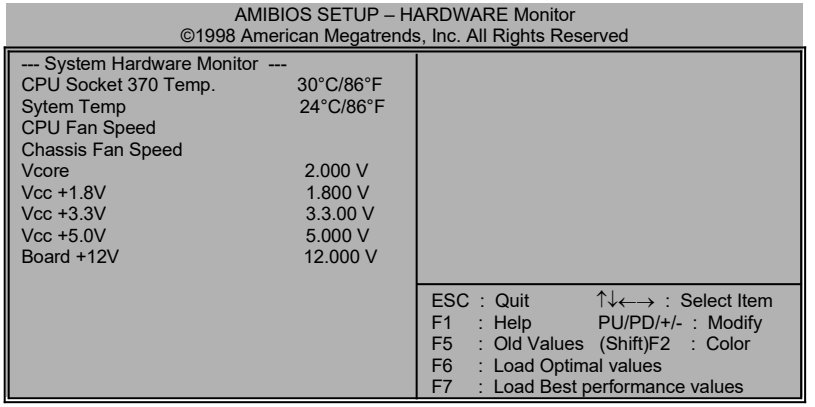
**Note**: If you manually set the wrong speed and the system won't run properly, press the **Page Up** key while the system is booting and a default setting will replace the incorrect CPU setting.




| | |
|---|---|
| **CPU Type**<br>**CPU Core Voltage** | These two items display the type and the core voltage of installed CPU |
| **CPU Speed/Ratio/Frequency** | Use this item to set the internal clock speed. When it's set to Manual, the CPU speed equal to the CPU Ratio (Multiplier) x CPU external Frequency (i.e. CPU clock). |

## Hardware Monitor

This page is for sttting the parameters of hardware monitoring function.




| | |
|---|---|
| **CPU / System Temp.** | Display of CPU and the system temperature measurement. |
| **FAN Speed & Voltage Measurements** | Indication of cooling fan speeds in RPM and the various system voltage measurements. |

## Change Password

If you highlight this item and press **Enter**, a dialog box appears which lets you enter a Supervisor password. You can enter no more than six letters or numbers. Press **Enter** after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press **Enter** after you have retyped it correctly. The password is then required to access the Setup Utility or for that and at start-up, depending on the setting of the Password Check item in Advanced Setup. Highlight this item, press Enter and type in the current password. At the next dialog box, type in the new password, or just press Enter to disable password protection.

## Change or Remove the Password

Highlight this item, press Enter and type in the current password. At the next dialog box, type in the new password, or just press Enter to disable password protection.

## Exit

Highlight this item and press **Enter** to save the changes that you have made in the Setup Utility configuration and exit the program. When the Save and Exit dialog box appears, press **Y** to save and exit, or press **N** to exit without saving.

