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- Mainboard
- Mainboard User Manual
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- Support CD
- Floppy Diskette with Promise RAID Drivers
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- Bundled Bonus Pack Manual
- Cables :
    ATA66/100/133 IDE Cable
    FDD Cable
    2 x Serial ATA Cable
    Serial ATA Power Cable
    USB Cable (Optional)

Chapter 1 Specification

Introduction

This mainboard features an integration of the powerful AMD processors Athlon 64 and the North Bridge VIA K8T800 plus South Bridge VT8235 CD, with which the whole system performance supports 800MHz system bus.

VIA K8T800 plus VT8235 CD supports on-board AMD processors to implement the 800MHz Front Side Bus, the AGP 8X/4X interface, the LPC Super I/O, the DDR 400/333/266MHz SDRAM, the 6-channel AC'97 Audio interface, the USB 2.0 interface and ATA 133/100/66 data transfer rate. This chapter is to introduce to users every advanced function of this high performance integration.

Topics included in this chapter are:
1-1 Mainboard Layout
1-2 Mainboard Specifications**
1-3 Mainboard Specification Table
1-2 Chipset System Block Diagram

** If any difference is found between this manual and the Mainboard you are using, please look up the <u>ERRATA/UPDATE Slip</u> enclosed inside for the correction or updated information, or else contact the Mainboard Dealer or visit our Web Site for the latest manual update.

1-1 K8AV-R Mainboard Layout
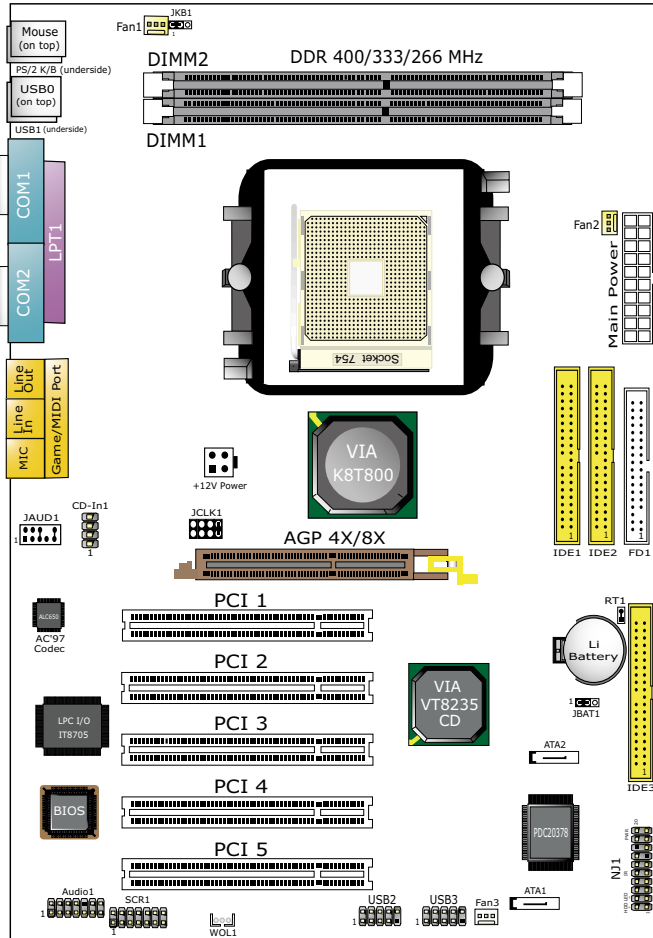
1-2 Mainboard Specification Table

K8AV-R Specifications and Features	
CPU	Socket 754 for AMD Athlon 64
North Bridge	VIA K8T800, supporting 800 MHz FSB
South Bridge	VT8235 CD
BIOS	AWARD BIOS
Memory	Supporting DDR 400/333/266 SDRAM, up to 2GB in 2 DIMM slots
I/O Chip	ITE IT8705F, with Hardware Monitor
AGP interface	AGP8X/4X Mode only; 1 AGP Slot on board
Audio	AC'97 Audio 2.2 compliant, 6-channel audio
IDE Interface	2 PATA 133/100 IDE ports; 1 PATA / PATA RAID 133 IDE port supported by PDC20378
RAID Interface	PDC20378 supporting 2 SATA RAID connectors and 1 PATA RAID IDE connector
LAN Interface	Not Integrated on board
PCI Slots	5 PCI Master slots on board
I/O Connectors	6 USB V2.0, 1 FDD port, 2 COM ports, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse
Other common features	Keyboard/Mouse Wake Up

1-3 Chipset System Block Diagram

```
                    ┌─────────────────┐
                    │   Athlon 64     │
                    │   Processors    │
                    └─────────────────┘
                            ↕
              800MHz │ HyperTransport interface

                    ┌─────────────────┐    DDR memory
   ┌──────────┐ AGP │  North Bridge   │    Interface    ┌──────────┐
   │ AGP Slot │─────│                 │─────────────────│ System   │
   └──────────┘8X/4X│  VIA K8T800     │    DDR 400/333/  │ Memory   │
                    └─────────────────┘    266          └──────────┘
                            ↕
                        8X V-Link
                                                         ┌──────────────┐
                                                         │ 5 PCI Slots  │
   ┌──────────┐              ┌─────────────────┐ PCI Bus └──────────────┘
   │ 4 IDE    │ATA 133/100/66│                 │─────────
   │ Devices  │──────────────│  South Bridge   │ AC'97   ┌──────────────┐
   └──────────┘              │  VIA VT8235CD   │─────────│ Audio Codec  │
   ┌──────────┐              │                 │         │ (6-channel)  │
   │ Mouse    │──────────────│                 │         └──────────────┘
   │ Keyboard │              └─────────────────┘         ┌──────────┐
   └──────────┘                                USB Bus   │ USB      │
                                               V2.0      │ Ports    │
   ┌──────────┐                                          └──────────┘
   │ IR       │
   │ FDD      │
   │ Serial Ports│ ┌──────────┐                      ┌──────────┐
   │ Printer Port│─│ LPC I/O  │──────────────────────│  BIOS    │
   │ Game/MIDI   │ │ IT8705   │                      └──────────┘
   │ H/Monitor   │ └──────────┘
   └──────────┘
```
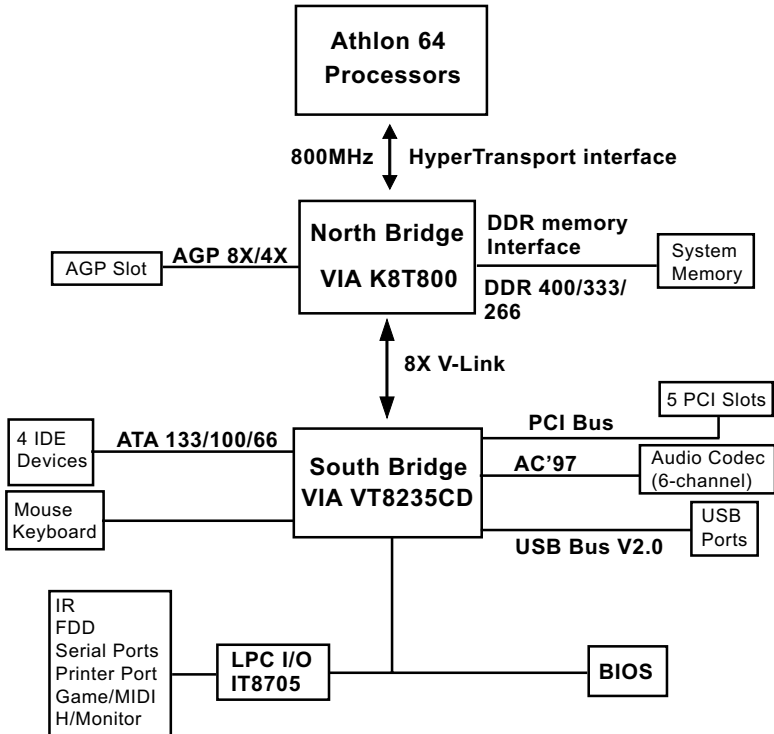
Athlon 64 + VIA K8T800 + VIA VT8235 CD Diagram

1-4 Mainboard Specifications

1-4.1 CPU Socket

CPU Socket 754 on board, supporting AMD Athlon 64 CPU with 800MHz System Bus

1-4.2 System Chipsets

- North Bridge VIA K8T800 for managing and supporting 800MHz system Bus, AGP 8X/4X interface and DDR 400/333/266MHz Memory Interface.
- South Bridge VIA VT8235 CD working with North Bridge K8T800 supporting the V-Link, LPC Super I/O, PCI interface, ATA133 interface, USB V2.0 interface, as well as AC'97 Audio 6-channel interface.

