

**ECS ELITEGROUP**

# ***PM800-M2***

***Supports Intel® Pentium® 4 Processor***

***USER'S GUIDE***

## Preface

### Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. Neither this manual, nor any of the material contained herein, may be reproduced without written consent of the author.

Version 1.0a

### Disclaimer

The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. The manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

### Trademark Recognition

Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corp.

AMD, Athlon, and Duron are registered trademarks of AMD Corporation.

Other product names used in this manual are the properties of their respective owners and are acknowledged.

### Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

## Preface

## Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

## Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## About the Manual

The manual consists of the following:

### Chapter 1

#### Introducing the Motherboard

Describes features of the motherboard.

Go to  page 1

### Chapter 2

#### Installing the Motherboard

Describes installation of motherboard components.

Go to  page 7

### Chapter 3

#### Using BIOS

Provides information on using the BIOS Setup Utility.

Go to  page 25

### Chapter 4

#### Using the Motherboard Software

Describes the motherboard software

Go to  page 47

### Chapter 5

#### VIA VT8237 SATA RAID Setup Guide

Provides information about SATA RAID Setup

Go to  page 51

## Preface

# TABLE OF CONTENTS

Preface	i
<b>Chapter 1</b>	<b>1</b>
<b>Introducing the Motherboard</b>	<b>1</b>
Introduction.....	1
Features.....	2
Motherboard Components.....	4
<b>Chapter 2</b>	<b>7</b>
<b>Installing the Motherboard</b>	<b>7</b>
Safety Precautions.....	7
Choosing a Computer Case.....	7
Installing the Motherboard in a Case.....	7
Checking Jumper Settings.....	8
<i>Setting Jumpers</i> .....	8
<i>Checking Jumper Settings</i> .....	9
<i>Jumper Settings</i> .....	9
Connecting Case Components.....	10
<i>Front Panel Connector</i> .....	11
Installing Hardware.....	12
<i>Installing the Processor</i> .....	12
<i>Installing Memory Modules</i> .....	13
<i>Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive</i> .....	16
<i>Installing a Floppy Diskette Drive</i> .....	18
<i>Installing Add-on Cards</i> .....	18
<i>Connecting Optional Devices</i> .....	20
Connecting I/O Devices.....	23
<b>Chapter 3</b>	<b>25</b>
<b>Using BIOS</b>	<b>25</b>
About the Setup Utility.....	25
<i>The Standard Configuration</i> .....	25
<i>Entering the Setup Utility</i> .....	25
<i>Updating the BIOS</i> .....	27
Using BIOS.....	27
<i>Standard CMOS Features</i> .....	28
<i>Advanced BIOS Features</i> .....	30
<i>Advanced Chipset Features</i> .....	32

<i>Integrated Peripherals</i> .....	35
<i>Power Management Setup</i> .....	39
<i>PNP/PCI Configurations</i> .....	42
<i>PC Health Status</i> .....	43
<i>Frequency/Voltage Control</i> .....	43
<i>Load Fail-Safe Defaults</i> .....	45
<i>Load Optimized Defaults</i> .....	45
<i>Set Supervisor/User Password</i> .....	45
<i>Save &amp; Exit Setup Option</i> .....	46
<i>Exit Without Saving</i> .....	46
<b>Chapter 4</b>	<b>47</b>
<b>Using the Motherboard Software</b>	<b>47</b>
About the Software CD-ROM.....	47
Auto-installing under Windows 98/ME/2000/XP.....	47
<i>Running Setup</i> .....	48
Manual Installation.....	50
Utility Software Reference.....	50
<b>Chapter 5</b>	<b>51</b>
<b>VIA VT8237 SATA RAID Setup Guide</b>	<b>51</b>
VIA RAID Configurations.....	49
Installing RAID Software & Drives.....	58
Using VIA RAID Tool.....	60

## Multi-Language Translation

# **Chapter 1**

## ***Introducing the Motherboard***

---

### **Introduction**

Thank you for choosing PM800-M2 motherboard of great performance and with enhanced function. The PM800-M2 is designed to fit the advanced Intel Pentium 4 processors in the 478-pin package. Based on the Micro-ATX form factor, this motherboard incorporates the following chipsets: PM800 Northbridge and VT8237 Southbridge chipsets. This motherboard provides the 800/533/400 MHz front side bus with extra capability.

The PM800 Northbridge provides a high performance, cost-effective and energy efficient UMA chipset north bridge with embedded UniChromePro graphics core used for the implementation of desktop personal computer systems. The PM800 implements twelve-level deep In-Order-Queue, and supports Intel Hyper-Threading Technology to maximize system performance for multi-threaded software applications. The PM800 supports asynchronous AGP and CPU interface for flexible system configuration. The Northbridge interfaces to the Southbridge through a high speed 8 x 66 MHz Data Transfer interconnect bus, Ultra V-Link.

The VT8237 Southbridge is a highly integrated peripheral controller, it includes V-Link to PCI and V-Link to LPC controllers. It also integrates Serial ATA and Ultra DMA IDE controllers, USB2.0 host controller, 10/100MB networking MAC, AC'97, and system power management controllers. The VT8237 also supports both ACPI (Advanced Configuration and Power Interface) and legacy (APM) power management.

Sufficient expansion is provided for one AGP slot, three 32-bit PCI slots and one optional CNR slot. It also comes with a concurrent PCI Bus Controller that provides expandability for add-on peripheral cards. This motherboard is designed in a micro-ATX form factor using a four-layer printed circuit board and measures 244 mm x 244 mm. In addition to its excellent performance, the motherboard is featuring a host of high-definition digital media technologies.

## Feature

### Processor

PM800-M2 uses a 478-pin socket type of Pentium 4 that carries the following features:

- Accommodates Intel Pentium 4 478-pin CPU
- Supports a system bus (FSB) of 800/533/400 MHz
- Intel P4 Celeron: FSB 400, 128K L2 cache
- Intel Pentium 4 Willimette: FSB 400, 256K L2 cache
- Intel Pentium 4 Northwood: FSB 533/400, 512K L2 cache
- Intel Pentium 4 Northwood: FSB 800/533, 512K L2 cache, HT supported
- Intel Pentium 4 Prescott: FSB 800/533, 1024K/256K L2 cache

“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate “logical” processors within the same physical processor.

### Chipset

The VIA PM800 Northbridge (NB) and VT8237 Southbridge (SB) chipset is based on an innovative and scalable architecture with proven reliability and performance.

#### **PM800 (NB)**

- Integrated Pentium 4 Northbridge with 800 MHz FSB support and UniChromePro 2D/3D Graphics Controller in a single chip
- Advanced 64-bit SDRAM controller supporting DDR400/333/266/200 SDRAM
- Supports 66 MHz V-Link Host interface with total bandwidth of 1 GB/sec
- Supports AGP 3.0 with 8X/4X transfer mode

#### **VT8237 (SB)**

- Supports 16bit 66 MHz V-Link Client interface with peak bandwidth of 1 GB/sec
- Compliant with PCI 2.2 specification at 33 MHz
- Integrated Serial ATA Host Controllers, supporting data transfer rates up to 1.5Gb/s
- Network Controller, supporting enterprise class 10/100 Mb Fast Ethernet MAC

### Memory

- Supports 400/333/266/200 MHz DDR SDRAM memory module
- Accommodates two unbuffered 2.5V 184-pin slots
- A total maximum capacity 2 GB

### Graphics

- 128-bit 2D/3D engine
- Supports 64/32/16 MB Frame Buffers size
- Supports 8bpp, 15/16bpp and 32bpp color depth modes
- Supports pixel rate up to 200-million pixels per second for 2 textures each

### AC'97 Audio CODEC

The AC'97 Audio CODEC is compliant with the AC'97 2.3 specification that provides 18-bit stereo full-duplex CODEC with independent and variable sampling rate. It supports S/PDIF compressed digital or LPCM audio out. Features include support for 3.3V digital, 5V analog power supply and low power consumption management.

**Introducing the Motherboard**

## Expansion Options

The motherboard comes with the following expansion options:

- Three 32-bit PCI slots
- One AGP slot (support 1.5V only)
- Two IDE headers which support four IDE devices
- One floppy disk drive interface
- Two 7-pin SATA connectors
- One optional CNR (Communication Networking Riser) slot

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66/33 MB/s.

## Onboard LAN (optional)

The onboard LAN provides the following features:

- Supports 10Mb/s and 100Mb/s N-way Auto-negotiation operation
- Half and Full Duplex
- Supports standard MII interface to an external PHY for 10/100 Mb base-T Ethernet
- Supports Wake-On-LAN(WOL) function and remote wake-up

## Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port
- One VGA port
- Four USB ports
- One LAN port (optional)
- Audio jacks for microphone, line-in and line-out

## BIOS Firmware

The motherboard uses Award BIOS that enables users to configure many system features including the following:

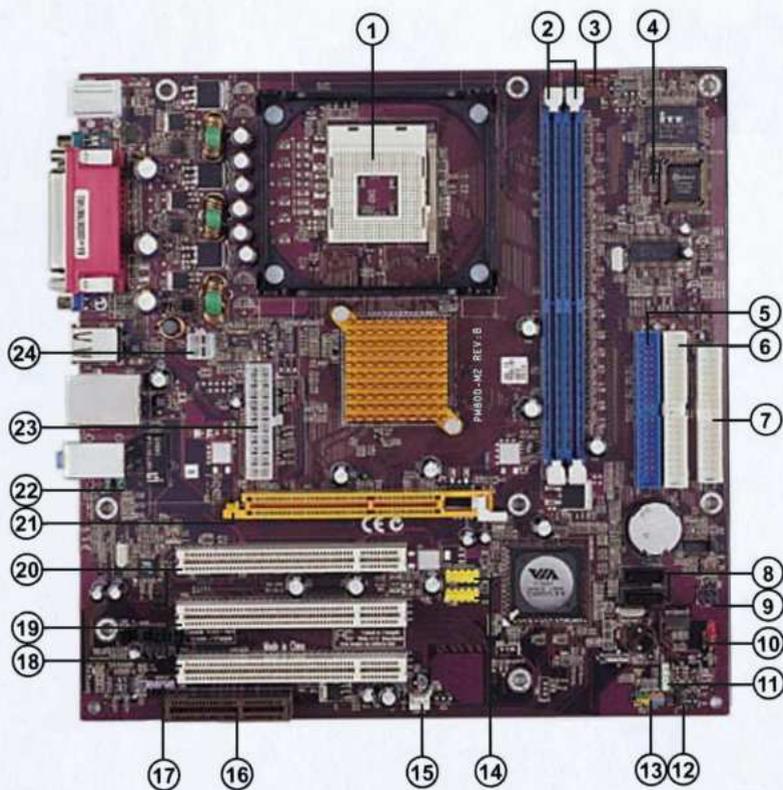
- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.



*Some hardware specifications and software items are subject to change without prior notice.*

## Motherboard Components



**Introducing the Motherboard**

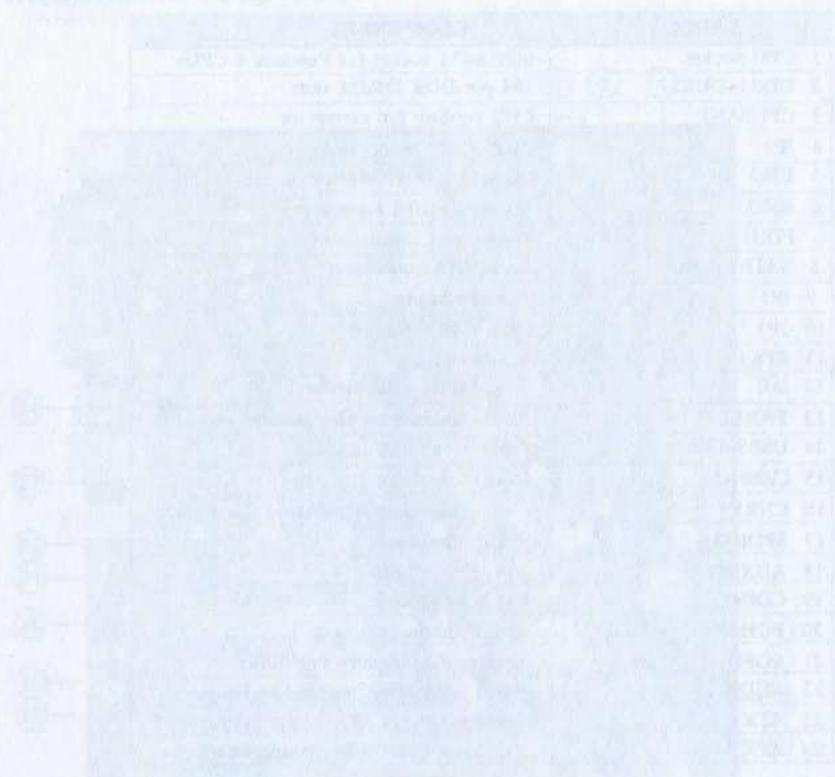
**Table of Motherboard Components**

<b>LABEL</b>	<b>COMPONENT</b>
1 CPU Socket	mPGA478 socket for Pentium 4 CPUs
2 DDR1~DDR2	184-pin DDR DIMM slots
3 CUFAN1	CPU cooling fan connector
4 JP3	BIOS flash protect jumper
5 IDE1	Primary IDE connector
6 IDE2	Secondary IDE connector
7 FDD1	Floppy disk drive connector
8 SATA1~SATA2	Serial ATA connectors
9 IR1	Infrared header
10 JP1	Clear CMOS jumper
11 SPK1	Speaker header
12 SJ1	Single-color LED header
13 PANEL1	Panel connector for case switches and LEDs
14 USB3~USB4	Front Panel USB header
15 CASFAN1	Case cooling fan connector
16 CNR1 *	Communications Networking Riser slot
17 SPDIFO1	SPDIF out header
18 AUXIN1	Auxiliary in header
19 CDIN1	CD-in connector
20 PCI1~PCI3	32-bit add-on card slots
21 AGP1	Accelerated Graphics Port Slot
22 AUDIO1	Front panel MIC/Speaker Out header
23 ATX1	Standard 20-pin ATX power connector
24 ATX2	Auxiliary 4-pin power connector

\* *Optional component*

This concludes Chapter 1. The next chapter explains how to install the motherboard.

## Memo



The motherboard is the main circuit board in a computer system. It houses the central processing unit (CPU), memory, and other essential components. The motherboard is responsible for connecting all the hardware components and providing power to them.