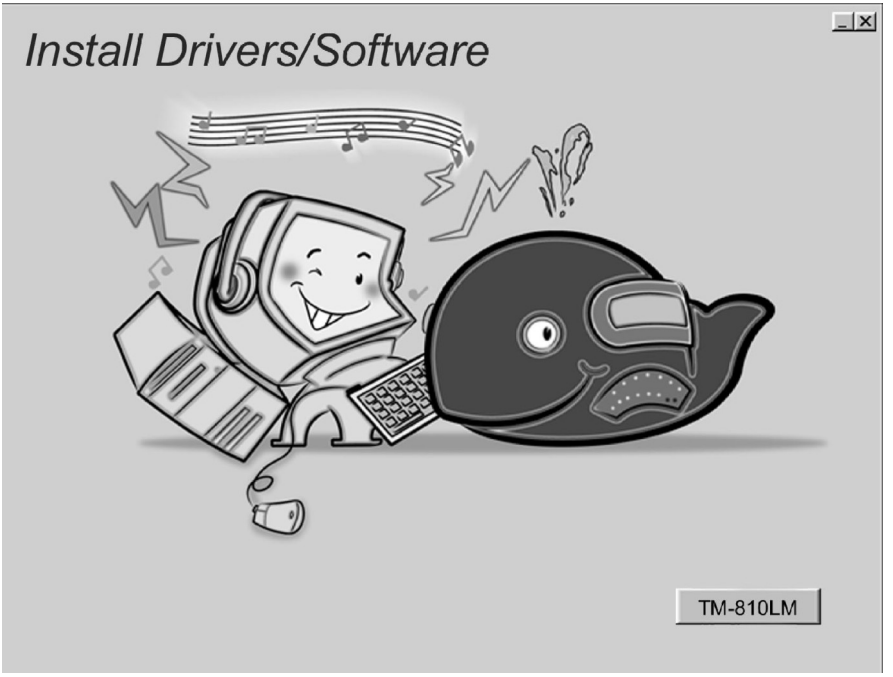
# Driver & Software

## Installation Guide

This driver is for Windows 95/NT/2000 and Win. 98. Aside from the installation procedure differs from the Operating System used, **the automatic installation is only available for Windows 98.**

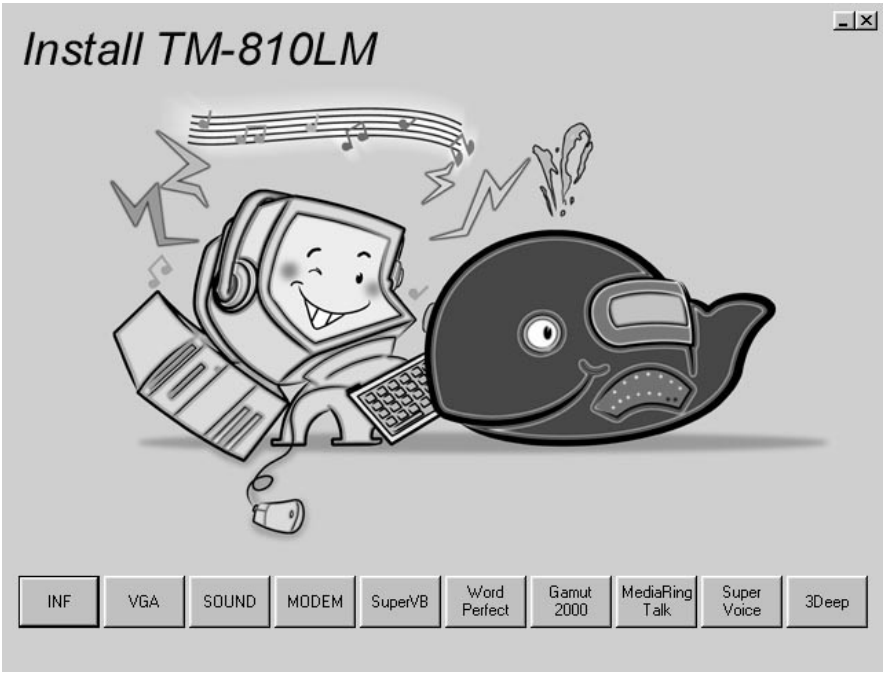
## Quick Installation under Windows 98

When insert the CD-ROM disc in the system CD-ROM drive, the set up feature will automatically come up the screen with buttons for selecting mainboard models' name **as follows:**



## Browse All The Drivers in CD

After selecting mainboard model name, all the available drivers will appears on the screen as follows:




## How to install Windows 95/NT/2000 ?

The procedure :

1. Insert the support CD-ROM disc in the CD-ROM drive.
   (Just bypass the error message from the PnP function.)

2. Since **quick installation** is not supported by Windows 95/NT/2000, you have to select correct drivers and **EXE** given file names as follows:

## Bus Master IDE Driver

- Win9x - \IDE\INTEL810\WIN9X\DISK1\SETUP.EXE

## USB Driver

- Win95 - \OTHERS\USB\EUSBSUPP\USBSUPP.EXE
- Win95(Chinese) - OTHERS\USB\CUSBSUPP\CUSBSUPP.EXE

## Audio Driver

- OS & Windows 3.x - \SOUND\C-MEDIA\DOSDRV\
- indows 9x - \SOUND\C-MEDIA\W95-98\DRV\
- Windows NT - \SOUND\C-MEDIA\NT40\DRV\
- Windows 2000 - \SOUND\C-MEDIA\W2K\DRV\