1-4.3 Memory

2 DDR DIMM 184-pin slots on board :
- Supporting DDR 400/333/266 SDRAM up to 2GBs
- Supporting installation of mixed volumes yet same type of DDR SDRAM modules

1-4.4 BIOS

- Supporting Plug & Play V1.0
- Flash Memory for easy upgrade
- Supporting BIOS Writing Protection and Year 2000 compliant
- Supporting BIOS Setup (See Chapter 4 BIOS Setup)

1-4.5 Accelerated Graphics Port (AGP) Interface

AGP Controller embedded on board, supporting:
- 1.5V(8X/4X) power mode only, 1 AGP Slot supported
- 8X 66MHz AD and SBA signaling; AGP pipelined split-transaction longburst transfers up to 2GB/sec.
- AGP 8X/4X supported, AGP V3.0 compliant

1-4.6 Advanced System Power Management

Advanced Configuration and Power Interface incorporated in BIOS for reducing power consumption :
• ACPI 1.0 compliant (Advanced Configuration and Power Interface)
• APM V1.2 compliant (Legacy Power Management)
• ACPI Suspend function supported
• Keyboard/Mouse Power On/Wake Up
• USB Wake-up supported by the optional STR(Suspend To RAM) function
• Real Time Clock with date alarm, month alarm, and century field

1-4.7 Multi-I/O Functions

• PCI EIDE Controller, supporting:
  -- 2 ATA 133 / 100 / 66 IDE connectors supporting up to 4 IDE devices;
• Promise RAID Controller PDC20378, supporting:
  -- 1 PATA/PATA RAID 133 IDE connector supporting 2 IDE/RAID IDE HDDs
  -- 2 SATA RAID 150Mb Connectors supporting 2 SATA RAID HDDs
• Dedicated IR Functions:
  -- 1x5 IR connector dedicated to IR function with Infrared-IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR
• Multi-mode parallel data transfer:
  -- Standard mode, high speed mode ECP and enhanced mode EPP
• Floppy Drive Connector:
  -- 1 FDD connector supporting 2 floppy drives with drive swap support
• Universal Serial Bus Transfer Mode:
  -- USB V2.0 compliant, 480Mb/s USB Bus, supporting Windows 98 and later operating systems; USB drivers provided in Support CD for installation
  -- 2 built-in USB connectors and 2 more USB pin-headers which require 2 optional USB cables to provide 4 more USB ports
• PS/2 Keyboard and PS/2 Mouse
• UARTs (Universal Asynchronous Receiver / Transmitter):
  -- 2 complete serial ports (COM1 & COM2) on board

1-4.8 Expansion Slots

• 5 PCI Bus Master slots
• 1 AGP 8X/4X slot
• 2 DDR DIMM slots

1-4.9 AC'97 Audio Codec on board

AC'97 Audio Codec on board, 6-channel playback compliant

• Supporting 6-channel playback of PCM audio output
• 6 channel audio consists of Front Left, Front Right, Back Left, Back
  Right, Center and Subwoofer for complete surround sound effect.
• AC'97 Audio Codec Driver enclosed in Support CD for user's
  installation

1-4.10 Hardware Monitor on board

• Hardware Monitor integrated in LPC I/O IT8705F, providing monitor-
  ing functions on hardware voltage, temperatures and fan speeds.
• Utility Software Soltek Hardware Monitor for displaying monitor sta-
  tus is enclosed in Support CD for user's installation.

1-4.11 Form Factor

• ATX Form Factor, ATX Power Supply
• Mainboard size: 305mm x 220mm

MEMO

Chapter 2 Hardware Setup

To Get Things Ready for Hardware Setup !

1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heatsink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User Manual for proper setup. Incorrect setting will cause damage to your CPU.

The following topics are included in this chapter:

2-1 CPU Identification and Installation
2-2 Memory Installation
2-3 AGP Slot Installation
2-4 IDE Connector Installation
2-5 Floppy Drive Connector (FDC) Installation
2-6 ATX Power Supply Installation
2-7 Jumper Settings
2-8 Other Connectors Configuration

2-1 CPU Identification and Installation

2-1.1 CPU Identification Legends

```
AMD Athlon 64
ADA 3100 A E  P  5 AO
(1)     (2)    (3) (4)(5) (6)   (7)
```

(1)   **Family / Architecture:**
      ADA=AMD Athlon 64 Desktop Processor

(2)   **Speed: 3100=1800MHz, 3400=2000MHz**

(3)   **Package Type: A=754 Pin Lidded OuPGA**

(4)   **Voltage: E=1.5V**

(5)   **Maximum Temperature: P=70˚C**

(6)   **Size of L2 Cache: 5=1 Megabyte**

(7)   **Part Definition: AO=CPUID Model 4, P-state transition support**

2-1.2 CPU Installation with Socket 754

This mainboard is built with CPU Socket 754 supporting the AMD Athlon 64:

• Follow the steps described in this section to install CPU into the on-board Socket 754.

• After installation of CPU, you must also install a proper cooling fan on top of the CPU and connect the Fan cable to the CPU fan connector.

Pin 1

1. First pull sideways the lever of Socket 754, and then turn it up 90⁰ so as to raise the upper layer of the socket from the lower platform.
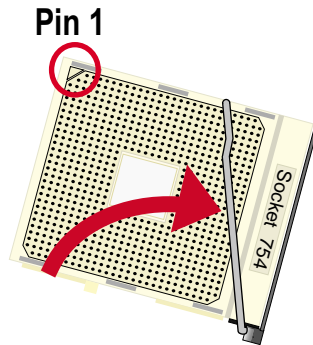
Pin 1

2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the pin holes of the socket.

Pin 1
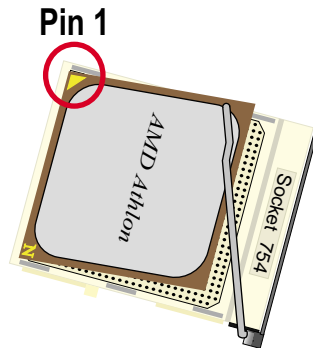
3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.

18
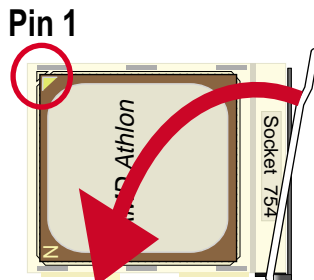
2-2 Memory Installation

How to tackle the memory Modules:
- Make sure to unplug your power supply before adding or removing memory module. Failure to do so may cause severe damage to both your mainboard and the memory module.
- Pay attention to the orientation of the DIMM slots. Forcing a DIMM into a slot improperly will damage the memory module and slot itself.
- Make sure you have the right type of memory module for your mainboard.

2-2.1 To Install DDR SDRAM Module

- This mainboard supports up to 2GB DDR 400/333/266 SDRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.

- DDR DIMM slot has 184-pins and one notch. Insert a DDR SDRAM vertically into the 184-pin slot with the notch-to-rib matching.

184-Pin DIMM Notch Key Definitions

DRAM Key Position   Voltage Key Position

(2.5V Voltage Key)DDR Notch

DDR Rib
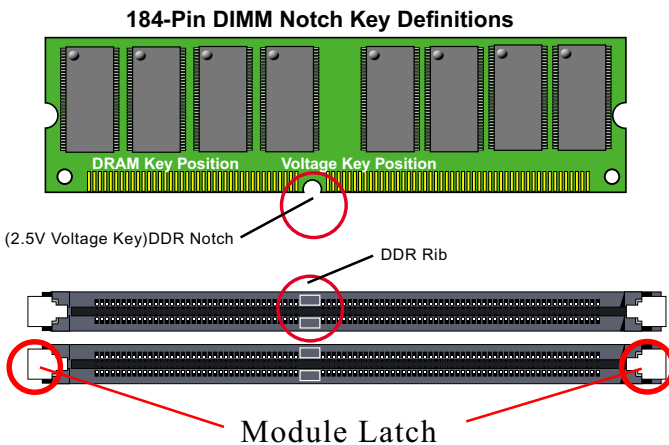
Module Latch

2-2.2 To Remove a DIMM

Press down the holding latches on both sides of slot to release the module from the DIMM slot.

2-3 AGP Slot Installation

The AGP slot on board supports 1.5V AGP 8X/4X card only. A Rib is specifically added to the 8X/4X slot so as to match the AGP 8X/4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip and burn the 1.5V circuitry.

An AGP 8X card will support a data transfer rate up to 2GB/sec., while an AGP 4X card will provide 1GB/sec transfer rate.
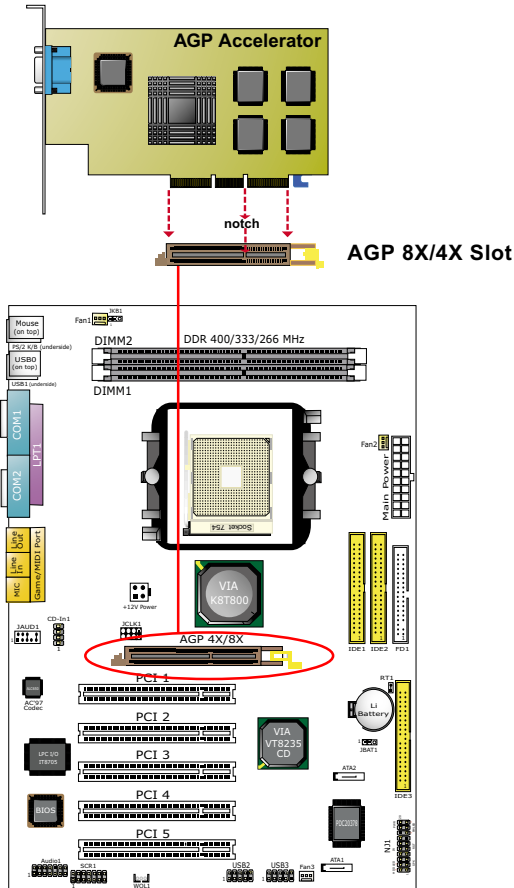
2-4 IDE Connector Installation

To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two hard disks, you must configure the second drive to slave mode by setting its jumpers correctly. Please refer to your hard disk documentation for the jumper settings.