## Introducing the Motherboard

## Chapter 2

### ***Installing the Motherboard***

---

#### **Safety Precautions**

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

#### **Choosing a Computer Case**

There are many types of computer cases on the market. The motherboard complies with the specifications for the Micro-ATX system case. First, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, PM800-M2 supports one or two floppy diskette drives and four enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

This motherboard carries a Micro-ATX form factor of 244 X 244 mm. Choose a case that accommodates this form factor.

#### **Installing the Motherboard in a Case**

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



*Do not over-tighten the screws as this can stress the motherboard.*

## Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

### Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**.



**SHORT**



**OPEN**

This illustration shows a 3-pin jumper. Pins 1 and 2 are **SHORT**.



## Installing the Motherboard

## Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



## Jumper Settings

Jumper	Type	Description	Setting (default)
<b>JP1</b>	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR  Before clearing the CMOS, make sure to turn the system off.
<b>JP3</b>	3-pin	BIOS PROTECT	1-2: Disable 2-3: Enable

## Connecting Case Components

After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

- 1 Connect the CPU cooling fan cable to **CPUFAN1**.
- 2 Connect the case cooling fan connector to **CASFAN1**.
- 3 Connect the case speaker cable to **SPK1**.
- 4 Connect the case switches and indicator LEDs to the **PANEL1**. If there are 3 pins in the case LED cable, connect to **SJ1**.
- 5 Connect the standard power supply connector to **ATX1**.
- 6 Connect the auxiliary case power supply connector to **ATX2**.

### CPUFAN1/CASFAN1: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

### SPK1: Internal speaker

Pin	Signal Name
1	VCC
2	Key
3	Ground
4	Signal

### SJ1: Single-color LED header

Pin	Signal Name
1	ACPILED
2	ACPILED
3	5VSB

### ACPI LED function

	S0	S1	S3	S4/S5
	Light	Blinking	Blinking	Dark

### ATX1: ATX 20-pin Power Connector

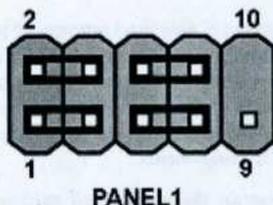
Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS ON#
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGD	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

## ATX2: ATX 12V Power Connector

Pin	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

## Front Panel Connector

The front panel connector (PANEL1) provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases. Refer to the table below for information:



Pin	Signal Name	Function	Pin	Signal Name	Function
1	HD_LED_P	Hard disk LED+	2	FP PWR/SLP	*MSG LED+
3	HD_LED_N	Hard disk LED-	4	FP PWR/SLP	*MSG LED-
5	RST_SW_N	Reset Switch	6	PWR_SW_P	Power Switch
7	RST_SW_P	Reset Switch	8	PWR_SW_N	Power Switch
9	RSVD	Reserved	10	Key	No pin

\* MSG LED (dual color or single color)

### Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

### Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

## Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

## Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal debounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

## Installing Hardware

### Installing the Processor



*Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.*

*On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.*

*Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.*

### Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.



*Warning: Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.*

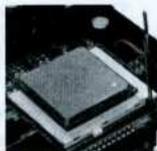
This motherboard has a Socket 478 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

## Installing the Motherboard

## CPU Installation Procedure

The following illustration shows CPU installation components.

- 1 Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
- 2 Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
- 3 Press the lever down and apply thermal grease on top of the CPU.
- 4 Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
- 5 Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPUFAN connector. This completes the installation.



*To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.*

## Installing Memory Modules

PM800-M2 accommodates two 184-pin 2.5V unbuffered Double Data Rate (DDR) SDRAM (Synchronous Dynamic Random Access Memory) memory modules. PM800-M2 can support DDR400/DDR333/DDR266/DDR200 memory types. The total maximum memory size is 2 GB.

### DDR SDRAM memory module table

Memory Module	Memory Bus
DDR200	100MHz
DDR266	133MHz
DDR333	166MHz
DDR400	200MHz



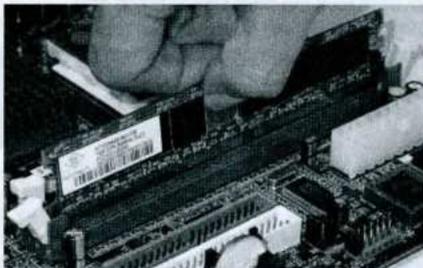
*Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.*

## Installing the Motherboard

## Installation Procedure

Refer to the following to install the memory modules.

- 1 This motherboard supports unbuffered DDR SDRAM only.
- 2 Push the latches on each side of the DIMM slot down.
- 3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
- 4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
- 5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
- 6 Install any remaining DIMM modules.



**Table A: DDR (memory module) QVL (Qualified Vendor List)**

The following DDR400 memory modules have been tested and qualified for use with this motherboard.

Size	Vendor	Module Name
<b>128MB</b>	SAMSUNG	M368L1713DTM-CC4
	Micron	MT8VDDT1664AG-403B2
	NANYA	NT128D64SH4B1G-5
	Infineon	HYS64D16301GU-5-B
	NANYA	NT128D64SH4B1G-5T
<b>256MB</b>	SAMSUNG	M368L3223DTM-CC4
	NANYA	NT256D64S88B1G-5
	Micron	MT16VDDT3264AG-403B2
	Infineon	HYS64D32300GU-5-B
	Micron	MT8VDDT3264AG-40BC4
	NANYA	NT256D64S88B1G-5T
	Infineon	HYS64D32300HU-5-C
<b>512MB</b>	SAMSUNG	M368L6423DTM-CC4
	NANYA	NT512D64S8HB1G-5
	Micron	MT16VDDT6464AG-40BC4
	NANYA	NT512D64S8HB1G-5T
	SAMSUNG	M368L6423ETM-CC4
	Infineon	HYS64D64320HU-5-C

## Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

### About IDE Devices

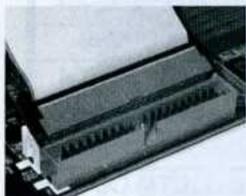
Your motherboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.



*You must orient the cable connector so that the pin1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.*

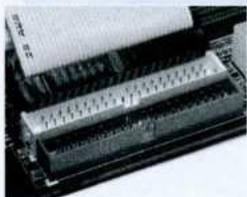
### IDE1: Primary IDE Connector

The first hard drive should always be connected to IDE1.



### IDE2: Secondary IDE Connector

The second drive on this controller must be set to slave mode. The configuration is the same as IDE1.



IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

### About UltraDMA

This motherboard supports UltraDMA 133/100/66. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 133/100/66.

## Installing the Motherboard

## About SATA Connectors

Your motherboard features two SATA connectors supporting a total of two drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard (see page 20) and follow the illustration below to install the SATA hard drives.

## Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



SATA cable (optional)



SATA power cable (optional)

Refer to the illustration below for proper installation:

- 1 Attach either cable end to the connector on the motherboard.
- 2 Attach the other cable end to the SATA hard drive.
- 3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.



*This motherboard does not support the "Hot-Plug" function.*

## Installing a Floppy Diskette Drive

The motherboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch drive and another type of connector for a 3.5-inch drive.



*You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.*

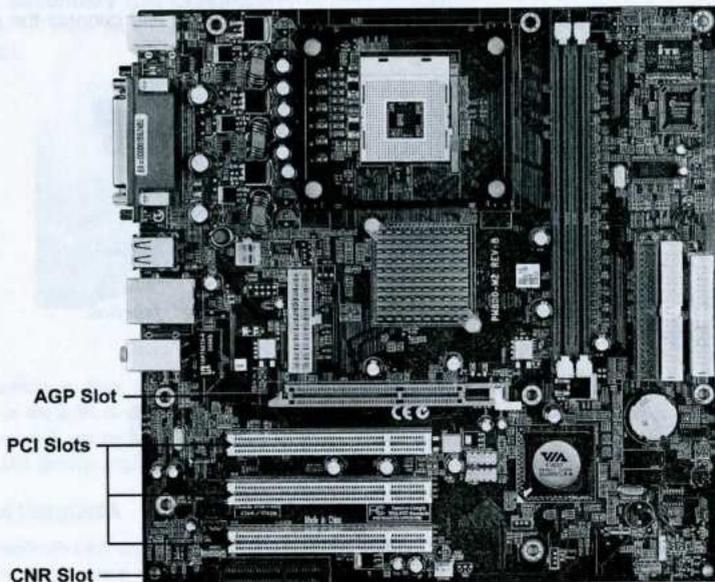
### FDD1: Floppy Disk Connector

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



## Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



**AGP Slot** The AGP slot is used to install a graphics adapter that supports the 8X/4X AGP specification. It is AGP 3.0 compliant.

**PCI Slot** PM800-M2 is equipped with three standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.2 compliant.

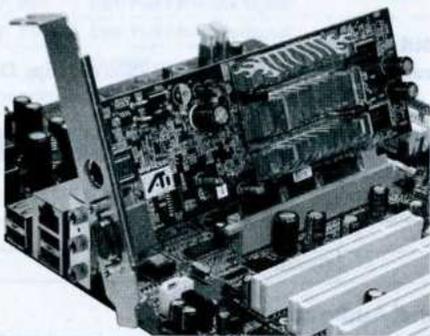
**CNR Slot (optional)** This slot is used to insert CNR cards with Modem and Audio functionality.



*Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.*

Follow these instructions to install an add-on card:

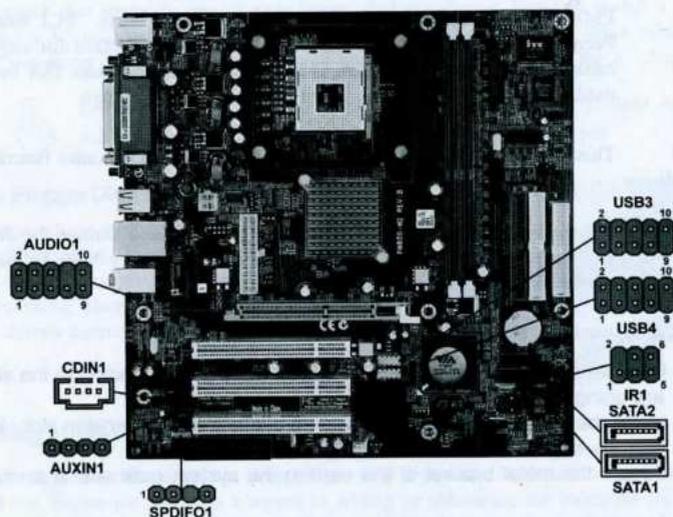
- 1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
- 2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
- 3 Secure the metal bracket of the card to the system case with a screw.



*For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.*

## Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



### SPDIFO1: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog Power
3	Key	No pin
4	GND	Ground

### AUDIO1: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal Name	Function
1	AUD_MIC	Front Panel Microphone input signal
2	AUD_GND	Ground used by Analog Audio Circuits
3	AUD_MIC_BIAS	Microphone Power
4	AUD_VCC	Filtered +5V used by Analog Audio Circuits
5	AUD_F_R	Right Channel audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	REVD	Reserved
8	Key	No Pin
9	AUD_F_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal to Return from Front Panel

### SATA1/SATA2: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (150 MB/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

Pin	Signal Name	Pin	Signal Name
1	Ground	2	TX+
3	TX-	4	Ground
5	RX-	6	RX+
7	Ground	-	-

### USB3/USB4: Front Panel USB header

The motherboard has four USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	USBPWR	Front Panel USB Power
2	USBPWR	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	Key	No pin
10	NC	Not connected



Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

### IR1: Infrared port

The motherboard supports an Infrared (IR1) data port. Infrared ports allow the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

Pin	Signal Name	Function
1	Not assigned	Not assigned
2	KEY	No pin
3	+5V	IR Power
4	GND	Ground
5	IRTX	IrDA serial output
6	IRRX	IrDA serial output

**AUXIN1: Auxiliary In header**

This connector is an additional line-in audio connector. It allows you to attach a line-in cable when your rear line-in jack is set as line out port for 4-channel function.

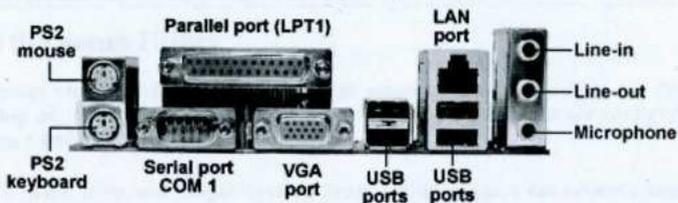
Pin	Signal Name	Function
1	AUX_L	AXU In left channel
2	GND	Ground
3	GND	Ground
4	AUX_R	AXU In right channel

**CD-in: CD Audio Input header**

Pin	Signal Name	Function
1	CD in L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD in R	CD In right channel

## Connecting I/O Devices

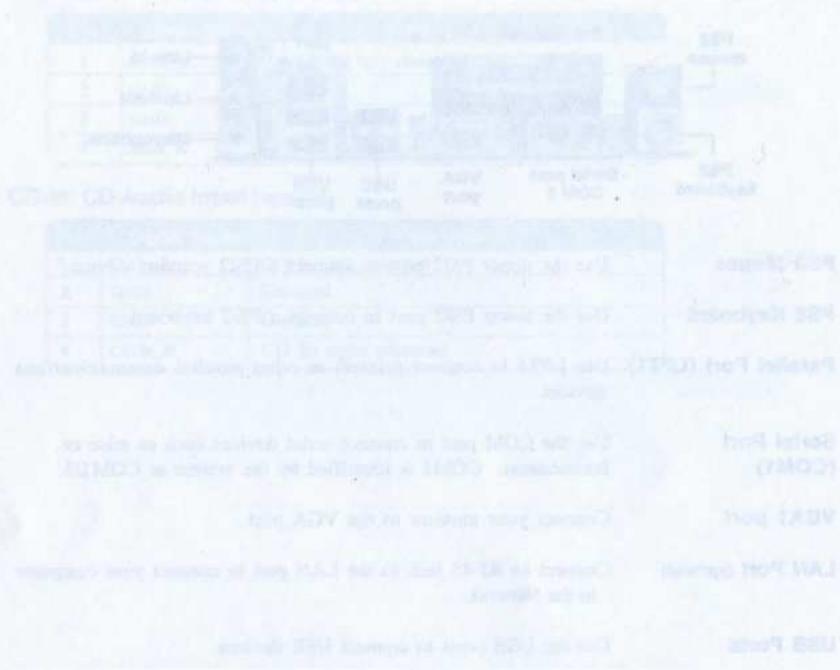
The backplane of the motherboard has the following I/O ports:



- PS2 Mouse** Use the upper PS/2 port to connect a PS/2 pointing device.
- PS2 Keyboard** Use the lower PS/2 port to connect a PS/2 keyboard.
- Parallel Port (LPT1)** Use LPT1 to connect printers or other parallel communications devices.
- Serial Port (COM1)** Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
- VGA1 port** Connect your monitor to the VGA port
- LAN Port (optional)** Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
- USB Ports** Use the USB ports to connect USB devices.
- Audio Ports** Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone

This concludes Chapter 2. The next chapter covers the BIOS.