## Audio Applications

- Windows 9x - \GAMUT\SETUP.EXE

## Display Drivers and Software

- \VGA\INTEL810\WIN9X\GRAPHICS\SETUP.EXE

## Path for updating Display Driver

- Windows 9x - \VGA\INTEL810\WIN9X\GRAPHICS\
- Windows NT - \VGA\INTEL810\WINNT4\
- Windows 2000 - \VGA\INTEL810\WIN2000\

## 3Deep

- DEEP\3DEEP 3.3\SETUP\SETUP.EXE

## Fax/Modem Drivers and Software

- Windows 9x,NT - \MODEM\PCI\9XNT\SETUP.EXE
- Windows 2000 - \MODEM\PCI\WIN2000\

- Windows ME - \MODEM\PCI\WINME\

### Super Voice

- \SUPER VOICE\PICSHELL.EXE

### MediaRing Talk

- \MEDIARING TALK\MRTALK-SETUP7.2.EXE

### LAN Driver

- Windows 9x,2000 - \LAN\DAVICOM\WIN2K_9X\
- Windows NT - \LAN\DAVICOM\WINNT40\
- Windows ME - \LAN\DAVICOM\WINME\

### Corel WordPerfect Suite 8

- \CD1\COREL\SUITE8\APPMAN\SETUP\SETUP.EXE

### BIOS Update

- \UTILITY\AMIFL818.EXE

### Super VB Software

**This software provides anti-virus protection PC.**

- \SUPERVB\AUTO.EXEWin9x – :\IDE\GFXPRO\Setup.exe

### USB Driver

- Win95 – :\Others\USB\EUSBSUPP\USBSUPP.EXE
- Win95 (Chinese) – :\Others\USB\CUSBSUPP\CUSBSUPP.EXE

## Further Guide to Audio Software :

1. Making sure the Operating System has been properly installed prior to the installation of the PCI Sound Drivers. Otherwise, the Onboard PCI Audio might be recognized as an **"Other Device".**

2. For featuring Wave-Table drivers as a MIDI output device, just select **MULTIMEDIA** from the Control Panel. Select the **MIDI tab** → Click "**C-media SoftMidi Synthesis** ( Win 98) / Driver ( Win 95)" → Click **OK** to complete.
3. **Audio Rack**, a Windows application, is provided to control all the Audio functions for simply working as a high quality home stereo system.
4. For featuring MIDI port as the control interface, just select **MULTIMEDIA** from the Control Panel. Select the **MIDI tab** → Click "**C-M8738 MPU-401**" **(Win 98) or "DM8738/C3DX PCI Audio External MIDI Port" (Win 95)** → Click **OK** to complete.