IDE1
IDE2

ATA IDE connectors:
Orient the red line on the IDE
Flat Cable to Pin1.

Pin 1 (to Red Line)

Gray Connector
(To Slave Device)

Black Connector
(To Master Device)

Red Line
IDE Flat Cable

Blue Connector
(To Mainboard)
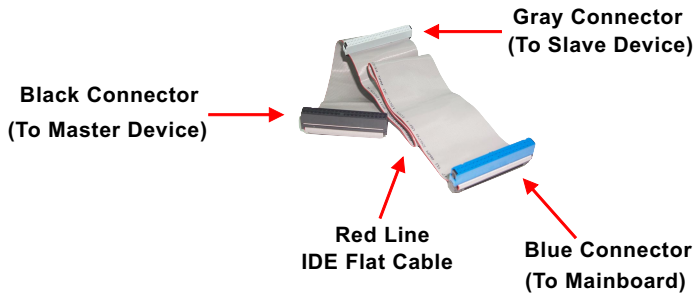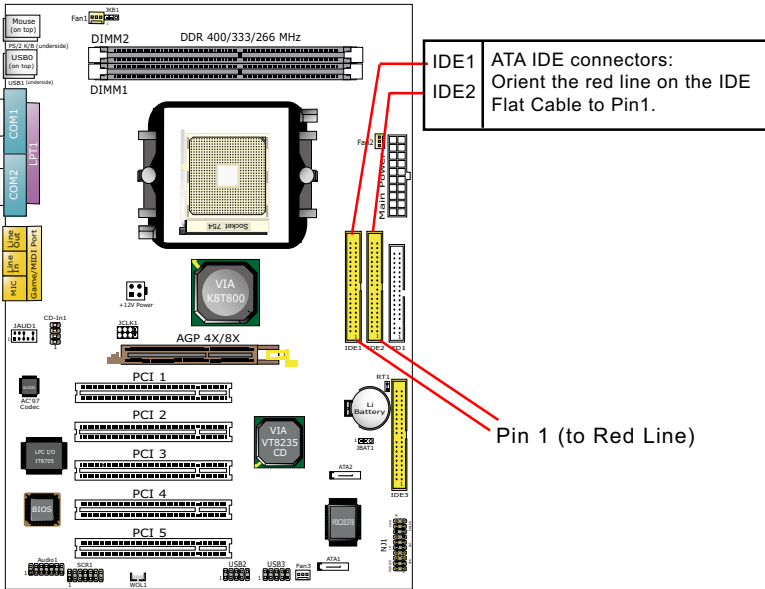
2-5 Serial ATA / Parallel ATA RAID Connectors

The Serial ATA is designed to improve the Parallel ATA with the capability of Hot Plug and a data bandwidth of 150Mbytes/second. It also reduce voltage and pin count and can be implemented with thin cables which improve the inner ventilaton of PC cases.

2 Serial ATA RAID and 1 Parallel ATA RAID connectors are built on board, supported by the RAID Controller PDC20378.

Use ATA1/2 and IDE3 to configure RAID (Disk Array)

Parallel ATA RAID Connector IDE3 (for 2 IDE RAID HDD)

Serial ATA RAID Connector ATA2

Serial ATA RAID Connector ATA1

RAID Controller PDC20378

SATA Port

Serial ATA Cable

SATA Connector

SATA Power Connector

Serial ATA Hard Disk
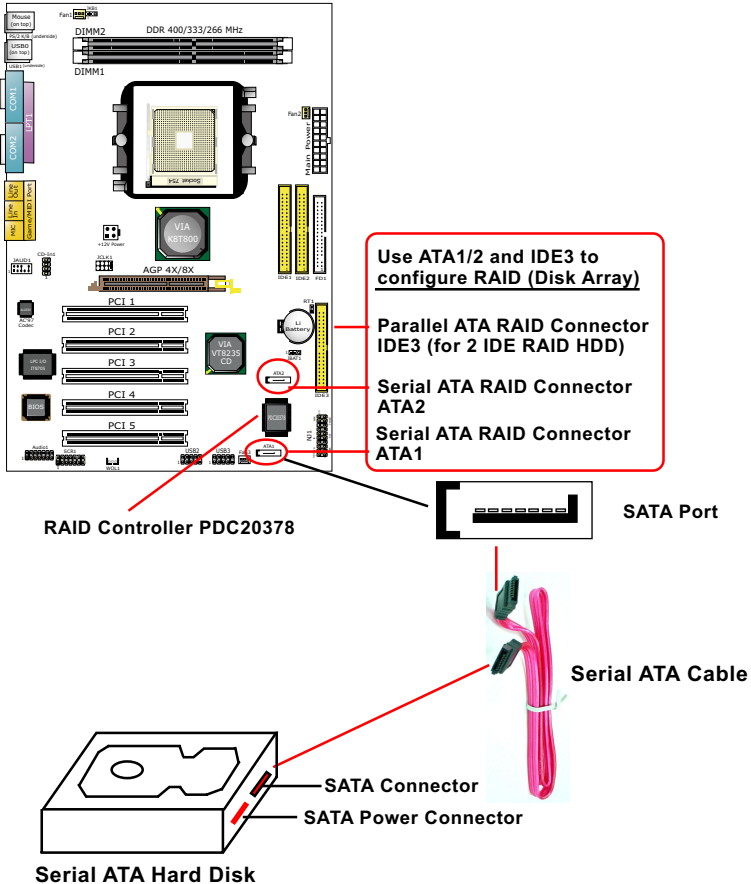
2-6 Floppy Drive Connector (FDC) Installation

To install FDC, you should connect the end of FDC cable with single connector to the board, and connect the other end with two connectors to the floppy drives.
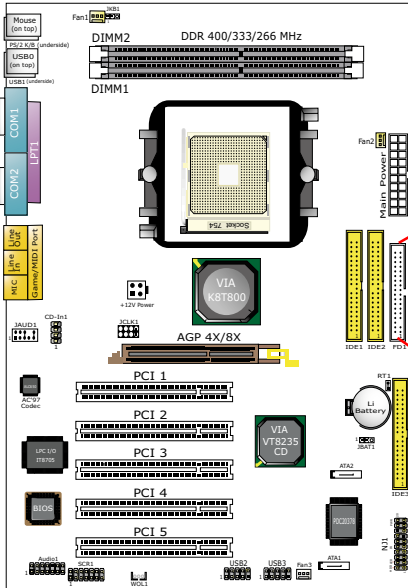
Floppy Drive Connector:

Orient the red line of the Floppy Flat Cable to Pin1.

Pin 1 (to Red Line)

To 2nd Floppy Drive

Signal Swap End

To 1st Floppy Drive

Red line

To mainboard

FDD Cable

2-7 ATX Power Supply Installation

+12V Power Connector

```
        2    4
GND    (  )(  )   +12V
GND    (  )(  )   +12V
        1    3
```