## Memo



## Chapter 3

### *Using BIOS*

---

#### About the Setup Utility

The computer uses the latest Award BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

#### *The Standard Configuration*

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

#### *Entering the Setup Utility*

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

**Press DEL to enter SETUP**

Pressing the delete key accesses the BIOS Setup Utility:

Phoenix-AwardBIOS CMOS Setup Utility:

▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Fail-Safe Defaults
▶ Advanced Chipset Features	Load Optimized Defaults
▶ Integrated Peripherals	Set Supervisor Password
▶ Power Management Setup	Set User Password
▶ PnP/PCI Configurations	Save & Exit Setup
▶ PC Health Status	Exit Without Saving
Esc: Quit	
F10: Save & Exit Setup	
↑ ↓ → ← : Select Item	
Time, Date, Hard Disk Type...	

***BIOS Navigation Keys***

The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
← ↑ ↓ →	Scrolls through the items on a menu
+/-/PU/PD	Modifies the selected field's values
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions
F5	Loads previously saved values to CMOS
F6	Loads a minimum configuration for troubleshooting
F7	Loads an optimum set of values for peak performance

## Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

- 1 If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
- 2 If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
- 3 Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
- 4 Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 3.
- 5 Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
- 6 At the A:\ prompt, type the Flash Utility program name and press <Enter>.
- 7 Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
- 8 When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten.

## Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ►) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ►.

## Standard CMOS Features

This option displays basic information about your system.

Phoenix-AwardBIOS CMOS Setup Utility  
Standard CMOS Features

Date (mm.dd.yy)	Tue, July 11 2003	Item Help
Time (hh:mm:ss)	12:8:59	
▶ IDE Channel 0 Master	[None]	Menu Level ▶
▶ IDE Channel 0 Slave	[None]	
▶ IDE Channel 1 Master	[None]	
▶ IDE Channel 1 Slave	[None]	
▶ IDE Channel 2 Master	[None]	
▶ IDE Channel 3 Master	[None]	
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Base Memory	640K	
Extended Memory	261120K	
Total Memory	262144K	

↑ → ← → : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

### Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

#### ▶ IDE Devices (None)

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Press <Enter> to display the IDE submenu:

Phoenix-AwardBIOS CMOS Setup Utility  
IDE Primary Master

IDE HDD Auto-Detection	[ Press Enter]	Item Help
IDE Primary Master	[Auto]	
Access Mode	[Auto]	Menu Level ▶▶ To auto-detect the HDD's size, head...on this channel
Capacity	0 MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

↑ → ← → : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

### IDE HDD Auto-Detection

Press <Enter> while this item is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.



*If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.*

### **IDE Channel 0/1 Master/Slave/Extended IDE Drive(Auto)**

Leave this item at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below. Please noted that if you choose IDE Channel 2/3 Master, the item may change to Extended IDE Drive.

Refer to your drive's documentation or look on the drive casing if you need to obtain this information. If no device is installed, change the value to None.



*Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.*

### **Access Mode (Auto)**

This item defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to return to the Standard CMOS Features page.

### **Drive A/Drive B (1.44M, 3.5 in./None)**

These items define the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

### **Floppy 3 Mode Support (Disabled)**

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

### **Video (EGA/VGA)**

This item defines the video mode of the system. This motherboard has a built-in VGA graphics system; you must leave this item at the default value.

### **Halt On (All Errors)**

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

### **Base Memory, Extended Memory, and Total Memory**

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

## Advanced BIOS Features

This option defines advanced information about your system.

### Phoenix-AwardBIOS CMOS Setup Utility Advanced BIOS Features

ATA66/100 IDE Cable Msg.	[Enabled]	Item Help
▶ Hard Disk Boot Priority	[Press Enter]	
Quick Power On Self Test	[Enabled]	Menu Level ▶
First Boot Device	[Floppy]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[CDROM]	
Boot Other Device	[Enabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Typematic Rate Setting	[Disabled]	
X Typematic Rate (Chars/Sec)	6	
X Typematic Delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	[Enabled]	
OS Select For DRAM > 64MB	[Non-OS2]	
HDD S.M.A.R.T. Capability	[Disabled]	
Video BIOS Shadow	[Enabled]	
Small Logo (EPA) Show	[Disabled]	

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

### ATA 66/100 IDE Cable Msg (Enabled)

Enables or disables the ATA 66/100 IDE Cable Msg. This message will appear during reboot when you use 40-pin cable on your 66/100 hard disks.

### ▶ Hard Disk Boot Priority (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

### Phoenix-AwardBIOS CMOS Setup Utility Hard Disk Boot Priority

Bootable Add-in Card	Item Help
	Menu Level ▶▶
	Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

↑↓: Move PU/PD/+/-: Change Priority F10:Save ESC:Exit

### Quick Power On Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

**First/Second/Third Boot Device (Floppy/Hard Disk/CDROM)**

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

**Boot Other Device (Enabled)**

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

**Boot Up Floppy Seek (Disabled)**

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

**Boot Up NumLock Status (On)**

This item defines if the keyboard Num Lock key is active when your system is started.

**Typematic Rate Setting (Disabled)**

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec):** Use this item to define how many characters per second are generated by a held-down key.
- **Typematic Delay (Msec):** Use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

**Security Option (Setup)**

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

**APIC Mode (Enabled)**

This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

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

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

**HDD S.M.A.R.T Capability (Disabled)**

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

**Video BIOS Shadow (Enabled)**

This item determines whether the BIOS will be copied to RAM for faster execution.

**Small Logo (EPA) Show (Disabled)**

Enables or disables the display of the EPA logo during boot.

## Advanced Chipset Features

These items define critical timing parameters of the motherboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

### Phoenix-AwardBIOS CMOS Setup Utility Advanced Chipset Feature

▶ DRAM Clock/Drive Control	[Press Enter]	Item Help
▶ AGP & P2P Bridge Control	[Press Enter]	
▶ CPU & PCI Bus Control	[Press Enter]	Menu Level ▶
System BIOS Cacheable	[Disabled]	
Init Display First	[PCI Slot]	

↑|→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

### ▶DRAM Clock/Drive Control (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

### Phoenix-AwardBIOS CMOS Setup Utility DRAM Clock/Drive Control

Current CPU Frequency	100MHz	Item Help
Current DRAM Frequency	100MHz	
DRAM Clock	[By SPD]	Menu Level ▶▶
DRAM Timing	[Auto By SPD]	
X SDRAM CAS Latency	2.5	
X Bank Interleave	4Bank	
X Precharge to Active (Trp)	4T	
DRAM Command Rate	[2T Command]	

↑|→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

### Current CPU/DRAM Frequency (100MHz)

These two items show the CPU and DRAM frequency.

### DRAM Clock (By SPD)

This item enables you to manually set the DRAM Clock. We recommend that you leave this item at the default value.

### **DRAM Timing (Auto By SPD)**

Set this to the default value to enable the system to automatically set the SDRAM timing by SPD (Serial Presence Detect). SPD is an EEPROM chip on the DIMM module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer. If you disable this item, you can use the following three items to manually set the timing parameters for the system memory.

- **SDRAM CAS Latency 2.5:** Enables you to select the CAS latency time in HCLKs of 2/2 or 3/3. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.
- **Bank Interleave (4T):** Enable this item to increase memory speed. When enabled, separate memory banks are set for odd and even addresses and the next byte of memory can be accessed while the current byte is being refreshed.
- **Precharge to Active (Trp) (4T):** This item is used to designate the minimum Row Precharge time of the SDRAM devices on the module.

DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the Row Address Strobe (RAS) to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

### **DRAM Command Rate (2T Command)**

This item enables you to specify the waiting time for the CPU to issue the next command after issuing the command to the DDR memory. We recommend that you leave this item at the default value.

Press <Esc> to return to the Advanced Chipset Features page.

## ►AGP & P2P Bridge Control (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility  
AGP & P2P Bridge Control

AGP Aperture Size	[128M]	Item Help
AGP 2.0 Mode	[4X]	
AGP Driving Control	[Auto]	
X AGP Driving Value	DA	Menu Level ►►
AGP Fast Write	[Disabled]	
VGA Share Memory Size	[64M]	

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

### **AGP Aperture Size (128M)**

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.

### **AGP 2.0 Mode (4X)**

This item allows you to enable or disable the caching of display data for the processor video memory. Enabling AGP-4X Mode can greatly improve the display speed. Disable this item if your graphics display card does not support this feature.

### **AGP Driving Control (Auto)**

This item is used to signal driving current on AGP cards to auto or manual. Some AGP cards need stronger than normal driving current in order to operate. We recommend that you set this item to the default.

- **AGP Driving Value:** When AGP Driving Control is set to Manual, use this item to set the AGP current driving value.

### **AGP Fast Write (Disabled)**

This item lets you enable or disable the caching of display data for the video memory of the processor. Enabling this item can greatly improve the display speed. Disable this item if your graphics display card does not support this feature.

### **VGA Share Memory Size (64M)**

These items allows you to select the shared memory size for VGA usage.

Press <Esc> to return to the Advanced Chipset Features page.

## ►CPU & PCI Bus Control (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility  
CPU & PCI Bus Control

PCI Delay Transaction	[Disabled]	Item Help
		Menu Level ►►

↑←→: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fall-Safe Defaults F7:Optimized Defaults

### ***PCI Delay Transaction(Disabled)***

The mainboard's chipset has an embedded 32-bit post write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

Press <Esc> to return to the Advanced Chipset Features page.

### **System BIOS Cacheable (Enabled)**

This item allow the system to be cached in memory for faster execution. Leave the item at the default value for better performance.

### **Init Display First (PCI Slot)**

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the motherboard.

### **Integrated Peripherals**

These options display items that define the operation of peripheral components on the system's input/output ports.

Phoenix-AwardBIOS CMOS Setup Utility  
Integrated Peripherals

► VIA OnChip IDE Device	[Press Enter]	Item Help
► VIA OnChip PCI Device	[Press Enter]	
► SuperIO Device	[Press Enter]	
		Menu Level ►

↑←→: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fall-Safe Defaults F7:Optimized Defaults

## Using BIOS

## ►VIA OnChip IDE Device (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility  
VIA OnChip IDE Device

OnChip SATA	[Enabled]	Item Help
SATA Mode	[IDE]	
IDE DMA transfer access	[Enabled]	Menu Level ►►
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]	
IDE HDD Block Mode	[Enabled]	

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

### **OnChip SATA (Enabled)**

This option allows you enable or disable the onboard Serial ATA device.

### **SATA Mode (IDE)**

Use this item to select the mode of the Serial ATA.

### **IDE DMA transfer access (Enabled)**

This item allows you to enable the transfer access of the IDE DMA then burst onto the PCI bus and nonburstable transactions do not.

### **OnChip IDE Channel0/1(Enabled)**

Use these items to enable or disable the PCI IDE channels that are integrated on the mainboard.

### **IDE Prefetch Mode (Enabled)**

The onboard IDE drive interfaces supports IDE prefetching, for faster drive access. If you install a primary and secondary add-on IDE interface, set this field to Disabled if the interface does not support prefetching.

### **IDE Primary/Secondary Master/Slave PIO (Auto)**

Each IDE channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input/Output) is used by IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0-4.

### **IDE Primary/Secondary Master/Slave UDMA (Auto)**

Each IDE channel supports a master device and a slave device. This mainboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this mainboard in order to use an UltraDMA device.

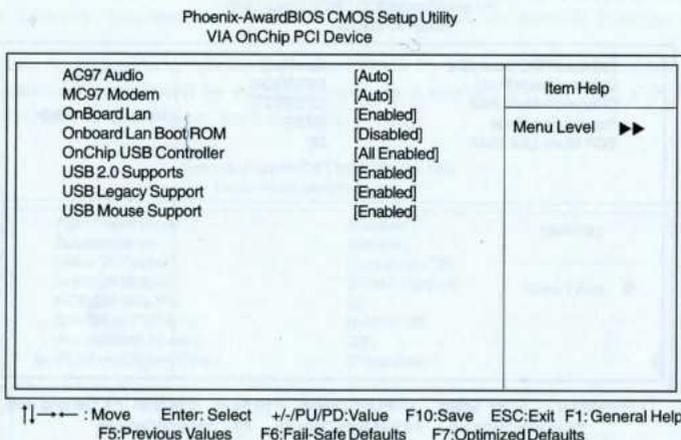
**IDE HDD Block Mode (Enabled)**

Enable this field if your IDE hard drive supports block mode. Block mode enables BIOS to automatically detect the optimal number of block read and writes per sector that the drive can support and improves the speed of access to IDE devices.

Press <Esc> to return to the Integrated Peripherals page.

**►VIA OnChip PCI Device (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:

**AC97 Audio( Auto)**

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-in card.

**MC97 Modem (Auto)**

Enables and disables the onboard modem. Disable this item if you are going to install an external modem.

**OnBoard Lan (Enabled)**

Enables and disables the onboard LAN.

**Onboard Lan Boot ROM (Disabled)**

This item allows you to enable or disable the onboard LAN boot ROM function.

**OnChip USB Controller (All Enabled)**

Enable this item if you plan to use the Universal Serial Bus ports on this motherboard.

**USB 2.0 Supports (Enabled)**

Enable this item if your system supports USB 2.0

**USB Legacy Support (Enabled)**

This item allows the BIOS to interact with a USB keyboard or mouse to work with MS-DOS based utilities and non-Windows modes.

**USB Mouse Support (Enabled)**

Enables this item if you plan to use a mouse connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

Press <Esc> to return to the Integrated Peripherals page.

**► SuperIO Device (Press Enter)**

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility  
Super IO Device

Onboard FDC Controller	[Enabled]	Item Help Menu Level ►►
Onboard Serial Port1	[3F8/IRQ4]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[ECP]	
ECP Mode Use DMA	[3]	

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

**Onboard FDC Controller (Enabled)**

This option enables the onboard floppy disk drive controller.

**Onboard Serial Port1 (3F8/IRQ4)**

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 1 (COM1).

**Onboard Parallel Port (378/IRQ7)**

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

**Parallel Port Mode (ECP)**

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP- and ECP-aware peripherals.

**ECP Mode Use DMA (3)**

When the onboard parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

Press <Esc> to return to the Integrated Peripherals page.

## Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is Enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system realtime clock.

Phoenix-AwardBIOS CMOS Setup Utility  
Power Management Setup

HDD Power Down	[Disable]	Item Help
Suspend Mode	[Disable]	
Video Off Option	[Suspend-> Off]	
Video Off Method	[DPMS Support]	Menu Level ▶
MODEM Use IRQ	[3]	
Soft-Off by PWRBTN	[Instant-Off]	
Ac Loss Auto Restart	[Off]	
▶ IRQ/Event Activity Detect	[Press Enter]	

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

### HDD Power Down (Disable)

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disable.

### Suspend Mode (Disable)

After the selected period of system inactivity, all devices except the CPU shut off.

### Video Off Option (Suspend-> Off)

This option defines if the video is powered down when the system is put into suspend mode.

### Video Off Method (DPMS Support)

This item defines how the video is powered down to save power.

### MODEM Use IRQ (3)

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the motherboard Wake On Modem connector for this feature to work.

### Soft-Off by PWRBTN (Instant-Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

### Ac Loss Auto Start (Off)

This item defines how the system will act after AC power loss during system operation. When you set to Off, it will keep the system in Off state until the power button is pressed.

### ►IRQ/Event Activity Detect (Press Enter)

Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility  
IRQ/Event Activity Detect

VGA	[Off]	Item Help
LPT & COM	[LPT/COM]	
HDD & FDD	[ON]	Menu Level ►►
PCI Master	[OFF]	
PowerOn by PCI Card	[Enabled]	
Modem Ring Resume	[Disabled]	
RTC Alarm Resume	[Disabled]	
X Date (of Month)	0	
X Resume Time (hh:mm:ss)	0 : 22 : 0	
► IRQs Activity Monitoring	[Press Enter]	

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

### VGA (OFF)

When set to On, the system power will resume the system from a power saving mode if there is any VGA activity.

### LPT & COM (LPT/COM)

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the serial ports, or the parallel port.

### HDD & FDD (ON)

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the hard disk drive or the floppy diskette drive.

### PCI Master (OFF)

When set to Off, any PCI device set as the Master will not power on the system.

### PowerOn by PCI Card (Enabled)

Use this item to enable PCI activity to wakeup the system from a power saving mode.

**Modem Ring Resume (Disabled)**

Use this item to enable modem activity to wakeup the system from a power saving mode.

**RTC Alarm Resume (Disabled)**

When set to Enabled, additional fields become available and you can set the date (day of the month), hour, minute and second to turn on your system. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

Press <Esc> to return to the Power Management Setup page.

**►IRQs Activity Monitoring (Press Enter)**

This screen enables you to set IRQs that will resume the system from a power saving mode.

Phoenix-Award BIOS CMOS Setup Utility  
IRQs Activity Monitoring

Primary INTR	[ON]	Item Help
IRQ3 (COM2)	[Disabled]	
IRQ4 (COM1)	[Enabled]	
IRQ5 (LPT2)	[Enabled]	
IRQ6 (Floppy Disk)	[Enabled]	Menu Level ►►
IRQ7 (LPT 1)	[Enabled]	
IRQ8 (RTC Alarm)	[Disabled]	
IRQ9 (IRQ2 Redir)	[Disabled]	
IRQ10 (Reserved)	[Disabled]	
IRQ11 (Reserved)	[Disabled]	
IRQ12 (PS/2 Mouse)	[Enabled]	
IRQ13 (Coprocessor)	[Enabled]	
IRQ14 (Hard Disk)	[Enabled]	
IRQ15 (Reserved)	[Disabled]	

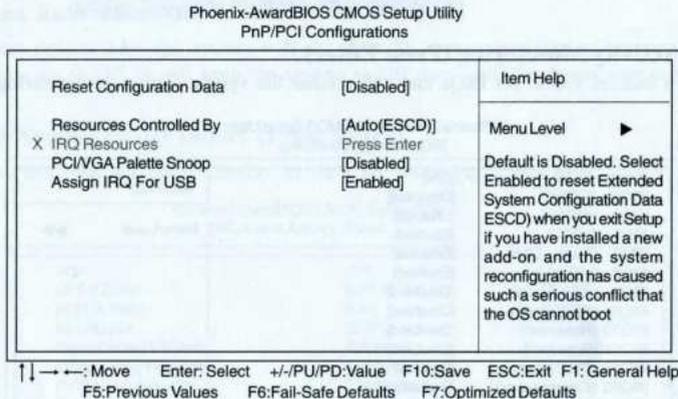
↑ ↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Set any IRQ to Enabled to allow activity at the IRQ to wake up the system from a power saving mode.

Press <Esc> to return to the IRQ/Event Activity Detect page.

## PNP/PCI Configurations

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the ISA and PCI buses on the Motherboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the motherboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:



### Reset Configuration Data (Disabled)

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

### Resources Controlled By (Auto(ESCD))

You should leave this item at the default Auto(ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

### PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

### Assign IRQ For USB (Enabled)

Names the interrupt request (IRQ) line assigned to the USB (if any) on your system. Activity of the selected IRQ always awakens the system.

## PC Health Status

On motherboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

Phoenix-AwardBIOS CMOS Setup Utility  
PC Health Status

Shutdown Temperature	[Disabled]	Item Help
CPU Vcore	1.68V	Menu Level ▶
2.50 V	2.51V	
3.30 V	3.34V	
5.00 V	5.10V	
12.00 V	11.84V	
Voltage Battery	8.23V	
Current System Temp	34°C	
Current CPU Temp	29°C	
CPU FAN Speed	2960 RPM	
CASE FAN Speed	0 RPM	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6\*Fail-Safe Defaults F7:Optimized Defaults

### Shutdown Temperature (Disabled)

Enables you to set the maximum temperature the system can reach before powering down.

### System Component Characteristics

These items allow end users and technicians to monitor data provided by the BIOS on this motherboard. You cannot make changes to these fields.

- CPU Vcore
- Voltage Battery
- Current System Temp
- Current CPU Temp
- CPU FAN Speed
- CASE FAN Speed

## Frequency/Voltage Control

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

Phoenix-AwardBIOS CMOS Setup Utility  
Frequency/Voltage Control

CPU Clock Ratio	[10X]	Item Help
Auto Detect PCI/DIMM Clk	[Enabled]	Menu Level ▶
Spread Spectrum	[Enabled]	
CPU Clock	[100MHz]	
CPU Voltage Regulator	[Default]	
DDR Voltage Regulator	[Default]	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5:Previous Values F6\*Fail-Safe Defaults F7:Optimized Defaults

## Using BIOS

**CPU Clock Ratio (10X)**

Enables you to set the CPU clock. The CPU clock ratio times the CPU Host/PCI Clock should equal the core speed of the installed processor. (For unlock Ratio CPU only.)

**Example:**

<b>CPU Clock Ratio</b>	<b>10</b>
<b>CPU Host/PCI Clock</b>	<b>X100</b>
<b>Installed CPU Clock Speed</b>	<b>1 GHz</b>

**Auto Detect PCI/DIMM Clk (Enabled)**

When this item is enabled, BIOS will disable the clock signal of free DIMM and PCI slots.

**Spread Spectrum (Enabled)**

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

**CPU Clock (100MHz)**

Use the CPU Host Clock to set the frontside bus frequency for the installed processor (usually 200MHz, 133 MHz or 100MHz).

**CPU/DDR Voltage Regulator (Default)**

If you are manually configuring the CPU clock, use this item to set the CPU voltage for more stability.

### ***Load Fail-Safe Defaults Option***

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility:

Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The fail-safe defaults place no great demands on the system and are generally stable. If your system is not functioning correctly, try installing the fail-safe defaults as a first step in getting your system working properly again. If you only want to install fail-safe defaults for a specific option, select and display that option, and then press <F6>.

### ***Load Optimized Defaults Option***

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

### ***Set Supervisor/User Password***

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

#### **ENTER PASSWORD**

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

#### **PASSWORD DISABLED**

If you have selected "System" in "Security Option" of "BIOS Features Setup" menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected "Setup" at "Security Option" from "BIOS Features Setup" menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

### ***Save & Exit Setup Option***

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility and exit the Setup Utility. When the Save and Exit dialog box appears, press <Y> to save and exit, or press <N> to return to the main menu:

### ***Exit Without Saving***

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Exit Without Saving dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.



*If you have made settings that you do not want to save, use the “Exit Without Saving” item and press <Y> to discard any changes you have made.*

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

## Chapter 4

### Using the Motherboard Software

#### About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software.



*Never try to install all software from folder that is not specified for use with your motherboard.*

Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

#### Auto-installing under Windows 98/ME/2000/XP

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.



*If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.*

The support software CD-ROM disc loads automatically under Windows 98/ME/2000/XP. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.



*If the opening screen does not appear; double-click the file "setup.exe" in the root directory.*

## Setup Tab

<b>Setup</b>	Click the <b>Setup</b> button to run the software installation program. Select from the menu which software you want to install.
<b>Browse CD</b>	<p>The <b>Browse CD</b> button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.</p> <p>Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly.</p> <p>Some software is installed in separate folders for different operating systems, such as DOS, WIN NT, or WIN98/95. Always go to the correct folder for the kind of OS you are using.</p> <p>In install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.</p>
<b>Exit</b>	The <b>EXIT</b> button closes the Auto Setup window.

## Application Tab

Lists the software utilities that are available on the CD.

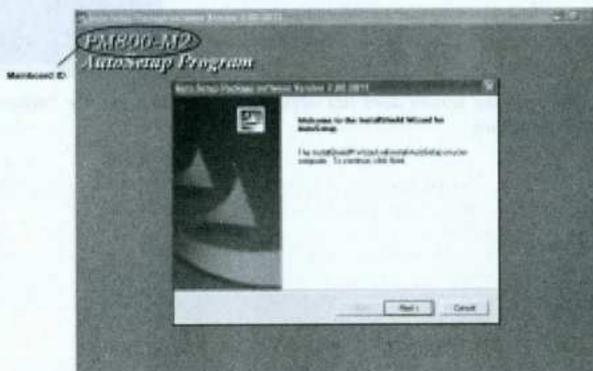
## Read Me Tab

Displays the path for all software and drivers available on the CD.

## Running Setup

*Follow these instructions to install device drivers and software for the motherboard:*

1. Click **Setup**. The installation program begins:

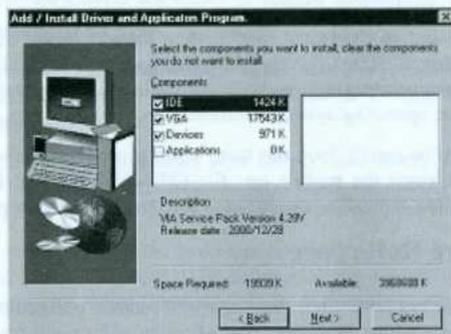


*The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.*

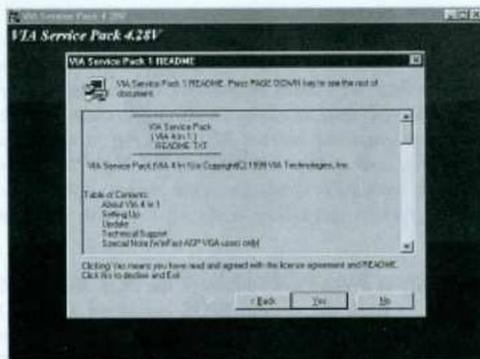
## Using the Motherboard Software

The motherboard identification is located in the upper left-hand corner.

2. Click **Next**. The following screen appears:



3. Check the box next to the items you want to install. The default options are recommended.
4. Click **Next** run the Installation Wizard. An item installation screen appears:



5. Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

## Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

## Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.



*These software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.*

### **AWARD Flash Memory Utility**

*This utility lets you erase the system BIOS stored on a Flash Memory chip on the motherboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, Using BIOS for more information.*

### **WinFlash Utility**

The Award WinFlash utility is a Windows version of the DOS Award BIOS flash writer utility. The utility enables you to flash the system BIOS stored on a Flash Memory chip on the motherboard while in a Windows environment. This utility is currently available for WINXP\ME\2000\98SE. To install the WinFlash utility, run WINFLASH.EXE from the following directory: \UTILITY\WINFLASH 1.51

## Chapter 5

### **VIA VT8237 SATA RAID Setup Guide**

---

#### **VIA RAID Configurations**

The motherboard includes a high performance Serial ATA RAID controller integrated in the VIA VT8237 Southbridge chipset. It supports RAID 0, RAID 1 and JBOD with two independent Serial ATA channels.

**RAID:** (Redundant Array of Independent Disk Drives) use jointly several hard drives to increase data transfer rates and data security. It depends on the number of drives present and RAID function you select to fulfill the security or performance purposes or both.

**RAID 0** (called data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage.

**RAID 1** (called data mirroring) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system.

**JBOD:** (Just a Bunch of Drives) Also known as "Spanning". Two or more hard drives are required. Several hard disk types configured as a single hard disk. The hard drives are simply hooked up in series. This expands the capacity of your drive and results in a useable total capacity. However, JBOD will not increase any performance or data security.

#### ***Install the Serial ATA (SATA) hard disks***

The VIA VT8237 Southbridge chipset supports Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a RAID set.

- If you are creating a RAID 0 (striping) array of performance, use two new drives.
- If you are creating a RAID 1 (mirroring) array for protection, you can use two new drives or use an existing drive and a new drive (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, one hard disk has an 80GB storage capacity and the other hard disk has 60GB storage capacity, the maximum storage capacity for the RAID 1 set is 60GB.

Follow these steps to install the SATA hard disks for RAID configuration.

- i Before setting up your new RAID array, verify the status of your hard disks. Make sure the Master/Slave jumpers are configured properly.
- ii Both the data and power SATA cables are new cables. You cannot use older 40-pin 80-conductor IDE or regular IDE power cables with Serial ATA drives. Installing Serial ATA (SATA) hard disks require the use of new Serial ATA cable (4-conductor) which supports the Serial ATA protocol and a Serial ATA power cable.
- iii Either end of the Serial ATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

- 1 Install the Serial ATA hard disks into the drive bays.
- 2 Connect one end of the Serial ATA cable to the motherboard's primary Serial ATA connector (SATA1).
- 3 Connect the other end of Serial ATA cable to the master Serial ATA hard disk.
- 4 Connect one end of the second Serial ATA cable to the motherboard's secondary Serial ATA connector (SATA2).
- 5 Connect the other end of Serial ATA cable to the secondary Serial ATA hard disk.
- 6 Connect the Serial ATA power cable to the power connector on each drive.
- 7 Proceed to section "Entering VIA Tech RAID BIOS Utility" for the next procedure.