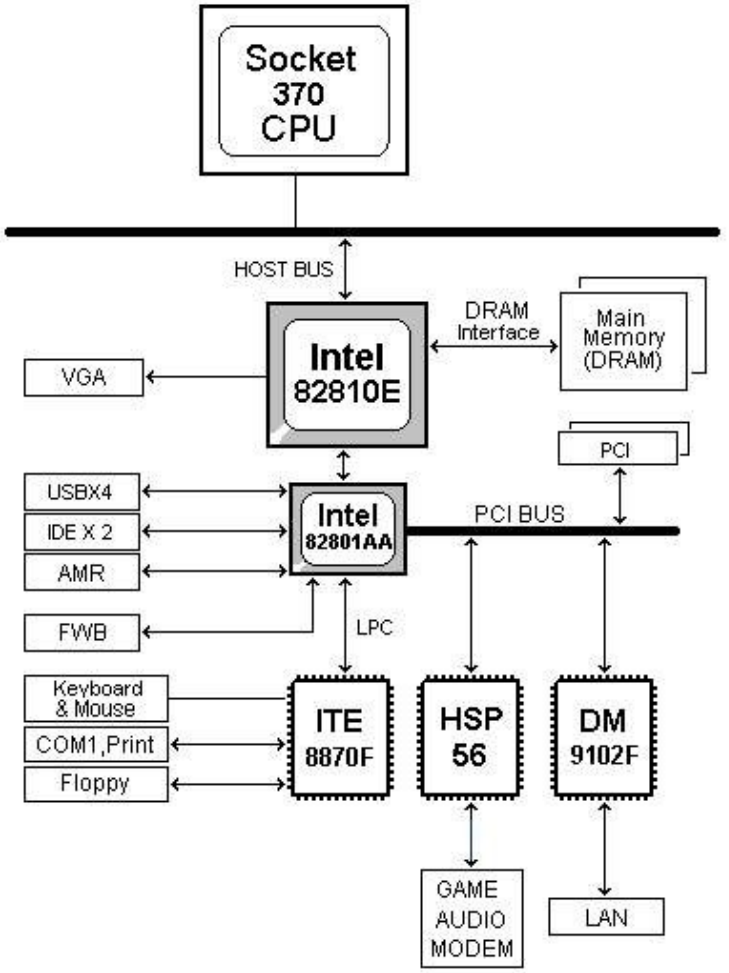
## The Four Speakers System

This onboard Audio System supports 2 wave channels (Front/rear) known as the 4 speakers system. For achieving simulation of realistic 3D sound effect through a 4 speakers, just to run applications which is featured with **DirectSound 3D** or **A3D Audio** interface.

## Mixer Setup

After setting up the **PCI Audio Application**, a 4-speakers option appears in the the Mixer. Just click on the **4 Speakers** icon to achieve this option. The rear speakers will output only via Line-in/Rear jack now. So, when Line-in/Rear jack is occupied by a Line-in device, **Do Not** enable this option to avoid hardware conflict.

# System Block Diagram



**AMI BIOS POST Code :**

| POST (HEX) | Description |
|---|---|
| **C2** | NMI is Disabled.<br>Power on delay starting. |
| **C5** | Power on delay complete.<br>Going to disable Cache if any. |
| **C6** | Calculating ROM BIOS checksum. |
| **C7** | ROM BIOS checksum passed.<br>CMOS shutdown register test to be done next. |
| **C8** | CMOS shutdown register test done. CMOS checksum calculation<br>to be done next. |
| **CA** | CMOS checksum calculation is done, CMOS Diag byte written.<br>CMOS status register about to init for Date and Time. |
| **CB** | CMOS status register init done.<br>Any initialization before keyboard BAT to be done next. |
| **CD** | BAT command to keyboard controller is to be issued. |
| **CE** | Keyboard controller BAT result verified.<br>Any initialization after KB controller BAT to be done next. |
| **CF** | Initialization after KB controller BAT done.<br>Keyboard command byte to be written next. |
| **D1** | Keyboard controller command byte is written.<br>Going to check pressing of <INS> key during power-on. |
| **D2** | Checking for pressing of <INS> key during power-on done.<br>Going to disable DMA and Interrupt controllers. |
| **D3** | DMA controller #1,#2, interrupt controller #1,#2 disabled.<br>Chipset init/ auto memory detection about to begin. |
| **D4** | Chipset initialization/ auto memory detection over.<br>To uncompress the RUNTIME code. |
| **D5** | RUNTIME code is uncompressed. |
| **DD** | Transfer control to uncompressed code in shadow ram at F000:FFF0. |
| **03** | NMI is Disabled. To check soft reset/power-on. |
| **05** | Soft reset/power-on determined. Going to disable Cache if any. |
| **06** | POST code to be uncompressed. |
| **07** | POST code is uncompressed.<br>CPU init and CPU data area init to be done next |