+12V	+5V
5SB	+5V
PWR OK	-5V
GND	GND
+5V	GND
GND	GND
+5V	PS ON#
GND	GND
+3.3V	-12V
+3.3V	+3.3V

Pin1   Pin11
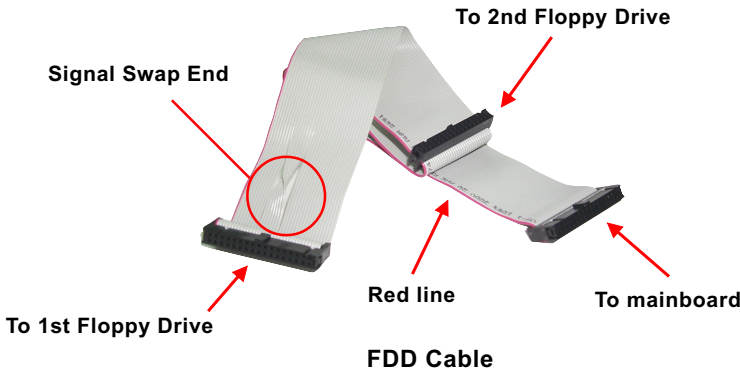
Main Power Connector
(20-pin)
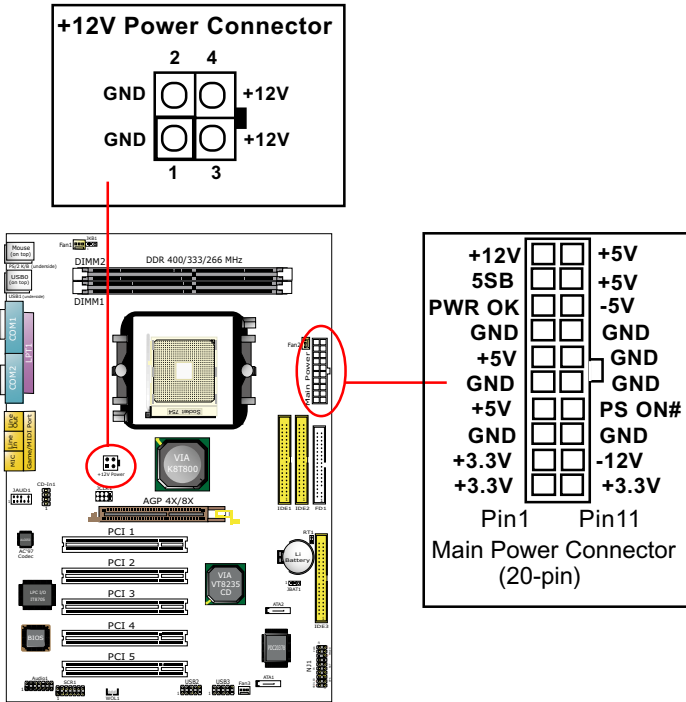
ATX V2.03 Power Supply is strongly recommended for mainboard running with Athlon 64 processors.

To set up Power Supply on this mainboard:
1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be of the latest version 2.03 model, and then connect the square-shaped +12V Power Connector on board to the square-shaped +12V Power Connector of the Power Supply.

   Warning: Both the Main Power Connector and the +12V Power Connector should be connected to Power Supply; otherwise, the system may either not start or be damaged.

2-8 Jumper Settings

The following diagrams show the locations and settings of jumper / switch blocks on the mainboard.

JKB1
KB/Mouse Power On / Wake Up

	1-2 closed (Default)
1	**Enabled**

	2-3 closed
1	**Disabled**

JBAT1
Clear CMOS

1	**(default) 1-2 closed To hold data**
1	**2-3 closed To clear CMOS**

JCLK1: CPU Clock Select			
(default) 200MHz 7-8 closed	**233MHz 3-4 closed**	**266MHz 1-2 closed**	**270MHz 1-2 closed 3-4 closed**
1 3 5 7	1 3 5 7	1 3 5 7	1 3 5 7
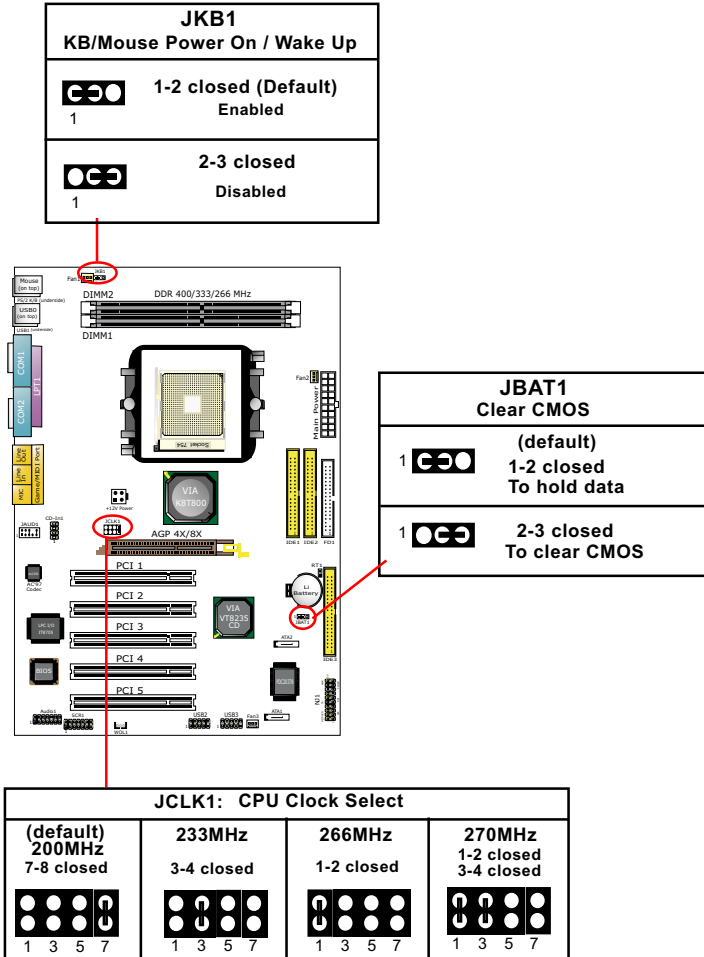
2-8.1 How to tackle the Jumpers:

1 2 3

A 3-pin Jumper

If a pin-header (of 2 or more pins) is designed in such a way that its pins can be closed or linked together to set up a specific function, this header is called a jumper in this manual.

A 2-pin Jumper Cap

The conductor inside the cap links two header-pins together.
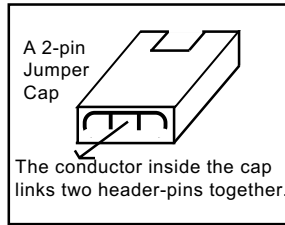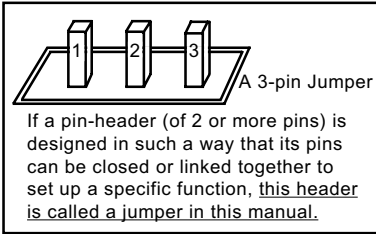
• A Jumper is usually but not necessarily given a "JpX" legend.
• In the Jumper setting diagram, all jumper pins covered with black marks stand for closed pins with jumper cap.

Jp X

1 ● ● 3
Jumper with Pin 2-3 closed

1 ○ ○ 3
Jumper with all pins open

1 ● ● 3
Jumper with Pin 1-2 closed

• Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, mainboard could be damaged.

2-8.2 JCLK1: CPU Clock Select

JCLK1 is designed on board as an 8-pin jumper for CPU clock select.

1. Select the CPU clock you want from 200/233/266/270MHz and set JCLK1 to match your choice.
2. If you select a CPU clock which is higher than your default CPU clock, it may fail to boot system. You should restore the default setting and then clear CMOS to reboot your system. (See Clear CMOS in next paragraph.)

JCLK1: CPU Clock Select			
(default) **200MHz** **7-8 closed**	**233MHz** **3-4 closed**	**266MHz** **1-2 closed**	**270MHz** **1-2 closed** **3-4 closed**
 1 3 5 7	 1 3 5 7	 1 3 5 7	 1 3 5 7

Further notes on CPU Overclocking:
1. If you have successfully booted system with or without CPU overclock, you still can do another CPU overclock in BIOS Setup. Please enter BIOS Setup, choose "Frequency/Voltage Control" menu, and take the "Use Linear" option of the "Use CPU Linear Frequency". Then configure the "CPU Clock" item to raise your CPU clock.
2. CPU overclocking should take all components on board into account. If you fail in BIOS overclocking, you will not be able to restart system. In such case, power off system and clear CMOS by JBAT1 as stated below and then restart your system. And remember to reconfigure whatever should be reconfigured.
3. If your system is already fixed in a cabinet or case, you may not like to take the trouble to clear CMOS. Then power on your system with the power button on the case and simultaneously press down the "Insert" key of the keyboard until you see the initial bootup screen appear. And remember you should also enter CMOS BIOS Setup and choose "Load Optimized Defaults" to restore default BIOS .

2-8.3 JBAT1: Clear CMOS

When you have problem with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:
1. Power off system.
2. Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, return the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default. Remember never clear CMOS when system power is on.

JBAT1 Clear CMOS	
1 ▣▣○	(default) 1-2 closed To hold data
1 ○▣▣	2-3 closed To clear CMOS
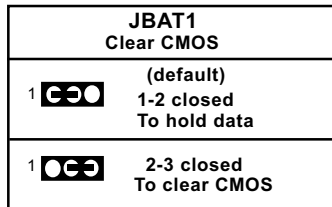
2-8.4 JKB1: Keyboard/Mouse Power On/Wake Up

JKB1 is designed on board as a jumper to enable/disable the PS/2 key-board/mouse Power On/Wake Up from system off or suspend mode. Yet users should still enter BIOS setup to choose the Wake Up/ Power On mode.
USB keyboard/mouse Wake Up function is an optional function in this mainboard.

JKB1 KB/Mouse Power On / Wake Up	
1	1-2 closed (Default) Enabled
1	2-3 closed Disabled

2-9 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

2-9.1 On-board FAN Connectors

Sensor

+12V

GND

Sensor Conn.