### Entering VIA Tech RAID BIOS Utility

- 1 Boot-up your computer.
- 2 During POST, press <TAB> to enter VIA RAID configuration utility. The following menu options will appear.



*The RAID BIOS information on the setup screen shown is for reference only. What you see on your screen may not be exactly the same as shown.*



On the upper-right side of the screen is the message and legend box. The keys on the legend box allow you to navigate through the setup menu options. The message describes the function of each menu item. The following lists the keys found in the legend box with their corresponding functions.

F1	View Array
↑↓	Move to the next item
Enter	Confirm the selection
ESC	Exit

## Create Array

- 1 In the VIA RAID BIOS utility main menu, select **Create Array** then press the <Enter> key. The main menu items on the upper-left corner of the screen are replaced with create array menu options.



## RAID 0 for performance

- 1 Select the second option item **Array Mode**, then press the <Enter> key. The RAID system setting pop-up menu appears.



- 2 Select **RAID 0 for performance** from the menu and press <Enter>. From this point, you may choose to auto-configure the RAID array by selecting Auto Setup for Performance or manually configure the RAID array for stripped sets. If you want to manually configure the RAID array continue with next step, otherwise, proceed to step #5.
- 3 Select **Select Disk Drives**, then press <Enter>. Use arrow keys to select disk drive/s, then press <Enter> to mark selected drive. An asterisk is placed before the selected drive.
- 4 Select **Block Size**, then press <Enter> to set array block size. Lists of valid array block sizes are displayed on a pop-up menu.

4K  
8K  
16K  
32K  
64K

**Tip** For server systems, it is recommended to use a lower array block size. For multimedia computer systems used mainly for audio and video editing, a higher array block size is recommended for optimum performance.

Use arrow keys to move selection bar on items and press <Enter> to select.

- 5 Select Start Create Process and press <Enter> to setup hard disk for RAID system. The following confirmation appears:

**The same confirmation message appears when the Auto Setup for Performance option is selected.**

The data on the selected disks will be destroyed. Continue? Press Y/N

Press "Y" to confirm or "N" to return to the configuration options.

### ***RAID 1 for data protection***

- 1 Select the second option item Array Mode, then press the <Enter> key. The RAID system setting pop-up menu appears.

RAID 0 for performance  
**RAID 1 for data protection**  
 RAID SPAN for capacity

- 2 Select RAID 1 for data protection from the menu and press <Enter>. Select next task from pop-up menu. The task Create only creates the mirrored set without creating a backup. Create and duplicate creates both mirrored set and backup.

Create only  
 Create and duplicate

- 3 Select task and press <Enter>. The screen returns to Create Array menu items. From this point, you may choose to auto-configure the RAID array by selecting Auto Setup for Data Security or manually configure the RAID array for mirrored sets. If you want to manually configure the RAID array continue with next step, otherwise, proceed to step #5.
- 4 Select Select Disk Drives, then press <Enter>. Use arrow keys to select disk drive/s, then press <Enter> to mark selected drive. (An asterisk is placed before a selected drive.)
- 5 Select Start Create Process and press <Enter> to setup hard disk for RAID system. The following confirmation appears:

**The same confirmation message appears when the Auto Setup for Performance option is selected.**

The data on the selected disks will be destroyed. Continue? Press Y/N

Press "Y" to confirm or "N" to return to the configuration options.

## Delete Array

- 1 In the VIA RAID BIOS utility main menu, select **Delete Array** then press the <Enter> key. The focus is directed to the list of channel used for IDE RAID arrays.
- 2 Press the <Enter> key to select a RAID array to delete. The following confirmation message appears.

```
The selected array will be destroyed.
Are you sure? Continue? Press Y/N
```

Press "Y" to confirm or "N" to return to the configuration options.

## Select Boot Array

- 1 In the VIA RAID BIOS utility main menu, select **Select Boot Array** then press the <Enter> key. The focus is directed to the list of channel used for IDE RAID arrays.
- 2 Press the <Enter> key to select a RAID array for boot. The Status of the selected array will change to Boot. Press <ESC> key to go return to menu items. Follow the same procedure to deselect the boot array.

Channel	Drive Name	Array Name	Mode	Size(GB)	Status
Channel 0	Master	XXXXXXXXXX	XXXXXX	xxx xx	Hot
Channel 1	Slave	XXXXXXXXXX	XXXXXX	xxx xx	Hot
Channel Master	No Drive				
Channel Slave	No Drive				

## Serial Number View

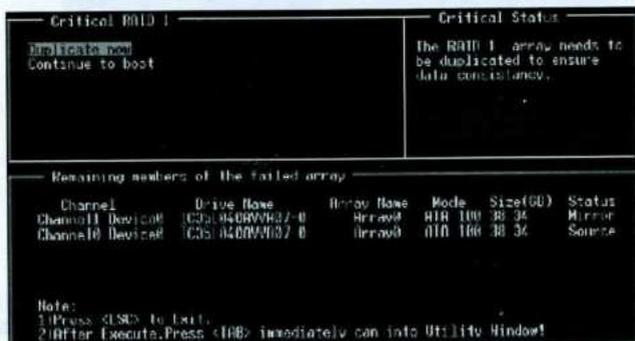
- 1 In the VIA RAID BIOS utility main menu, select **Serial Number View** then press the <Enter> key. The focus is directed to the list of channel used for IDE RAID arrays. Move the selection bar on each item and the serial number is displayed at the bottom of the screen. This option is useful for identifying same model disks.

Channel	Drive Name	Array Name	Mode	Size(GB)	Status
Channel 0	Master	XXXXXXXXXX	XXXXXX	xxx xx	Hot
Channel 1	Slave	XXXXXXXXXX	XXXXXX	xxx xx	Hot
Channel Master	No Drive				
Channel Slave	No Drive				

Serial Number: VJ741646

## Duplicate Critical RAID 1 Array

When booting up the system, BIOS will detect if the RAID 1 array has any inconsistencies between user data and backup data. If BIOS detects any inconsistencies, the status of the disk array will be marked as critical, and BIOS will prompt the user to duplicate the RAID 1 in order to ensure the backup data consistency with the user data.



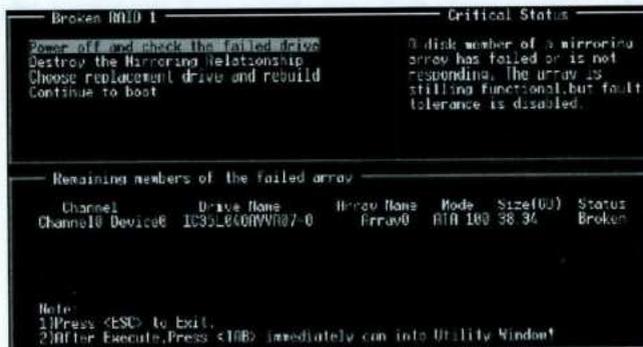
If user selects **Continue to boot**, it will enable duplicating the array after booting into OS.

## Rebuild Broken RAID 1 Array

When booting up the system, BIOS will detect if any member disk drives of RAID has failed or is absent. If BIOS detects any disk drive failures or missing disk drives, the status of the array will be marked as broken.

If BIOS detects a broken RAID 1 array but there is a spare hard drive available for rebuilding the broken array, the spare hard drive will automatically become the mirroring drive. BIOS will show a main interface just like a duplicated RAID 1. Selecting **Continue to boot** enables the user to duplicate the array after booting into operating system.

If BIOS detects a broken RAID 1 array but there is no spare hard drive available for rebuilding the array, BIOS will provide several operations to solve such problems.



### 1. Power off and Check the Failed Drive:

This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

### 2. Destroy the Mirroring Relationship:

This item cancels the data mirroring relationship of the broken array. For broken RAID 1 arrays, the data on the surviving disk will remain after the destroy operation. However, **Destroy the Mirroring Relationship** is not recommended because the data on the remaining disk will be lost when the hard drive is used to create another RAID 1 array.

### 3. Choose Replacement Drive and Rebuild:

This item enables users to select an already-connected hard drive to rebuild the broken array. After choosing a hard drive, the channel column will be activated.



Highlight the target hard drive and press <Enter>, a warning message will appear. Press Y to use that hard drive to rebuild, or press N to cancel. Please note selecting option Y will destroy all the data on the selected hard drive.

### 4. Continue to boot:

This item enables BIOS to skip the problem and continue booting into OS.

## Installing RAID Software & Drivers

### *Install Driver in Windows OS*

#### **New Windows OS (2000/XP/NT4) Installation**

The following details the installation of the drivers while installing Windows XP.

- 1 Start the installation:  
Boot from the CD-ROM. Press **F6** when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
- 2 When the Windows Setup window is generated, press **S** to specify an Additional Device(s).
- 3 Insert the driver diskette **VIA VT8237 Disk Driver** into drive A: and press <Enter>.
- 4 Depending on your operation system, choose **VIA Serial ATA RAID Controller (Windows XP)**, **VIA Serial ATA RAID Controller (Windows 2000)** or **VIA Serial ATA RAID Controller (Windows NT4)** from the list that appears on Windows XP Setup screen, press the <Enter> key.
- 5 Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
- 6 From the Windows XP Setup screen press the <Enter> key. Setup will now load all device files and the continue the Windows XP installation.

#### **Existing Windows XP Driver Installation**

- 1 Insert the ECS CD into the CD-ROM drive.
- 2 The CD will auto-run and the setup screen will appear.
- 3 Under the Driver tab, click on **VIA SATA RAID Utility**.
- 4 The drivers will be automatically installed.

#### **Confirming Windows XP Driver Installation**

- 1 From Windows XP, open the **Control Panel** from **My Computer** followed by the System icon.
- 2 Choose the **Hardware** tab, then click the **Device manager** tab.
- 3 Click the "+" in front of the **SCSI and RAID Controllers** hardware type. The driver **VIA IDE RAID Host Controller** should appear.

### ***Installation of VIA SATA RAID Utility***

The VIA SATA RAID Utility is the software package that enables high-performance RAID 0 arrays in the Windows\*XP operating system. This version of VIA SATA RAID Utility contains the following key features:

- Serial ATA RAID driver for Windows XP
- VIA SATA RAID utility
- RAID0 and RAID1 functions

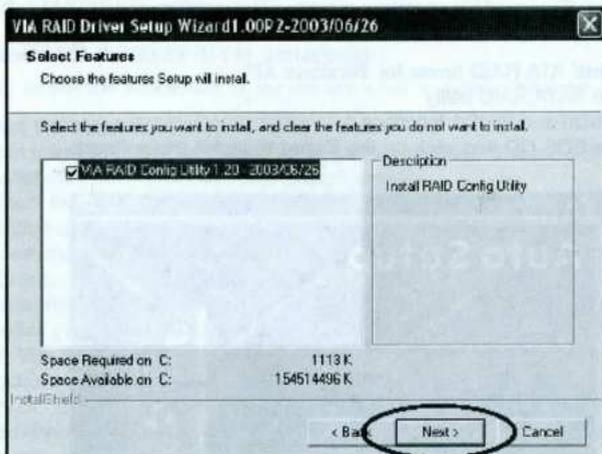
Insert the ECS CD and click on the **Setup** to install the software.



The **InstallShield Wizard** will begin automatically for installation. Click on the **Next** button to proceed the installation in the welcoming window.

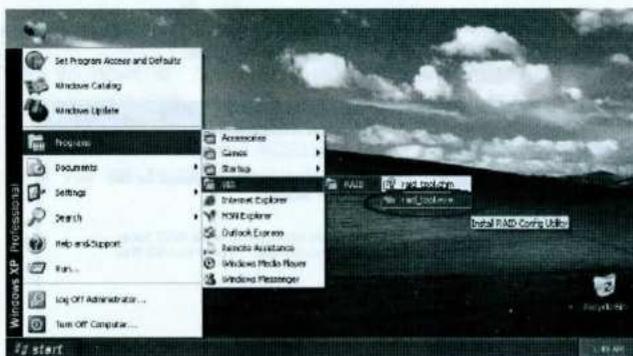


Put a check mark in the check box to install the feature you want. Then click **Next** button to proceed the installation.

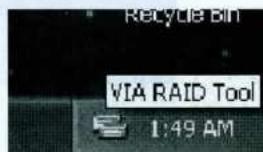


## Using VIA RAID Tool

Once the installation is complete, go to Start----> Programs----> VIA----> raid\_tool.exe to enable VIA RAID Tool.



After the software is finished installation, it will automatically started every time Windows is initiated. You may double-click on the  icon shown in the system tray of the tool bar to launch the **VIA RAID Tool** utility.



The main interface is divided into two windows and the toolbar above contain the main functions. Click on these toolbar buttons to execute their specific functions. The left windowpane displays the controller and disk drives and the right windowpane displays the details of the controller or disk drives. The available features are as following:



View by Controller



View by Devices



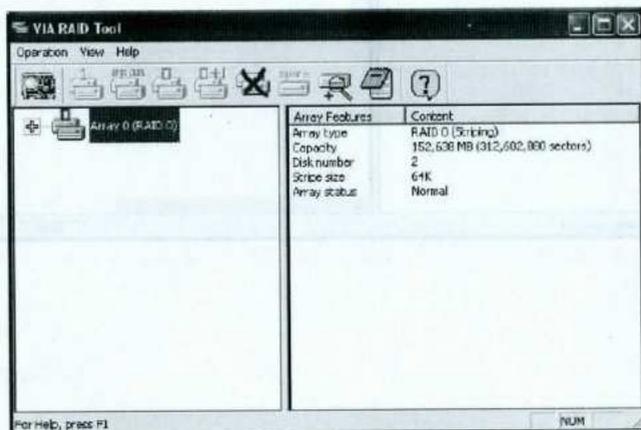
View Event log



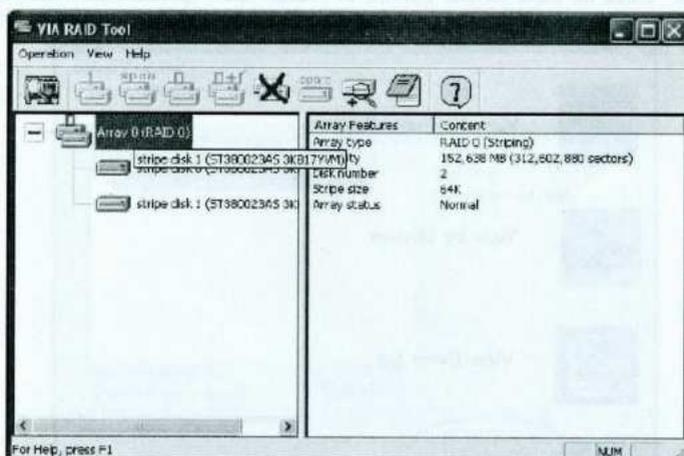
Help Topics

It means that VT8237 SATA RAID only has the feature of monitoring the statuses of RAID 0 and RAID 1.