| POST (HEX) | Description |
|---|---|
| **08** | CPU and CPU data area init done.<br>CMOS checksum calculation to be done next. |
| **09** | CMOS checksum calculation is done, CMOS Diag byte written.<br>CMOS init to begin (If "Init CMOS in every boot" is set). |
| **0A** | CMOS initialization done (if any).<br>CMOS status register about to init for Date and Time. |
| **0B** | CMOS status register init done.<br>Any initialization before keyboard BAT to be done next. |
| **0C** | KB controller I/B free.<br>Going to issue the BAT command to keyboard controller. |
| **0D** | BAT command to keyboard controller is issued.<br>Going to verify the BAT command. |
| **0E** | Keyboard controller BAT result verified.<br>Any initialization after KB controller BAT to be done next. |
| **0F** | Initialization after KB controller BAT done.<br>Keyboard command byte to be written next. |
| **10** | Keyboard controller command byte is written.<br>Going to issue Pin-23,24 blocking/unblocking command. |
| **11** | Pin-23,24 of keyboard controller is blocked/ unblocked.<br>Going to check pressing of <INS> key during power-on. |
| **12** | Checking for pressing of <INS> key during power-on done.<br>Going to disable DMA and Interrupt controllers. |
| **13** | DMA controller #1,#2, interrupt controller #1,#2 disabled.<br>Video display is disabled and port-B is initialized.<br>Chipset init about to begin. |
| **15** | Chipset initialization over. 8254 timer test about to start. |
| **19** | 8254 timer test over. About to start memory refresh test. |
| **1A** | Memory Refresh line is toggling.<br>Going to check 15 micro second ON/OFF time. |
| **20** | Memory Refresh period 30 micro second test complete.<br>Base 64K memory to be initialized. |
| **23** | Base 64K memory initialized. Going to set BIOS stack and to do<br>any setup before Interrupt vector init. |
| **24** | Setup required before interrupt vector initialization complete.<br>Interrupt vector initialization about to begin. |

| POST (HEX) | Description |
|---|---|
| 25 | Interrupt vector initialization done.<br>Going to read Input port of 9042 for turbo switch (if any)<br>and to clear password if post diag switch is on. |
| 26 | Input port of 8042 is read.<br>Going to initialize global data for turbo switch. |
| 27 | Global data initialization for turbo switch is over.<br>Any initialization before setting video mode to be done next. |
| 28 | Initialization before setting video mode is complete.<br>Going for monochrome mode and color mode setting. |
| 2A | Different BUSes init (system, static, output devices) to start if present.<br>(Please see Appendix for details of different BUSes). |
| 2B | About to give control for any setup required before optional<br>video ROM check. |
| 2C | Processing before video ROM control is done.<br>About to look for optional video ROM and give control. |
| 2D | Optional video ROM control is done. About to give control<br>to do any processing after video ROM returns control. |
| 2E | Return from processing after the video ROM control.<br>If EGA/VGA not found then do display memory R/W test. |
| 2F | EGA/VGA not found.<br>Display memory R/W test about to begin. |
| 30 | Display memory R/W test passed.<br>About to look for the retrace checking. |
| 31 | Display memory R/W test or retrace checking failed.<br>About to do alternate Display memory R/W test. |
| 32 | Alternate Display memory R/W test passed.<br>About to look for the alternate display retrace checking. |
| 34 | Video display checking over. Display mode to be set next. |
| 37 | Display mode set. Going to display the power on message. |
| 38 | Different BUSes init (input, IPL, general devices) to start if present.<br>(Please see Appendix for details of different BUSes). |
| 39 | Display different BUSes initialization error messages.<br>(Please see Appendix for details of different BUSes). |
| 3A | New cursor position read and saved.<br>Going to display the Hit <DEL> message. |