Void

+12V

GND

No Sensor

FAN2, Sensor Fan Connector (Yellow)

FAN1, Sensor Fan Connector (Yellow)

FAN3, No-sensor Fan Connector
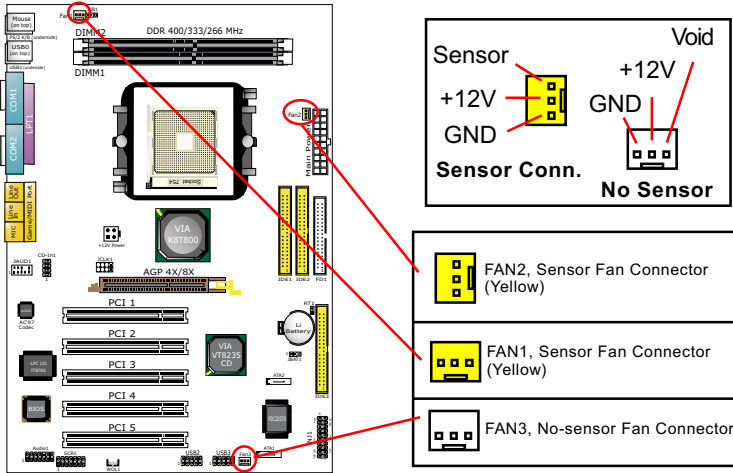
Both Sensor and No-sensor Fan Connectors support CPU/AGP/System/Case cooling fan with +12V mode. When connecting the wire to any Fan Connector, user should make sure that the red wire is for the positive current and should be connected to pin +12V, and the black wire is Ground and should be connected to pin GND. A Hardware Monitor chipset is on board, with which user can install a Hardware Monitor Utility and read the fan speed transmitted from the sensor fan connector. Otherwise, user can read the fan speed from the "Hardware Monitor Status" in CMOS BIOS.

A running fan will send out 2 electric pulses per rotation of its fan blade to a Sensor Fan Connector which in turn will count the electric pulses and send the information to the System Hardware Monitor. The hardware Monitor Program will work out the fan rotation speed and display it on screen.

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2-9.2 USB Ports and USB Pin-headers

This mainboard provides two USB ports USB0 and USB1 on board supporting various USB devices. In addition, two USB pin-headers are added on board to provide expansion of four more optional USB ports by using two additional USB Cables. User can order the optional USB cables from your mainboard dealer or vender.

When plugging the USB cable to USB Header, user must make sure the red wire is connected to Pin 1.

All 6 USB ports are compliant with 1.0 / 2.0 USB Bus. USB 2.0 supports Windows 98 and above. USB 1.0 / 2.0 drivers are provided in Support CD for user's installation.

USB connectors USB0 and USB1 (underside)   USB Cable (Optional)
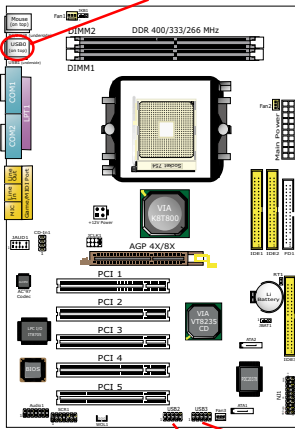
USB Port

Red wire

1

10

1

10
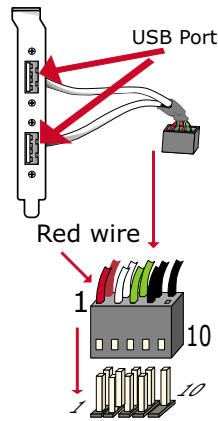
USB Pin-headers USB2 and USB3

First USB Port Wiring for Front USB

Red	White	Green	black
+5V	D1-	D1+	GND

USB Header Pin Assignment

10

1

+5V	D2-	D2+	GND
Red	White	Green	black

Second USB Port Wiring for Front USB
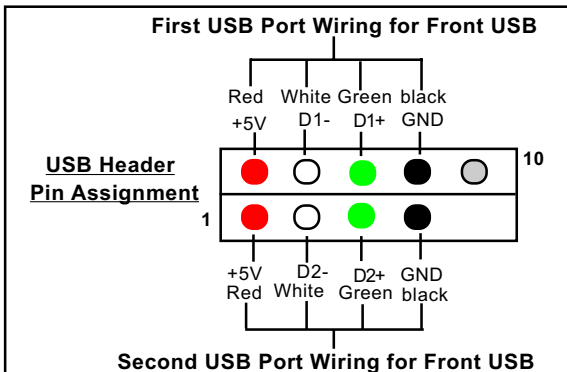
2-9.3 Chassis Panel Connectors

A. **B.** **C.** **D.**

E. **F.** **G.** **H.** **I.** **J.** **K.**

A : PS/2 Mouse
B : Port USB 0
C : Printer PORT
D : Game/MIDI
E : PS/2 Keyboard
F : USB 1 (Underside)
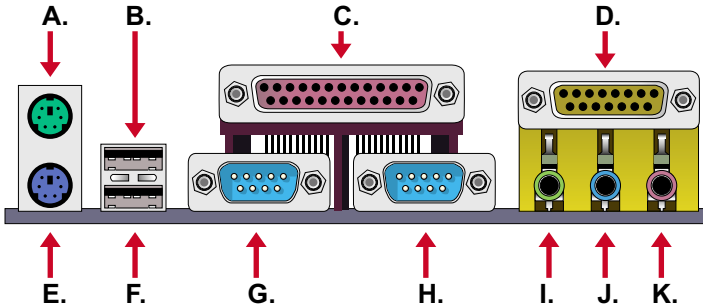
G : COM 1
H : COM 2
I : Line Out / Front Speaker Out
J : Line In / Rear Speaker Out
K : Microphone Input / Center
**   Subwoofer Out**

2-9.4 PS/2 Mouse And PS/2 Keyboard

PS/2 Mouse Connector (green, on top)

6 Void   **5 Mouse Clock**

4 VCC   **3 GND**

2 Void   **1 Mouse Data**

6 Void   **5 Keyboard Clock**

4 VCC   **3 GND**

2 Void   **1 Keyboard Data**
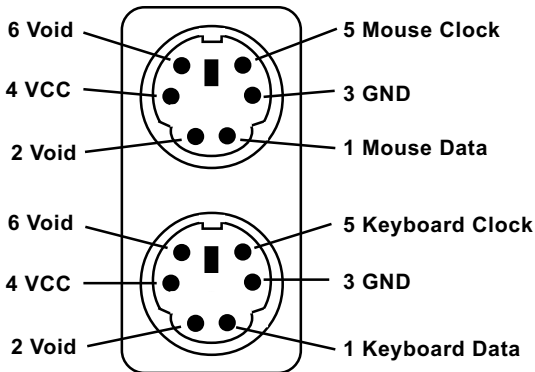
PS/2 Keyboard Connector   (purple, underside)

2-9.5 CD-ROM Audio Connectors (CD-In1)

CD-In1 is an audio connector connecting CD-ROM audio to mainboard.
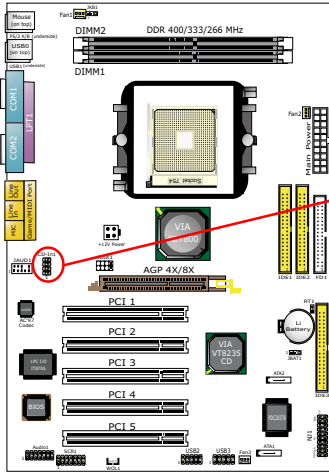
CD-ROM Audio Connector	
CD-In1	Pin Signal
Pin 1	Left Channel
Pin 2	GND
Pin 3	GND
Pin 4	Right Channel

2-9.6 JAUD1: Front Panel Audio Connector (optional)

This Mainboard is designed with a Front Panel Audio connector "JAUD1" which provides connection to your chassis.
1. When JAUD1 is set to 5-6 closed and 9-10 closed, this default setting disables this connector and leaves the Back Panel Audio enabled.
2. To use this Front Panel Audio Connector, please open all pins of JAUD1 and connect it to the Front Panel Audio Connector.

JAUD1: Front Audio Connector

Pin 1 Mic In
Pin 3 Mic VREF
Pin 5 FPOUT R
Pin 7 (Key)
Pin 9 FPOUT L
Pin 2 Aud GND
Pin 4 Aud Vcc
Pin 6 RET R
Pin 8 (Void)
Pin10 RET L
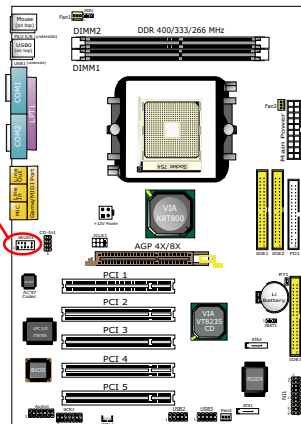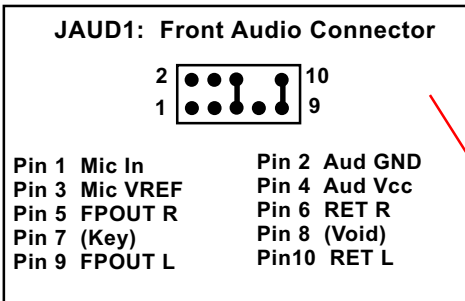
2-9.7 Thermal Resistor and Connector
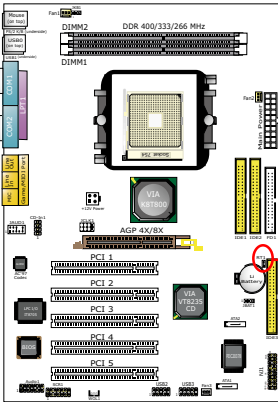
Resistor RT1: A thermal resistor is mounted by default to connector RT1 so as to detect the temperature of the system. What RT1 does is to transmit the thermal signal to BIOS or Hardware Monitor.