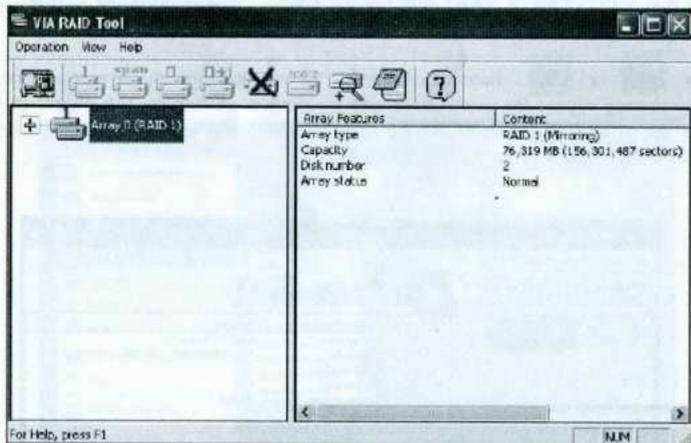
Click on  or  button to determine the viewing type of left windowpane. There are two viewing types: By controllers and by device. Click on the object in the left windowpane to display the status of the object in the right windowpane. The following screen shows the status of Array 0-RAID 0.



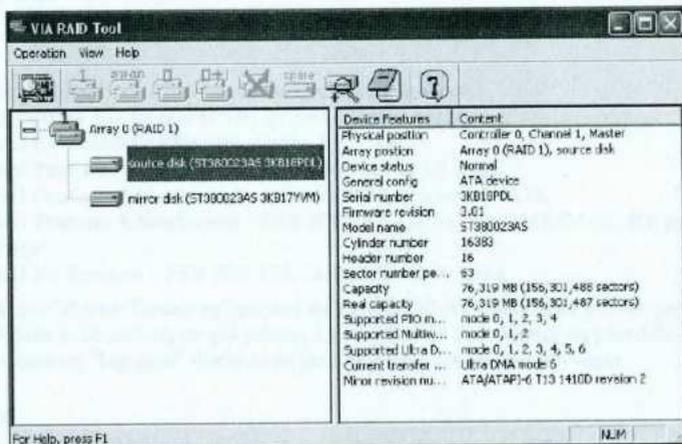
Click on the plus (+) symbol next to Array 0--RAID 0 to see the details of each disk.



You may also use the same  or  button to view the statuses of Array 0--RAID 1.



Click on the plus (+) symbol next to Array 0; RAID 1 to see the details of each disk.





## Caractéristiques

### Processeur

PM800-M2 utilise un Pentium 4 avec socle 478 broches et possédant les caractéristiques suivantes :

- Peut recevoir les CPU Intel Pentium 4 478 broches
- Support un bus frontal (FSB) de 800/533/400 MHz
- Intel P4 Celeron : FSB 400, Cache L2 128K
- Intel Pentium 4 Willamette : FSB 400, Cache L2 256K
- Intel Pentium 4 Northwood : FSB 400/533, Cache L2 512K
- Intel Pentium 4 Northwood : FSB 800/533, Cache L2 1024K/256K, HT pris en charge
- Intel P4 Prescott : FSB 800/533, Cache L2 1024K/256K

Le technologie "Hyper-Threading" permet au système d'exploitation de penser qu'il est connecté à deux processeurs, ce qui permet à deux flux de fonctionner en parallèle, mais sur des processeurs "logiques" distincts au sein du même processeur physique.

### Chipset

Le chipset VIA PM800 Northbridge (NB) et VT8237 Southbridge (SB) se base sur une architecture innovante et évolutive avec des performances et une fiabilité éprouvées.

#### PM800 (NB)

- Intègre le Pentium 4 Northbridge avec support FSB 800 MHz et le Contrôleur Graphique UniChromePro 2D/3D en une puce unique
- Contrôleur SDRAM 64 bits avancé supportant la SDRAM DDR 400/333/ 266/200
- Prend en charge l'interface hôte V-Link 66 MHz avec bande passante totale de 1Go/Sec
- Prend en charge AGP 3.0 avec mode de transfert 8X/4X

#### VT8237 (SB)

- Prend en charge l'interface client V-Link 16 bits 66 MHz avec bande passante de pointe de 1Go/sec
- Compatible avec la spécification PCI 2.2 à 33 MHz
- Contrôleurs hôtes ATA série intégré, prenant en charge des débits pouvant atteindre les 1,5 Go/s
- Contrôleur Réseau, supportant Fast Ethernet MAC 10/100 Mo de classe entreprise

### Mémoire

- Prend en charge les modules de mémoire SDRAM DDR 400/333/266/200 MHz
- Comporte deux emplacements 184 broches 2,5V non tamponnés
- Capacité maximum totale de 2 Go

### Graphiques

- Moteur 2D/3D 128 bits
- Supporte la taille de Tampons de Trame de 64/32/16 Mo
- Supporte les modes de profondeur de couleur 8bpp, 15/16bpp et 32bpp
- Supporte la fréquence de pixels jusqu'à 200 millions de pixels par seconde pour chacune des 2 textures

## CODEC audio AC'97

Le CODEC audio AC'97 est compatible avec la spécification AC'97 2.3 qui apporte un CODEC 18 bits stéréo en duplex intégral avec une fréquence d'échantillonnage indépendante et variable. Il prend en charge la sortie audio numérique comprimée S/PDIF ou LPCM. Les caractéristiques comprennent la prise en charge pour alimentation numérique 3,3V, analogique 5V et gestion basse consommation d'énergie.

### Options d'extension

La carte mère comporte les options d'extension suivantes :

- Trois emplacements PCI 32 bits
- Un emplacement AGP (prise en charge de 1,5V uniquement)
- Deux barrettes IDE avec prise en charge de quatre périphériques IDE
- Une interface lecteur de disquettes
- Deux connecteurs SATA 7 broches
- Un emplacement optionnel CNR (Communications Networking Riser )

La carte mère prend en charge la maîtrise de bus Ultra DMA avec des débits de 133/100/66/33 Mo/s.

### LAN interne(optionnel)

Le LAN interne offre les caractéristiques suivantes:

- Prise en charge des opérations d'auto-négociation N-voies 10Mb/s et 100Mb/s
- Semi-duplex et Duplex intégral
- Prise en charge d'interface MII standard pour un PHY externe pour Ethernet 10/100Mb base-T
- Prise en charge de la fonction réveil sur LAN (Wake-On-LAN : WOL) et réveil à distance

### E/S intégrées

La carte mère comporte un ensemble complet de connecteurs et de ports E/S :

- Deux ports PS/2 pour souris et clavier
- Un port série
- Un port parallèle
- Un port VGA
- Quatre ports USB
- Un port LAN (optionnel)
- Prise audio pour micro, entrée de ligne et sortie de ligne

### Microprogramme BIOS

La carte mère utilise Award BIOS qui permet à l'utilisateur de configurer bon nombre de fonctions du système, dont :

- Gestion d'alimentation
- Alertes de réveil
- Paramètres UC
- Temporisation UC et mémoire

Le micro-programme peut également être utilisé pour définir les paramètres pour différentes vitesses d'horloge de processeur.



*Certaines spécifications matérielles et certains éléments logiciels sont susceptibles de modification sans préavis.*

## Leistungsmerkmale

### Prozessor

PM800-M2 besitzt einen 478-pol. Pentium 4-Socket, der die folgenden Leistungsmerkmale hat:

- CPU-Anpassung für Intel Pentium 4 478-Pin
- Unterstützt bis zu 800/533/400 MHz Frontsidebus (FSB)
- Intel P4 Celeron: FSB 400, 128K L2-Cache
- Intel Pentium 4 Willamette: FSB 400, 256K L2-Cache
- Intel Pentium 4 Northwood: FSB 400/533, 512K L2-Cache
- Intel Pentium 4 Northwood: FSB 800/533, 512K L2-Cache, HT unterstützt
- Intel Pentium 4 Prescott: FSB 800/533, 1024K/256K L2-Cache

Die "Hyper-Threading"-Technologie ermöglicht es, dass das Betriebssystem seinen Prozessor als zwei Prozessoren behandelt, so dass zwei Threads auf separaten "logischen" Prozessoren in einem der selben physischen Prozessor parallel ausgeführt werden können.

### Chipsatz

Der VIA PM800 Northbridge (NB)- sowie VT8237 Southbridge (SB)-Chipsatz basiert sich auf eine innovative und skalierbare Architektur mit bewiesener Zuverlässigkeit und Leistung.

#### PM800 (NB)

- Integrierter Pentium 4 Northbridge mit FSB-Unterstützung von 800 MHz und ein UniChromePro 2D/3D Grafik-Kontroller in einem Einzelchip
- Fortgeschrittener SDRAM-Kontroller mit 64 Bit, welcher DDR400/333/ 266/200 SDRAM unterstützt
- Unterstützt 66 MHz V-Link Hostschnittstelle mit einer Gesamtbandbreite von 1GB/Sek.
- Unterstützt AGP 3.0 mit 8X/4X Transfermodus

#### VT8237 (SB)

- Unterstützt 16Bit 66 MHz V-Link Clientschnittstelle mit einer Spitzbandbreite von 1GB/Sek.
- Kompatibel mit PCI 2.2-Spezifikation bei 33 MHz
- Integrierte Serial ATA Host Controller, Unterstützt eine Datentransferrate von bis zu 1,5Gb/s
- Network Controller (Netz-Controller), mit einer Unterstützung eines 10/100 Mb Fast Ethernet MAC der Betriebsklasse

### Arbeitsspeicher

- Unterstützt 400/333/266/200 MHz DDR SDRAM-Speichermodule
- Besitzt zwei ungepufferte 2,5V 184-pol. Steckplätze
- Unterstützt eine Gesamtkapazität von bis zu 2 GB

### Grafik

- 2D/3D Motor mit 128 Bit
- Unterstützt Rahmenpuffergrößen von 64/32/16 MB
- Unterstützt einen Farbstärke-Modus von 8bpp, 15/16bpp und 32bpp
- Unterstützt eine Pixelgröße von bis zu 200-Millionen Pixel pro Sekunde für je 2 Strukturen

## AC'97 Audio CODEC

Der AC'97 Audio CODEC ist konform mit der AC'97 2.3-Spezifikation für einen 18-Bit Stereo Vollduplex- CODEC mit unabhängigen und verschiedene Samplingraten. Er unterstützt S/PDIF komprimierte digitale oder LPCM-Audioausgang. Zu seinem Leistungsmerkmalen gehören die Unterstützung für 3,3V digitale, 5V analoge Stromversorgung und Energiesparverwaltung.

## Erweiterungsmöglichkeiten

Das Motherboard ist mit den folgenden Erweiterungsmöglichkeiten ausgestattet:

- Drei 32-Bit PCI-Steckplätze
- Ein AGP-Steckplatz (unterstützt nur 1,5V)
- Zwei IDE-Anschlüsse für vier IDE-Geräte
- Ein Diskettenlaufwerkanschluss
- Zwei 7-pol. SATA-Anschlüsse
- Ein optional CNR (Communications Networking Riser)-Steckplatz

Das Motherboard unterstützt Ultra DMA-Busmaster mit Transferraten von 133/100/66/33 MB/s.

## Onboard LAN (optional)

Das Onboard-LAN hat die folgenden Leistungsmerkmale:

- Unterstützt 10Mb/s und 100Mb/s N-Way Auto-Negotiation
- Halb- und Vollduplex
- Unterstützt Standard MII-Schnittstellen für ein externes PHY für 10/100Mb Base-T Ethernet
- Unterstützt die Wake-On-LAN(WOL)-Funktion und Remote-Aufwecken.

## Integrierte I/O

Das Motherboard hat einen vollständigen Satz von E/A-Schnittstellen bzw. -Anschlüssen:

- Zwei PS/2-Anschlüsse für Maus und Tastatur
- Eine serielle Schnittstelle
- Eine parallele Schnittstelle
- Ein VGA-Anschluss
- Vier USB-Anschlüsse
- Ein LAN-Anschluss (optional)
- Audiobuchse für Mikrofon, Line-In und Line-Out

## BIOS-Firmware

Das Motherboard verwendet Award BIOS, das es Benutzern gestattet, viele Systemfunktionen inkl. der Folgenden zu konfigurieren:

- Energieverwaltung
- Aufweckfunktionen
- CPU-Parameter
- CPU- und Arbeitsspeicherfrequenz

Die Firmware kann auch zur Einstellung von Parametern für verschiedene Prozessortaktgeschwindigkeiten verwendet werden.



*Manche Hardwarespezifikationen und Softwareelemente können ohne Ankündigung geändert werden.*

## Caratteristiche

### Processore

PM800-M2 utilizza un tipo di presa Pentium 4 a 478 pin che supporta le seguenti caratteristiche:

- Può alloggiare CPU Intel Pentium 4 a 478 pin
- Supporto per il bus di sistema frontside (FSB) 800/533/400 MHz
- Intel P4 Celeron: FSB 400, cache 128K L2
- Intel Pentium 4 Willamette: FSB 400, cache 256K L2
- Intel Pentium 4 Northwood: FSB 400/533, cache 512K L2
- Intel Pentium 4 Northwood: FSB 800/533, cache 512K L2, tecnologia HT supportata
- Intel Pentium 4 Prescott: FSB 800/533, cache 1024K/256K L2

La tecnologia "Hyper-Threading" (HT) abilita il sistema operativo a credere di essere collegato a due processori, consentendo di eseguire in parallelo due Thread, entrambi su processori "logici" separati, all'interno dello stesso processore fisico.

### Chipset

I Chipset VIA PM800 Northbridge (NB) e VT8237 Southbridge (SB) si basano su di una architettura innovativa e scalabile con affidabilità e prestazioni provate.