| POST (HEX) | Description |
|---|---|

| | |
|---|---|
| **3B** | Hit <DEL> message displayed.<br>Virtual mode memory test about to start. |
| **40** | Going to prepare the descriptor tables. |
| **42** | Descriptor tables prepared.<br>Going to enter in virtual mode for memory test. |
| **43** | Entered in the virtual mode.<br>Going to enable interrupts for diagnostics mode. |
| **44** | Interrupts enabled (if diagnostics switch is on).<br>Going to initialize data to check memory wrap around at 0:0. |
| **45** | Data initialized. Going to check for memory wrap around at 0:0<br>and finding the total system memory size. |
| **46** | Memory wrap around test done. Memory size calculation over.<br>About to go for writing patterns to test memory. |
| **47** | Pattern to be tested written in extended memory.<br>Going to write patterns in base 640k memory. |
| **48** | Patterns written in base memory.<br>Going to findout amount of memory below 1M memory. |
| **49** | Amount of memory below 1M found and verified.<br>Going to findout amount of memory above 1M memory. |
| **4B** | Amount of memory above 1M found and verified.<br>Check for soft reset and going to clear memory below 1M for<br>soft reset. (If power on, go to check point# 4Eh). |
| **4C** | Memory below 1M cleared. (SOFT RESET)<br>Going to clear memory above 1M. |
| **4D** | Memory above 1M cleared. (SOFT RESET)<br>Going to save the memory size. (Goto check point# 52h). |
| **4E** | Memory test started. (NOT SOFT RESET)<br>About to display the first 64k memory size. |
| **4F** | Memory size display started. This will be updated during<br>memory test. Going for sequential and random memory test. |
| **50** | Memory testing/initialization below 1M complete.<br>Going to adjust displayed memory size for relocation/ shadow. |
| **51** | Memory size display adjusted due to relocation/ shadow.<br>Memory test above 1M to follow. |
| **52** | Memory testing/initialization above 1M complete.<br>Going to save memory size information. |

| POST (HEX) | Descriptions |
|---|---|
| **53** | Memory size information is saved. CPU registers are saved. |

| | |
|---|---|
| | Going to enter in real mode. |
| **54** | Shutdown successful, CPU in real mode. Going to disable gate A20 line and disable parity/NMI. |
| **57** | A20 address line, parity/NMI disable successful. Going to adjust memory size depending on relocation/shadow. |
| **58** | Memory size adjusted for relocation/shadow. Going to clear Hit <DEL> message. |
| **59** | Hit <DEL> message cleared. <WAIT...> message displayed. About to start DMA and interrupt controller test. |
| **60** | DMA page register test passed. To do DMA#1 base register test. |
| **62** | DMA#1 base register test passed. To do DMA#2 base register test. |
| **65** | DMA#2 base register test passed. To program DMA unit 1 and 2. |
| **66** | DMA unit 1 and 2 programming over. To initialize 8259 interrupt controller. |
| **67** | 8259 initialization over. |
| **7F** | Extended NMI sources enabling is in progress. |
| **80** | Keyboard test started. clearing output buffer, checking for stuck key, About to issue keyboard reset command. |
| **81** | Keyboard reset error/stuck key found. About to issue keyboard controller interface test command. |
| **82** | Keyboard controller interface test over. About to write command byte and init circular buffer. |
| **83** | Command byte written, Global data init done. About to check for lock-key. |
| **84** | Lock-key checking over. About to check for memory size mismatch with CMOS. |
| **85** | Memory size check done. About to display soft error and check for password or bypass setup. |
| **86** | Password checked. About to do programming before setup. |
| **87** | Programming before setup complete. Going to uncompress SETUP code and execute CMOS setup. |
| **88** | Returned from CMOS setup program and screen is cleared. About to do programming after setup. |
| **89** | Programming after setup complete. Going to display power on screen message. |

| POST (HEX) | Description |
|---|---|
| **8B** | First screen message displayed. <WAIT...> message displayed. About to do Video BIOS shadow. |