RT1

RT1 is mounted with Thermal Resistor by default.
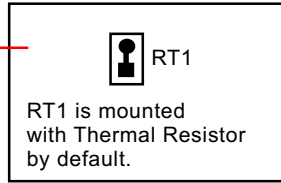
2-9.8 Smart Card Reader Connector
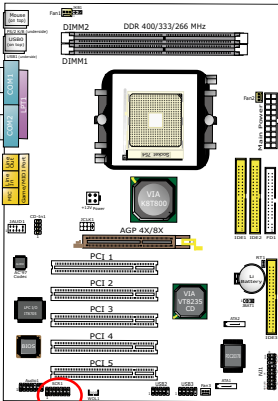
The connector "SCR1" allows you to use Smart Card Reader. It is compliant with Personal Computer Smart Card (PC/SC) working group standard and smart card (ISO 7816) protocols.

```
        NC      RFU   SCRPRES
  LED  SCRRST  SCRIO      NC
8  ○  ○  ○  ○  ○  ○  14
1  ○  ○  ○  ○  ○  ○  7
  VCC  SCRFET  RFU      NC
        NC    SCRCLK   GND
```

33
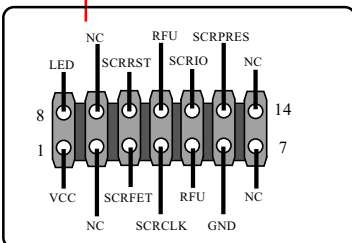
2-9.9 Complex Pin-header (Front Panel Connectors)

This complex Pin-header consists of the following connectors for various front panel supports. When you have fixed the mainboard to the case, join the connectors of this Complex Pin-header to the case Front Panel.

Case
Front Panel

(1)Power Switch
PWRBT#
PWRBT

PLED-
NC
PLED+
Power LED (4)

(2)Infrared(IR)
IR_VCC
NC
IRRX
IRGND
IRTX

RSTGND
RST1
Reset Switch (5)

SP1
NC
Speaker (6)

(3)HDD LED
HDLED-
HDLED+

SP3
SPVCC

34
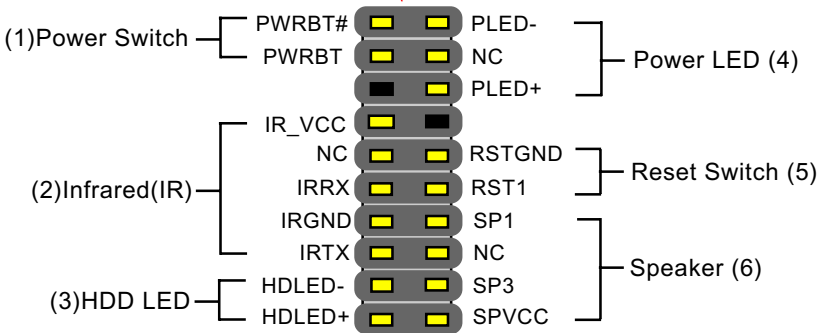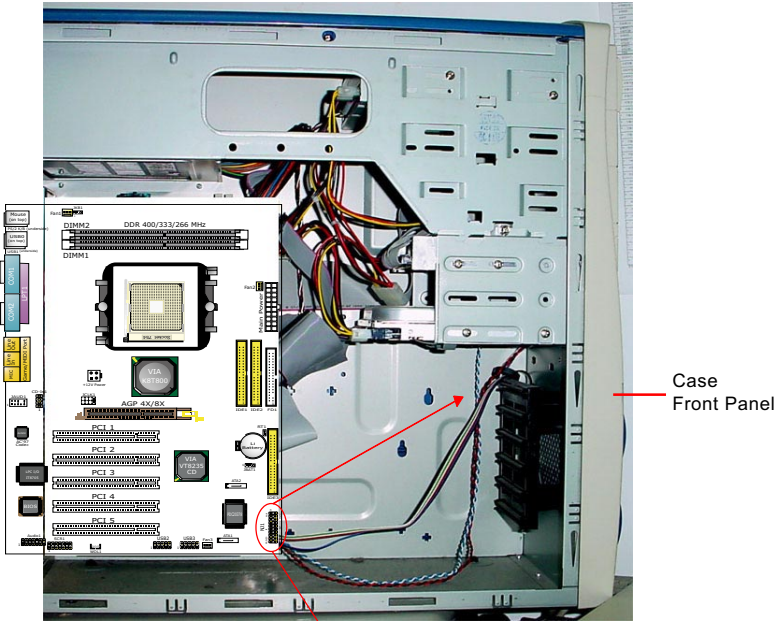
(1) Power Switch Connector:

Connection**:** Connected to a momentary button or switch.
Function: Manually switching the system between "On" and "Soft Off". Pressing the momentary button for more than 4 seconds will also turn the system off.

(2) IR Connector (Infrared Connector):

Connection: Connected to Connector IR on board.
Function: Supporting wireless transmitting and receiving module on board.

(3) HDD LED Connector:

Connection: Connected to HDD LED.
Function: To supply power to HDD LED.

(4) Power LED Connector:

Connection: Connected to System Power LED.
Function: To supply power to "System Power LED".

(5) Reset Switch Connector:

Connection: Connected to case-mounted "Reset Switch".
Function: To supply power to "Reset Switch" and support system reboot function.

(6) Speaker Connector:

Connection: Connected to the case-mounted Speaker.
Function: To supply power to the case-mounted Speaker.

Chapter 3 Software Setup

Drivers, Utilities and Software Installation

Support CD:
This mainboard will be shipped with a Support CD which contains those necessary driver files, Application Softwares and some helpful utilities. It is a user-friendly, auto-run CD which will open itself up in a CD-ROM automatically.

   This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 98SE, Windows ME, Windows 2000 and Windows XP. The installation procedures for all these operating systems are programed into an auto-run mode. What users have to do is read and follow the pop-up instructions. We therefore take the installation on Windows XP as the general illustration hereby.
   The priority of driver installation should also be noted. Users are recommended to take the following installation order:

   3-1 To Open Support CD
   3-2 VIA 4-in-1 Drivers Installation
   3-3 AC'97 Audio Driver Installation
   3-4 USB 2.0 Driver Installation
   3-5 Hardware Monitor Utility Installation
   3.6 RAID Driver Installation

3-1 To Open Up Support CD:

1. Please put the Support CD enclosed in your mainboard package into the CD-ROM drive. In a few seconds, the Main Menu will automatically appear, displaying the contents to be installed for this series:
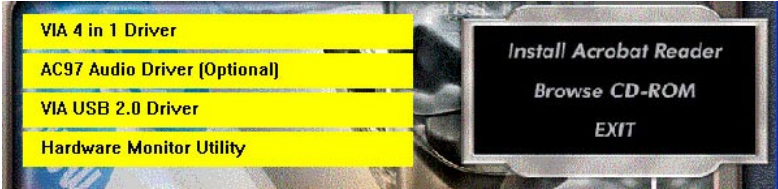
2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:

   D:\ Autorun.exe (assuming that your CD-ROM Drive is Drive D)

3. Users are recommended to install all the drivers and utilities at a time, though they can be installed separately.
   Also, we should take "VIA 4-in-1 Drivers" as first installation priority to optimize the VIA system.
   From next section, we provide detailed descriptions of all these installations with graphical illustrations.

3-2 To Install VIA 4-IN-1 Drivers

1. Following the procedures of opening the Support CD, click to " VIA 4-in-1 Drivers" to proceed.

2. The VIA Service Pack InstallShield Wizard will pop up to guide you to the VIA Service pack installation. Click "Next" button to continue.
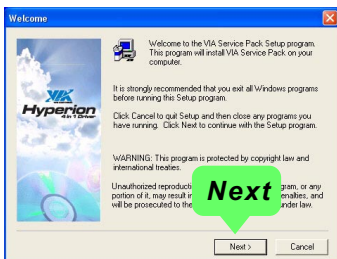
3. "VIA Service Pack README" screen will appear, please click the "Yes" button to agree with the Licence Agreement and continue.
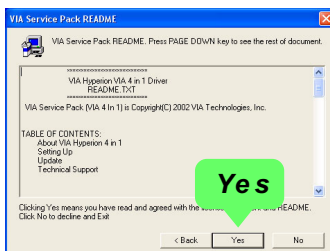
4. On the screen below, check "Normally Install" and click "Next" to continue. (If you check "Quick Install", you will skip the detailed procedures of the VIA 4-in-1 Setup.)
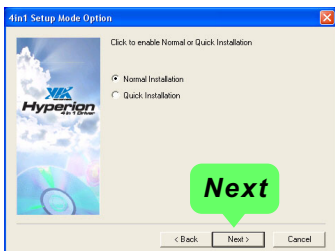
5. Select the checkbox as below and click "Next" to continue:

☑ VIA PCI IDE Bus Driver
☑ AGP Driver (AGP 3.0 Supported)
☑ VIA INF Driver 1.70a
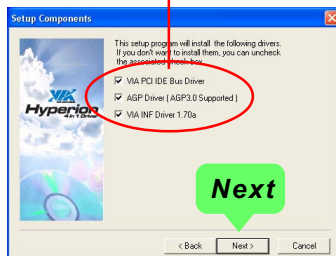
6. Select "Install VIA PCI IDE Driver" checkbox, then click the "Next" button to continue.
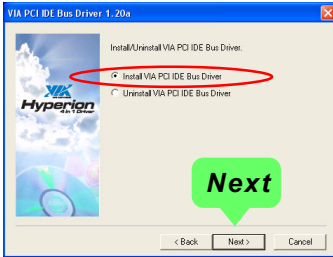
7. Select "Install VIA AGP Driver" in turbo mode and press "Next" button to continue.