#### **PM800 (NB)**

- Il Northbridge Pentium 4 con FSB a 800 MHz e il controller grafico UniChromePro 2D/3D è stato integrato in un singolo chip
- Controller SDRAM avanzato a 64 bit in grado di gestire banchi SDRAM DDR 400/333/266/200
- Supporto interfaccia V-Link Host 66 MHz con una larghezza di banda totale di 1GB/Secondo
- Supporto AGP 3.0 con modalità di trasferimento 8X/4X

#### **VT8237 (SB)**

- Supporto interfaccia V-Link Client 16 bit 66 MHz con un picco di larghezza di banda di 1GB/Secondo
- Conforme alle specifiche PCI 2.2 a 33 MHz
- Controller Host Serial ATA intergrati supportano velocità di trasferimento dati fino a 1,5Gb/s
- Controller di Rete, con supporto della modalita Fast Ethernet MAC enterprise classe 10/100 Mb

### Memoria

- Supporto moduli memoria SDRAM DDR400/333/266/200
- Accomoda due alloggiamenti Unbuffered 2,5V a 184 pin
- Una capacità massima totale di 2 GB

### Grafica

- Motore 2D/3D a 128 bit
- Dimensioni del Frame Buffer supportato: 64/32/16 MB
- Supporto delle modalita Colori a 8bpp, 15/16bpp e 32bpp
- Supporto fino a 200 milioni di pixel al secondo per ogni due 2 texture

## AC'97 Audio CODEC

L'AC'97 Audio CODEC è conforme alle specifiche AC'97 2.3 che forniscono Full Duplex stereo a 18 bit con frequenza di campionamento indipendente e variabile. Supporta uscita audio S/PDIF digitale compressa o LPCM. Le caratteristiche includono il supporto per alimentazione 3,3V digitale, 5V analogica e gestione di risparmio energetico.

## Opzioni d'espansione

La scheda madre è dotata delle seguenti opzioni d'espansione:

- Tre alloggiamenti PCI 32 bit
- Un alloggiamento AGP (supporta solamente 1,5V)
- Due collettori IDE che supportano quattro dispositivi IDE
- Una interfaccia unità dischetti floppy
- Due connettori SATA a 7 pin
- Un alloggiamento optional CNR (Communications Networking Riser)

Questa scheda madre supporta masterizzazione bus Ultra DMA con velocità di trasferimento di 133/100/66/33 MB/s.

## LAN su scheda (opzionale)

La LAN su scheda fornisce le seguenti caratteristiche:

- Supporto operazioni di auto negoziazione N-Way a 10Mb/s e 100Mb/s
- Half e Full Duplex
- Supporto interfaccia standard MII su PHY esterno per Ethernet Base-T 10/100Mb
- Supporto funzione WOL (Wake-On-LAN) e riattivazione remota

## I/O integrato

La scheda madre ha una serie completa di porte e connettori I/O:

- Due porte PS/2 per mouse e tastiera
- Una porta seriale
- Una porta parallela
- Una porta VGA
- Quattro porte USB
- Una porta LAN (opzionale)
- Connettori audio per microfono, ingresso linea ed uscita linea

## Firmware BIOS

La scheda madre impiega il software Award BIOS che abilita gli utenti a configurare molte caratteristiche de sistema, tra cui sono incluse le seguenti:

- Risparmio energetico
- Allarmi di riattivazione
- Parametri CPU
- Temporizzazione di CPU e memoria

Il Firmware può anche essere utilizzato per impostare i parametri di diverse velocità di temporizzazione del processore.



*Alcune specifiche hardware ed elementi software sono soggetti a modifica senza preavviso.*

## **Función**

### **Procesador**

PM800-M2 utiliza un tipo de zócalo de 478 de Pentium 4 que tiene las características siguientes:

- Acomoda CPU de Intel Pentium 4 y Pentium 478-pin
- Soporta un bus frontal de 800/533/400 MHz (FSB)
- Intel P4 Celeron: FSB 400, caché 128K L2
- Intel Pentium 4 Willamette: FSB 400, caché 256K L2
- Intel Pentium 4 Northwood: FSB 400/533, caché 512K L2
- Intel Pentium 4 Northwood: admiteFSB 800/533, 512K L2 cache, HT
- Intel Pentium 4 Prescott: FSB 800/533, 1024K/256K L2 cache

La tecnología "Hyper-Threading" permite al sistema operativo pensar que está enganchado a dos procesadores, permitiendo que se ejecuten dos vías en paralelo, ambas sobre procesadores "lógicos" diferentes dentro del mismo procesador físico.

### **Juego de chips**

El conjunto de chips Northbridge VIA PM800 (NB) y VT8237 Southbridge (SB) está basado en una arquitectura innovadora y escalable con un rendimiento y fiabilidad probados.

#### **PM800 (NB)**

- Pentium 4 Northbridge integrado con soporte de 800 MHz FSB y Controlador de Gráficas UniChrome2 2D/3D en un solo chip
- Controlador 64-bit SDRAM avanzado que soporta SDRAM DDR400/333/ 266/200
- Admite interfaz de unidad principal de 66 MHz V-Link con un ancho de banda total de 1GB/seg
- Admite AGP 3.0 con modo de transferencia 8X/4X

#### **VT8237 (SB)**

- Admite interfaz cliente de 16 bits de 66 MHz V-Link con un ancho de banda con pico de 1066 MB/seg
- Compatible con la especificación PCI 2.2 a 33 MHz
- Controladoras de unidad principal ATA de serie integrada, admite velocidades de transferencia de datos de hasta 1.5 Gb/s
- Controlador de Redes, que soporta Fast Ethernet MAC de 10/100Mb de clase empresarial

### **Memoria**

- Admite módulos de memoria SDRAM DDR a 400/333/266/200 MHz
- Acomoda dos ranuras de 184 contactos de 2.5V sin memoria intermedia
- Una capacidad máxima total de 2 GB

### **Gráficas**

- Motor 128-bit 2D/3D
- Soporta tamaño de Buffers de Cuadro 64/32/16 MB
- Soporta modos de profundidad de color 8bpp, 15/16bpp y 32bpp
- Soporta índice de pixel hasta 200-millones de pixeles por segundo para 2 texturas cada uno

## CODEC de audio AC'97

El CODEC de audio AC'97 es compatible con la especificación 2.3 de AC'97 que proporciona un CODEC de 18 bits estéreo de dúplex completo con velocidades de muestreo independiente y variable. Admite salida de audio LCPM o S/PDIF digital comprimido. Entre las características se incluye el soporte para una fuente de alimentación analógica de 5 V, 3.3V digital y administración de bajo consumo energético.

## Opciones de expansión

La placa base viene con las opciones siguientes de expansión:

- Tres zócalos PCI de 32 bits
- Un zócalo AGP (sólo admite para 1.5V)
- Dos cabezales IDE que admiten cuatro dispositivos IDE
- Una interfaz para unidad de disquete
- Dos conectores SATA de 7 contactos
- Una ranura de opcional CNR (Communications Networking Riser)

Esta placa base admite ultra DMA bus mastering con velocidades de transferencia de 133/100/66/33 MB/s.

## LAN en placa (opcional)

La LAN en placa proporciona las características siguientes:

- Admite el funcionamiento de negociación automática de n vías de 10Mb/s y 100Mb/s
- Dúplex completo y medio
- Admite interfaz MII estándar con un PHY externo para red Ethernet de base 10/100Mb
- Admite función Wake-On-LAN (WOL) y arranque remoto

## I/O integrado

La placa base tiene un conjunto completo de puertos I/O y conectores:

- Dos puertos PS/2 para ratón y de teclado
- Un puerto serie
- Un puerto paralelo
- Un puerto VGA
- Cuatro puertos USB
- Un puerto LAN (opcional)
- Clavijas de audio para micrófono, entrada de línea y salida de línea

## Firmware de BIOS

La placa base utiliza Award BIOS que permite a los usuarios configurar muchas funciones del sistema, incluyendo las siguientes:

- Administración de energía
- Alarmas de encendido
- Parámetros CPU
- Temporización de memoria y CPU

El firmware también puede utilizarse para ajustar los parámetros para diversas velocidades del reloj del procesador.



*Algunas especificaciones de hardware y elementos de software están sujetos a cambios sin previo aviso.*

## Características

### Processador

A PM800-M2 usa um tipo de soquete de 478 pinos de Pentium 4 com as seguintes características:

- Acomoda Intel Pentium 4 CPU 478-pin
- Suporta um sistema bus (FSB) de 800/533/400 MHz
- Intel P4 Celeron: FSB 400, cache L2 de 128 kB
- Intel Pentium 4 Willamette: FSB 400, cache L2 de 256 kB
- Intel Pentium 4 Northwood: FSB 533/400, cache L2 de 512 kB
- Intel Pentium 4 Northwood: FSB 800/533, cache L2 de 512 kB, suporte à tecnologia HT
- Intel Pentium 4 Northwood: FSB 800/533, cache L2 1024K/256K

A tecnologia “Hyper-Threading” faz o sistema operacional trabalhar como se houvesse dois processadores conectados, permitindo que duas “pistas” corram em paralelo, ambas em processadores “lógicos” separados dentro de um mesmo processador físico.

### Chipset

O chipset de Ponte Norte (NB) VIA PM800 e a Ponte Sul (SB) VT8237 é baseado em uma arquitetura inovadora e escalável com confiabilidade e desempenho comprovados.

#### **PM800(NB)**

- Pentium 4 Northbridge integrado com suporte 800 MHz FSB e Controlador de Gráfico UniChromePro 2D/3D em um único chip
- Controlador 64-bit SDRAM avançado suportando DDR400/333/266/200 SDRAM
- Suporta interface host V-Link de 66 MHz com largura de banda total de 1GB/s
- Suporta AGP 3.0 com modo de transferência de 8X/4X

#### **VT8237 (SB)**

- Suporta interface Cliente V-Link de 66 MHz com largura de banda de pico de 1GB/s
- Compatível com a especificação PCI 2.2 a 33 MHz
- Controladores host ATA Serial, com taxas de transferência de até 1,5 Gb/s
- Controlador de Network, suportando classe enterprise 10/100 Mb Fast Ethernet MAC

### Memória

- Suporta módulos de memória SDRAM DDR de 400/333/266/200 MHz
- Acomoda dois slots de 184 pinos de 2,5 V, sem buffer
- Capacidade total máxima de 2 GB

### Gráficos

- Engenho de 128-bit 2D/3D
- Suporta tamanhos de 64/32/16 MB de Quadros de Registros
- Suporta modos de profundidade de cor 8bpp, 15/16bpp e 32bpp
- Suporta razão de pixel até 200-milhoes de pixels por Segundo para cada 2 texturas

## AC'97 Audio CODEC

AC'97 Audio CODECはAC'97 2.3仕様に準拠しており、18ビットのステレオ全二重CODECに独立した可変サンプリングレートを提供します。S/PDIF圧縮デジタルまたはLPCMオーディオアウトをサポートします。3.3V デジタル、5Vアナログ電源装置、低い消費電力管理のサポートを含みます。

## 拡張オプション

マザーボードには、次の拡張オプションが付属しています。

- 32ビットPCIスロットx3
- AGPスロット(1.5Vのみをサポート) x1
- 4つのIDEデバイスをサポートするヘッダ x2
- フロッピーディスクドライブインターフェイス x1
- 7ピンSATAコネクタx2
- オプションの通信ネットワークワーキングライザ (CNR) スロット X1

このマザーボードは、133/100/66/33 MB/秒の転送速度でUltra DMA/バスマスタリングをサポートします。

## オンボードLAN (オプション)

オンボードLANは、次の機能を提供します。

- 10Mb/秒および100Mb/秒N-way自動ネゴシエーション操作をサポート
- 半二重および全二重
- 10/100MbベースTイーサネット用に、外部PHYに対して標準のMIIインターフェイスをサポート
- ウェークオンLAN (WOL) 機能とリモートウェークアップをサポート

## 統合I/O

マザーボードには、I/Oポートとコネクタの完全なセットが搭載されています。

- マウスとキーボード用のPS/2ポートx2
- シリアルポートx1
- パラレルポートx1
- VGAポートx1
- USBポートx4
- LANポートx1 (オプション)
- マイク、ラインイン、ラインアウト用オーディオジャック

## BIOSファームウェア

マザーボードは Award BIOSを使用して、次の機能を含め多くのシステム機能を構成します。

- 電源管理
- ウェークアップアラーム
- CPUパラメータ
- CPUおよびメモリアイミング

ファームウェアは、さまざまなプロセッサクロック速度に対してパラメータを設定するために使用することもできます。



一部のハードウェア仕様とソフトウェアアイテムは、将来予告なしに変更することがあります。

## 특징

### 프로세서

PM800-M2는 다음과 같은 특징이 있는 478핀 소켓 유형의 펜티엄 4를 사용합니다.

- 인텔 펜티엄 4 및 펜티엄 478 핀 CPU 사용
- 800/533/400 MHz frontside bus (FSB) 지원
- 인텔 펜티엄 4 셀러론: FSB400, 128K L2 캐시
- 인텔 펜티엄 4 Willamette: FSB 400, 256K L2 캐시
- 인텔 펜티엄 4 Northwood: FSB 533/400, 512K L2 cache
- 인텔 펜티엄 4 Northwood: FSB 800/533, 512K L2 cache, HT 지원
- 인텔 펜티엄 4 Prescott: FSB 800/533, 1024K/256K L2 cache

Hyper-Threading(HT)\* 기술은 운영체제로 하여금 두 개의 프로세서에 연결된 것으로 인식하게 하여 동일한 물리적 프로세서 내의 각기 분리된 논리적 프로세서에서 두 개의 스레드를 병렬로 실행할 수 있게 합니다.

### 칩셋

VIA PM800 노스브리지(NB)와 VT8237 사우스브리지(SB) 칩셋은 증명된 신뢰도와 성능을 지닌 혁신적이고 확장가능한 아키텍처에 기반합니다.

#### PM800 (NB)

- 싱글 칩에 펜티엄 4 Northbridge 와 800 MHz FSB 지원 및 UniChrome2 2D/3D 그래픽 컨트롤러 통합
- DDR400/333/ 266/200 SDRAM 을 지원하는 고급 64 비트 SDRAM 컨트롤러
- 최대 대역폭 1GB/sec 의 66 MHz V-Link 호스트 인터페이스 지원
- 8X/4X 전송 모드의 AGP 3.0 지원

#### VT8237 (SB)

- 최대 대역폭 1GB/s의 16비트 66 MHz V-Link 클라이언트 인터페이스 지원
- 33 Mhz에서 PCI 2.2 규격 준수
- 최대 1.5 GB/s의 데이터 전송률을 지원하는 통합 시리얼 ATA 호스트 컨트롤러
- 네트워크 컨트롤러, 기업 수준 10/100 Mb 패스트 이더넷 MAC 지원

### 메모리

- 400/333/266/200 MHz DDR SDRAM 메모리 모듈 지원
- Unbuffered 2.5V 184핀 슬롯 2개 제공
- 최대 용량 2 GB

### 그래픽

- 128 비트 2D/3D 엔진
- 64/32/16 MB 프레임 버퍼 사이즈 지원
- 8bpp, 15/16bpp 및 32bpp 색상 농도 모드 지원
- 2 개의 텍스처에 각 최대 2억 픽셀 지원

## AC'97 오디오 코덱

AC'97 오디오 코덱은 18비트 스테레오 전이중 코덱에 독립적이고 가변적인 표본 추출 비율을 제공하는 AC'97 2.3 규격을 준수합니다. S/PDIF 압축 디지털 또는 LPCM 오디오 아웃을 지원합니다. 3.3V 디지털 지원, 5V 아날로그 전원공급장치 및 저전력 소모 관리 기능 등을 포함합니다.