| | |
|---|---|
| **8C** | Video BIOS shadow successful.<br>Setup options programming after CMOS setup about to start. |
| **8D** | Setup options are programmed, mouse check and init<br>to be done next. |
| **8E** | Mouse check and initialization complete.<br>Going for hard disk controller reset. |
| **8F** | Hard disk controller reset done. Floppy setup to be done next. |
| **91** | Floppy setup complete. Hard disk setup to be done next. |
| **94** | Hard disk setup complete. To set base and extended memory size. |
| **95** | Memory size adjusted due to mouse support.<br>Init of different BUSes optional ROMs from C800 to start.<br>(Please see Appendix-I for details of different BUSes). |
| **96** | Going to do any init before C800 optional ROM control. |
| **97** | Any init before C800 optional ROM control is over.<br>Optional ROM check and control will be done next. |
| **98** | Optional ROM control is done. About to give control to do<br>any required processing after optional ROM returns control. |
| **99** | Any initialization required after optional ROM test over.<br>Going to setup timer data area and printer base address. |
| **9A** | Return after setting timer and printer base address.<br>Going to set the RS-232 base address. |
| **9B** | Returned after RS-232 base address.<br>Going to do any initialization before Coprocessor test. |
| **9C** | Required initialization before Coprocessor is over.<br>Going to initialize the Coprocessor next. |
| **9D** | Coprocesor initialized.<br>Going to do any initialization after Coprocessor test. |
| **9E** | Initialization after Coprocessor test is complete.<br>Going to check extd keyboard, keyboard ID and num-lock. |
| **9F** | Extd keyboard check is done, ID flag set, num-lock on/off.<br>Keyboard ID command to be issued. |
| **A0** | Keyboard ID command issued. Keyboard ID flag to be reset. |
| **A1** | Keyboard ID flag reset. Cache memory test to follow. |
| **A2** | Cache memory test over. Going to display any soft errors. |
| **A3** | Soft error display complete. Going to set keyboard typematic rate. |

| POST (HEX) | Description |
|---|---|
| **A4** | Keyboard typematic rate set. To program memory wait states. |
| **A5** | Memory wait states programming over.<br>Going to clear the screen and enable parity/NMI. |

| | |
|---|---|
| **A7** | NMI and parity enabled. Going to do any initialization required before giving control to optional ROM at E000. |
| **A8** | Initialization before E000 ROM control over. E000 ROM to get control next. |
| **A9** | Returned from E000 ROM control. Going to do any initialization required after E000 optional ROM control. |
| **AA** | Initialization after E000 optional ROM control is over. Going to display the system configuration. |
| **B0** | System configuration is displayed. |
| **B1** | Going to copy any code to specific area. |
| **00** | Copying of code to specific area done. Going to give control to INT-19 boot loader. |

APPENDIX:

| CHECK-POINT | Description of CHECK-POINT |
|---|---|
| **2A** | Different BUSes init (system, static, output devices) to start if present. |
| **38** | Different BUSes init (input, IPL, general devices) to start if present. |
| **39** | Display different BUSes initialization error messages. |
| **95** | Init of different BUSes optional ROMs from C800 to start. |

## Problem Sheet

- To conduct correct diagnosis and repairing work, you were requested to fill this RMA from and attach it with each RMA mainboard before sending back for repairing.

| Customer |
|---|

| | | | |
|---|---|---|---|
| Name | | Tel | |
| address | | Fax | |

| Mainboard | | | |
|---|---|---|---|
| Mode | | Mainboard Rev | |
| Serial No. | | BIOS version | |

| Peripherals Description | | | | | |
|---|---|---|---|---|---|
| CPU | Brand | | RAM | Brand | |
| | Type | | | Type & Size | |
| | Voltage | | | Speed | |
| Floppy disk | Brand | | VGA card | Brand | |
| | Mode | | | Chipset | |
| | Size | | | RAM Type | |
| Hard disk | Brand | | CD-ROM | Brand | |
| | Mode | | | Mode | |
| | Size | | | Speed | |
| Sound card | Brand | | Lan card | Brand | |
| | Mode | | | Mode | |
| | Remark | | | PCI/ISA Bus | |
| Mouse | Brand | | O.S | Brand | |
| | Mode | | | Name | |
| | PS/2 or Serial | | | Version | |
| Problem Description | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

# MEMO