8. After all these setup procedures have finished, you should restart your computer by clicking on **"OK"** so as to put VIA 4-in-1drivers into effect and proceed to next driver installation.

3-5 AC'97 Audio Driver Installation

Avance AC97 Audio Codec on board, AC'97 2.2 compatible stereo audio code for PC multimedia systems. Avance AC'97 Audio Codec Driver is provided in Support CD for user's installation.

3-5.1 Installing AC'97 6-channel Audio Driver

1. Following the procedures of opening the Support CD, click to " AC'97 Audio Driver" to proceed.

2. Instantly, the "installShield Wizard" screen appears to guide you through the "Avance AC'97 Audio Setup"".
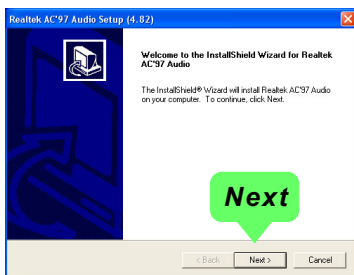
3. instantly, the Setup program proceeds to install the softwares which include AC'97 driver and AVRack. (If you want to stop setup, click the "Cancel" button.)
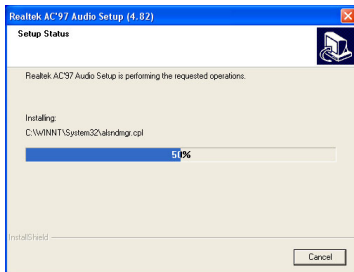
4. After the setup process is finished, please check the radial button "Yes, I want to restart my computer now." And click "Finish" to restart your system.

3-3.2 To verify 6-channel Audio

After installation of AC'97 6-channel Codec, you must configure the 5.
1 Speaker connection to enable the 6-channel audio.

1. Connect your on-board Audio Connector to your 6-channel speakers
   as depicted in the figure below:

Pale Green Connector
to Front Speaker

Pale Blue Connector
to Rear Speaker

Pale Pink Connector to
Center/Subwoofer Speaker
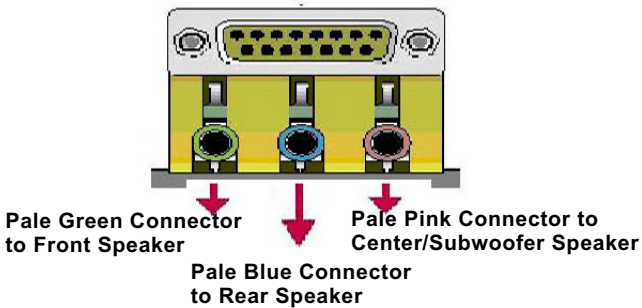
2. After Connection is done, start
   your Windows system and
   double click "volume" icon at
   the taskbar to enter 6-channel
   configuration:

"Volume" icon
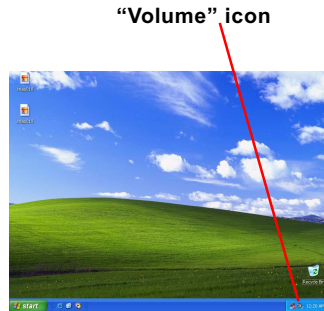
3. The AC'97 Audio
   Configuration" screen will
   pop out. Clikc the
   "Speaker Configuration"
   bar with your mouse.

41
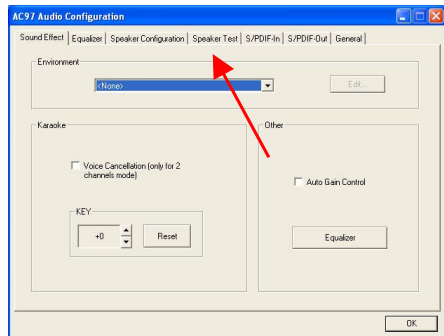
4. Instantly, the "Speaker Configuration" screen will pop out. Pick the items "6-channel mode for 5.1 speakers output" and " Synchronize the phonejack switch with the speakers settings" and then click "OK" to finish configuration.
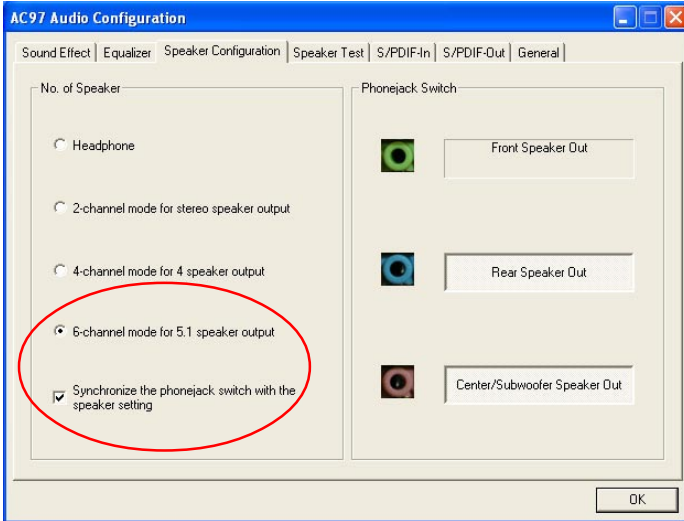
5. At finishing the Speakers Configuration, you can also click the "Speaker Test" bar on the screen to test the 6-channel performance. The figure below is the "Speaker Test" screen with testing instructions enclosed on it. Follow the instructions to perform the Speakers Test.
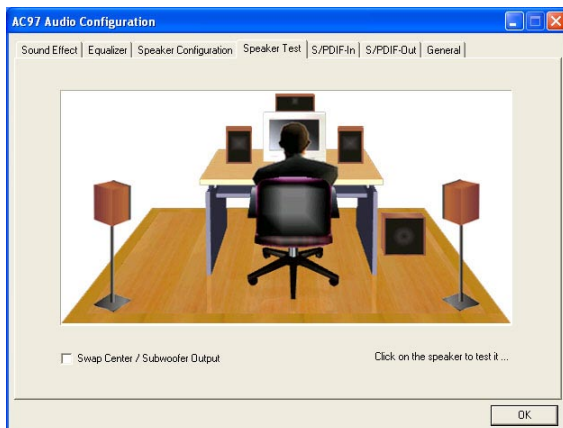
3-4 To Install USB 2.0 Driver

VIA USB V2.0 is already integrated on board. Its 480Mb/s transfer rate supports operating systems Windows 98SE/Me/2000/XP. USB Driver installation procedures are of similar steps in these systems. <u>Before installing VIA USB V2.0 Driver on Windows XP, users should install the latest Service Pack for Windows XP.</u> Please take the following illustrations from Windows XP as the USB driver installation guide:

1. Update Windows XP with the latest service pack before installing VIA USB V2.0 Driver.

2. Following the procedures of opening the Support CD, click to choose "VIA USB 2.0 Driver" to proceed. Please notice that the USB card driver is different from the USB 2.0 driver typically for the on-board USB. Do not use the USB card driver here.

3. Instantly the "USB 2.0 Setup Program" will pop up on screen. Click "Next" to continue.

3. Instantly, next screen will pop up to prompt you to select component. Select "Install USB Driver" and click "Next" button to continue.
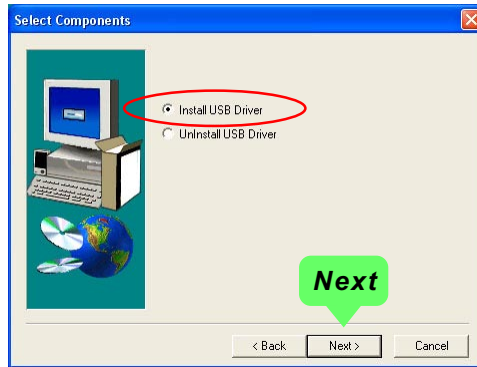
4. The USB 2.0 Setup Program will then guide you through the whole driver setup until the "Finish" screen appears to prompt you to restart your system. Please click "Finish" button to restart system to put the new driver into effect.
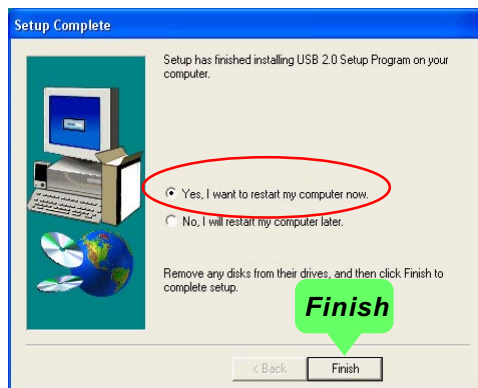
3-5 To Install Hardware Monitor Utility

3-5.1 Installation

Hardware Monitor is built on this mainboard. Its installation is pro-
grammed to a fully automated mode on Windows 9X/Me/NT4/2000/
XP. Users can follow the model installation below for its installation
on various Windows System.