## 확장 옵션

마더보드에는 다음과 같은 확장 옵션이 있습니다.

- 32비트 PCI 슬롯 3개
- AGP 슬롯(1.5V만 지원) 1개
- 4개의 IDE 장치를 지원하는 IDE 헤더 2개
- 플로피 디스크 드라이브 인터페이스 1개
- 7핀 SATA 커넥터 2개
- 선택 품목CNR (Communications Network Riser) 슬롯 1개

이 마더보드는 최대 133/100/66/33 MB/s의 전송률로 Ultra DMA 버스 마스터링을 지원합니다.

## 온보드 LAN(선택 품목)

온보드 LAN에는 다음과 같은 특징이 있습니다.

- 10 Mb/s 및 100 Mb/s N-Way 자동 교섭 작동 지원
- 전이중 및 반이중
- 10/100Mb Base-T 이더넷용 외부 PHY로의 표준 MII 인터페이스 지원
- WOL(Wake On LAN) 및 RWU(Remote Waek Up) 기능 지원

## 통합 I/O

마더보드에는 충분한 수의 I/O 포트 및 커넥터가 있습니다.

- 마우스 및 키보드용 PS/2 포트 2개
- 시리얼 포트 1개
- 병렬 포트 1개
- VGA 포트 1개
- USB 포트 4개
- LAN 포트 1개(선택 품목)
- 마이크, 라인 인 및 라인 아웃용 오디오 단자

## 바이오스 펌웨어

마더보드는 다음의 기능은 물론 많은 시스템 기능을 설정할 수 있게 하는 Award 바이오스를 사용합니다.

- 전원 관리
- 웨이크업(Wake-up) 경보
- CPU 매개 변수
- CPU 및 메모리 타이

펌웨어를 사용하여 다른 프로세서 클럭 속도에 대한 매개 변수를 설정할 수도 있습니다.



일부 하드웨어 사양 및 소프트웨어 항목은 사전 통보 없이 변경될 수 있습니다.

## 功能

### 處理器

PM800-M2 使用一個 478-針 socket 型 Pentium 4 處理器，它具有下列功能：

- 可安裝Intel Pentium 4 478針處理器
- 支援800/533/400MHz的前側匯流排(FSB)
- Intel P4 Celeron: FSB 400, 128K L2 快取
- Intel Pentium 4 Willamette: FSB 400, 256K L2 快取
- Intel Pentium 4 Northwood: FSB 400/533, 512K L2 快取
- Intel Pentium 4 Northwood: FSB 800/533, 512K L2 快取, 支援HT
- Intel Pentium 4 Prescott : FSB 800/533, 1024K/256K L2 快取

「超執行緒 (Hyper-Threading)」科技讓作業系統認為它正使用兩個處理器，允許兩條執行緒以平行方式運行，雖然身處於同一個物理處理器內，卻位於不同的「邏輯」處理器。

### 晶片組

VIA PM800 北橋 (NB) 及 VT8237 南橋 (SB) 晶片組以一創新且發展空間極大之架構為基礎研發而成，具備可靠性及優秀性能。

#### PM800 (NB)

- 將支援800MHzFSB之Pentium 4 Northbridge及UniChromePro 2D/3D 繪圖控制器整合成單一晶片
- 設有先進的64位元SDRAM控制器，可支援DDR400/333/ 266/ 200 SDRAM
- 支援 66 MHz V-Link 主機介面，總共頻寬 1 GB/Sec
- 支援 AGP 3.0 8X/4X 傳輸模式

#### VT8237 (SB)

- 支援 16bit 66 MHz V-Link 客戶端介面，最高頻寬 1GB/sec
- 與 PCI 2.2 規格相容 (33 MHz)
- 整合串列 ATA 主機控制器，支援資料傳輸率最大至 1.5Gb/s
- 網路控制器(支援企業級10/100高速乙太MAC)

### 記憶體

- 支援 400/333/266/200 MHz DDR SDRAM 記憶體模組
- 兩個無緩衝的 2.5V 184-針插槽
- 最大容量 2 GB

### 繪圖功能

- 128位元2D/3D引擎
- 共享64/32/16MB系統記憶體做為框架緩衝區
- 支援8bpp、15/16bpp、及32bpp的色彩深度
- 可對2個材質分別提供每秒200百萬像素的支援

## AC'97 音頻編碼器

AC'97 音頻編碼器與 AC'97 2.3規格相容，提供18-bit立體聲全雙工編碼器，具有獨立可變化的樣本率。它支援S/PDIF壓縮數位或LPCM音頻輸出。其功能包括有支援3.3V數位、5V類比電力供應，及低功耗管理。

## 擴充選項

本主機板包括下列擴充選項：

- 3個 32-bit PCI 插槽
- 1個 AGP 插槽 (只支援 1.5V)
- 2個 IDE 連接頭，支援 4個 IDE 裝置
- 1個軟碟機介面
- 2個 7-針 SATA 連接頭
- 1個可選式CNR(Communications Network Riser)槽

本主機板支援 Ultra DMA 匯流排阻控，傳輸率 133/100/66/33 MB/s。

## 內建區域網路 (可選)

內建區域網路提供下列功能：

- 支援 10Mb/s 及 100Mb/s N-way 自動協調作業
- 半雙工及全雙工
- 支援標準 MII 介面至外接型 PHY (10/100Mb base-T 乙太網路)
- 支援喚醒 (WOL) 功能及遙控喚醒

## 整合 I/O

主機板具有一組齊全的 I/O 連接埠及連接頭：

- 2 個 PS/2 埠，供滑鼠與鍵盤使用
- 1 個串列埠
- 1 個平行埠
- 1 個VGA埠
- 4 個USB埠
- 1 個區域網路埠 (可選)
- 麥克風音頻插座，line-in 及 line-out

## BIOS 韌體

本主機板使用 Award BIOS，使用者可以組態設定許多系統功能，包括如下：

- 電源管理
- 喚醒警鈴
- CPU 函數
- CPU 及記憶體定時

韌體也可以被使用來設定不同處理器的時脈速度函數。



有些硬體規格和軟體項目如經改變，恕不先行通知。

## 功能配置

### 处理器

PM800-M2 使用具有以下功能配置的 478 针槽类型 Pentium 4:

- 支持 Intel Pentium 4 478-pin CPU
- 支持 800/533/400 MHz 系统总线 (FSB)
- Intel P4 Celeron: FSB 400、128K L2 高速缓存
- Intel Pentium 4 Willamette: FSB 400、256K L2 高速缓存
- Intel Pentium 4 Northwood: FSB 533/400、512K L2 高速缓存
- Intel Pentium 4 Northwood: FSB 800/533、512K L2 高速缓存、支持 HT 超线程技术
- Intel P4 Prescott: FSB 800/533、1024K/256K L2 高速缓存

“超线程技术”可以让操作系统认为它挂载了两个处理器，可以让两个线程在同一个“物理”处理器的单独逻辑处理器上并行运行。

### 芯片组

VIA PM800 Northbridge (NB) 和 VT8237 Southbridge (SB) 芯片组采用了创新的可伸缩架构，性能非常可靠。

#### PM800 (NB)

- 在单个芯片中集成支持 800 MHz FSB 的 Pentium 4 北桥和 UniChromePro 2D/3D 图形控制器
- 支持 DDR400/333/266/200 SDRAM 的高级 64 位 SDRAM
- 支持总带宽为 1GB/秒的 66 MHz V-Link Host 接口
- 支持 8X/4X 传输模式的 AGP 3.0

#### VT8237 (SB)

- 支持峰值带宽为 1GB/秒的 16 位 66 MHz V-Link Client 接口
- 兼容 33 MHz 的 PCI 2.2 规范
- 集成串行 ATA Host 控制器，支持高达 1.5Gb/秒的数据传输速率
- 网络控制器，支持企业级 10/100 Mb 高速以太网 MAC

### 内存

- 支持 400/333/266/200 MHz DDR SDRAM 内存模块
- 配备两个非缓冲 2.5V 184 针插槽
- 最大内存总量 2 GB

### 图形

- 128 位 2D/3D 图形引擎
- 支持 64/32/16 MB 帧缓冲区
- 支持 8bpp、15/16bpp 和 32bpp 颜色深度模式
- 像素速率最大支持 2 亿像素/秒 (2 种纹理引擎)

## AC'97 Audio CODEC

AC'97 Audio CODEC 兼容 AC'97 2.3 规范，以特定和变动的采样速率提供 18 位立体声全双工 CODEC。它支持 S/PDIF 压缩数字或 LPCM 音频输出。功能包括了对 3.3V 数字、5V 模拟电源和低功耗管理的支持。

## 扩充选项

主板具有以下扩充选项：

- 3个 32 位 PCI 插槽
- 1个 AGP 插槽（只支持 1.5V）
- 支持4个 IDE 设备的2个 IDE 插口
- 1个软驱接口
- 2个 7针 SATA 接口
- 1个可选网络通讯插卡（CNR）槽

这个主板支持传输速率为 133/100/66/33 MB/秒的 Ultra DMA 总线管理。

## 板载 LAN（可选）

板载 LAN 提供以下功能：

- 支持 10Mb/s 和 100Mb/s N-way 自动协商操作
- 半和全双工
- 支持标准 MII 接口连接用于 10/100Mb base-T 以太网的外部 PHY
- 支持网上唤醒(WOL) 功能和远程唤醒

## 集成 I/O

该主板配有完整的一组 I/O 端口和接口：

- 2个 PS/2 端口用于鼠标和键盘
- 1个串行端口
- 1个并行端口
- 1个 VGA 端口
- 4个 USB 端口
- 1个 LAN 端口（可选）
- 音频插孔用于麦克风、线路输入和输出

## BIOS 固件

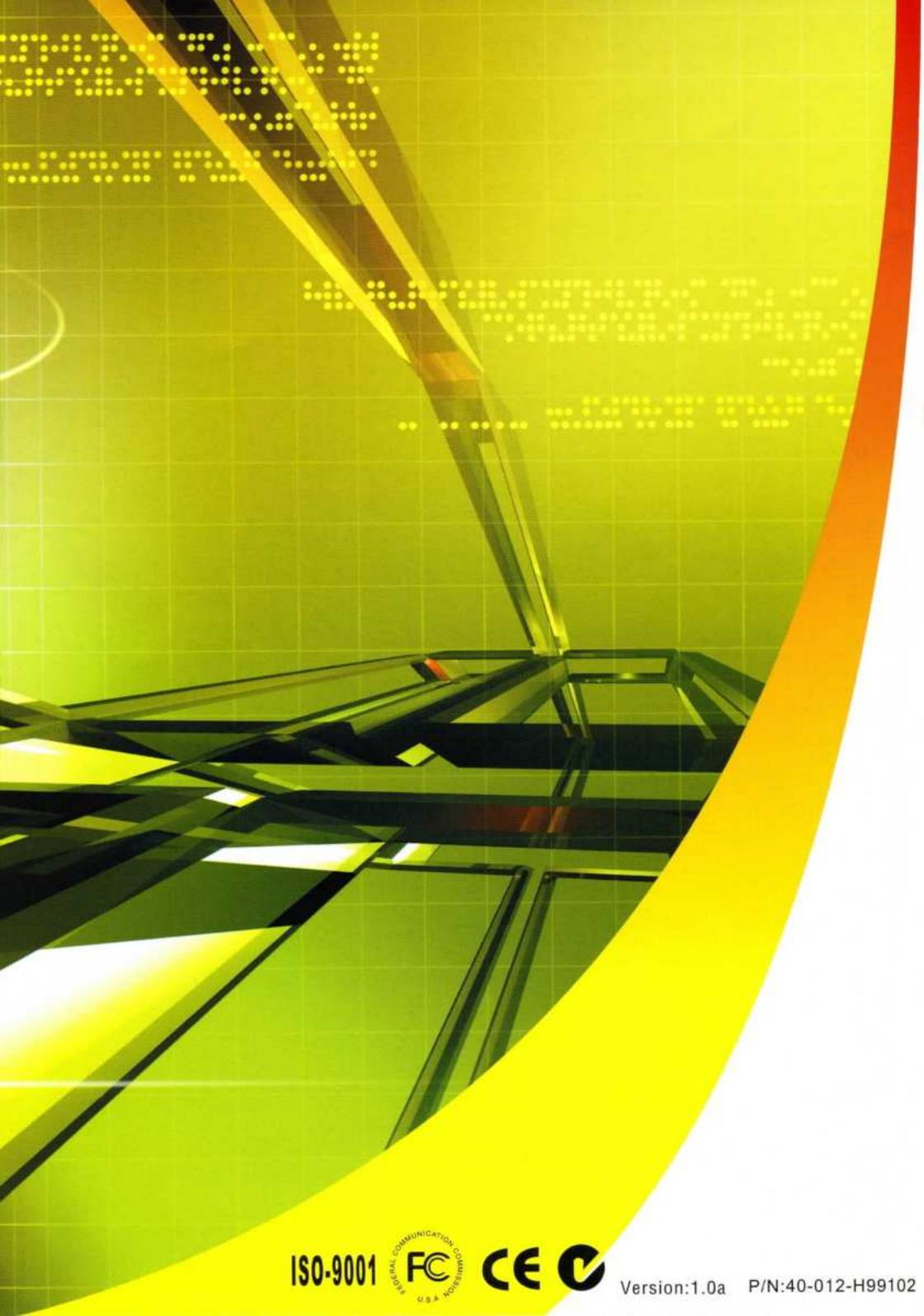
该主板使用 Award BIOS，可以让用户设定许多系统功能，其中包括：

- 电源管理
- 唤醒闹钟
- CPU 参数
- CPU 和内存定时

该固件还可以用来设置用于不同处理器时钟速度的参数。



有些硬件规格和软件项目会随时变更，恕不另行通知。



ISO-9001



Version:1.0a P/N:40-012-H99102