1. Following the procedures of opening the Support CD, click to "
   Hardware Monitor Utility" to proceed.

2. The Soltek Hardware
   Monitor InstallShield
   Wizard will pop up to guide
   you to the Intel Service pack
   installation. Press **"Next"**
   button to continue.
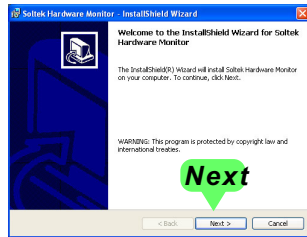
3. The **InstallShield Wizard**
   screen will show the current
   setting, please click the
   "Install" button to continue.
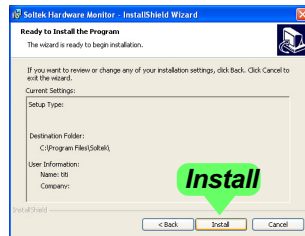
4. After all the setup process
   is finished, click "Finish" to
   exit the wizard.
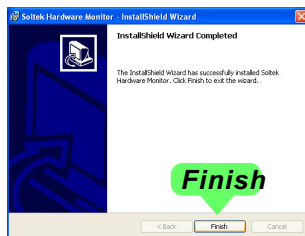
3-5.2 Verification

1. After installing Soltek Hardware Monitor, double click "SoltekHM" icon on the desktop to open the main window of the Soltek HM.

Soltek Hardware Monitor Icon
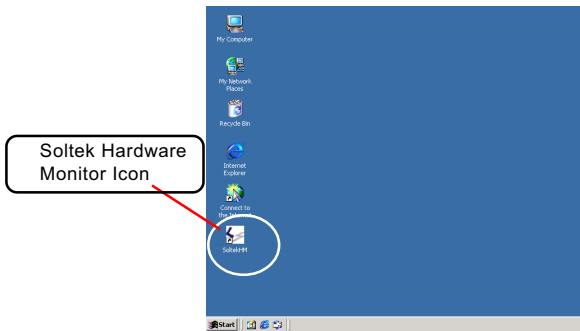
2. Instantly, the pop-up screen will show all information about CPU Temperature, Fan Speed and various Voltages.

Showing the Fan Speed(s) that is supported by the mainboard.

Showing the temperature(s), the function of which is supported by the mainboard.

Click on "Soltek" button to display the function menu.

Showing the Voltage(s) that is supported by the mainboard.

Status Warning LED

*Note: Not all items or functions showing in the above picture will show up. Only those items or functions that are supported by the mainboard will reveal themselves in the above screen.

3-6 RAID Driver Installation

1. RAID Driver should be intalled into a RAID system. That is, user should first configure a RAID system and then install the RAID driver into it.
2. Chapter 5 of this User Manual introduces the configuration of RAID system and then the installation of RAID Driver. Please refer to Chapter 5 for the RAID Driver installation.

Chapter 4 BIOS Setup

THE BIOS

BIOS stands for Basic Input and Output System. It was once called ROM BIOS when it was stored in a Read-Only Memory(ROM) chip Now manufacturers would like to store BIOS in EEPROM which means Electrically Erasable Programmable Memory. BIOS used in this series of mainboard is stored in EEPROM, and is the first program to run when you turn on your computer.

BIOS performs the following functions:
1. Initializing and testing hardware in your computer (a process called "POST", for Power On Self Test).
2. Loading and running your operating system.
3. Helping your operating system and application programs manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

This Chapter includes the following topics :
4-1 About BIOS Setup
4-2 To run BIOS Setup
4-3 About CMOS
4-4 The POST (Power On Self Test)
4-5 To upgrade BIOS
4-6 BIOS Setup

4-1 About BIOS Setup

BIOS setup is an interactive BIOS program that you need to run when:
1. Changing the hardware of your system. (For example: installing a new Hard Disk etc.)
2. Modifying the behavior of your computer. (For example: changing the system time or date, or turning special features on or off etc.)
3. Enhancing your computer's behavior. (For example: speeding up performance by turning on shadowing or cache)

4-2 To Run BIOS Setup

First access BIOS setup menu by pressing < DEL > key after "POST" is complete (before OS is loaded). BIOS will then display the following message:

```
        Press "DEL" to enter "SETUP"
```

4-3 About CMOS

CMOS is the memory maintained by a battery. CMOS is used to store the BIOS settings you have selected in BIOS Setup. CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS Looks into CMOS for the settings you have selected and configures your computer accordingly. If the battery runs out of power, the CMOS data will be lost and POST will issue a "CMOS invalid" or "CMOS checksum invalid" message. If this happens, you have to replace the battery and do some proper settings in BIOS Setup.

4-4 The POST (Power On Self Test)

POST is an acronym for Power On Self Test. This program will test all things the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, a unique number which is sent to I/O port 080h before the routine is executed.

4-5 To Upgrade BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette to execute saving, verifying, and updating the system BIOS. The Upgrade Utility can also be run from a hard disk drive or a network drive.

4-5.1 Before Upgrading BIOS

- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (AWDFLASH.EXE) to a bootable floppy disk so that you can reinstall the BIOS when needed.

4-5.2 Upgrade Process

- Normally, to upgrade BIOS is unnecessary if the system is working fine Users should only upgrade the BIOS when you experience incompatible problems or need to create new features.

- "AWDFLASH.EXE" is a Flash EPROM Programming utility that up dates the BIOS by uploading a new BIOS file to the programmable flash ROM on the mainboard. This program only works in *DOS environment, the utility can not be executed in Windows 95/98, ME, NT, WINDOWS 2000 or Windows XP environment.*

- Please follow the steps below for upgrading the system BIOS:

Step 1. Please visit the board maker's website, download the zip file which contains the latest BIOS file and Award Flash Utility "AWDFLASH. EXE". After unzipping, the BIOS file format will be *.bin, of which " * " stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and Award Flash Utility "AWDFLASH.EXE" into the diskette.

Step 3. Insert the diskette into drive A, reboot your system and boot from the diskette.

Step 4. Type **awdflash *.bin /sn/py/cc** and then press <Enter> to run BIOS upgrade program. (*.bin depends on your mainboard model and version code. Instead of typing "*", you should type specific file name for   your specific mainboard).

Step 5. Please press <F1> or <F10> to exit or reset your system.

Warning ! If the message *" Write Fail "* appears while Award "FLASH MEMORY WRITER" is verifying Flash memory, just repeat the process. Please DO NOT reset or turn off the system. If the award memory flash utility is not able to update the BIOS successfully, your system may not be able to boot up.

Step 6. You will need a message "CMOS checksum error-Default loaded" during booting the system. Press <Del> to run CMOS setup utility, then reload "LOAD SETUP DEFAULTS" or **"Load Optimized Defaults"** and save this change.

The parameters of AWDFLASH.EXE

/sn: No original BIOS backup
/py: Program flash memory
/cc: Clear CMOS data (and update data automatically) after pro-
     gramming

NOTE: Users can type AWDFLASH /? to get further details about
     the parameters. Incorrect usage of the parameter will dam-
     age the BIOS information, so we strongly recommend users
     to leave parameters alone unless you fully understand their
     function.

```
┌─────────────────────────────────────────────────────┐
│          AwardBIOS Flash Utility V8.23F               │
│    (C)Phoenix Technologies Ltd. All Rights Reserved   │
├─────────────────────────────────────────────────────┤
│  Flash Type -                                         │
│                                                       │
│  File Name to Program :                               │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
├─────────────────────────────────────────────────────┤
│  Message: Please input File Name !                    │
└─────────────────────────────────────────────────────┘
```

Award Flash Memory Writer Start Screen

```
┌─────────────────────────────────────────────────────┐
│          AwardBIOS Flash Utility V8.23F               │
│    (C)Phoenix Technologies Ltd. All Rights Reserved   │
├─────────────────────────────────────────────────────┤
│  Flash Type - PMC Pm49FL002T LPC/FWH                  │
│                                                       │
│  File Name to Program : 75FRN2.bin                    │
│                                                       │
│    Writing Flash Memory - 0FE00 OK                    │
│                                                       │
│    ▊▊▊▊▊▊▊□□□□□□□□□                                    │
│                                                       │
│  [] Write OK    ▊ No Update    ▊ Write Fail           │
├─────────────────────────────────────────────────────┤
│  Warning: Don't Turn Off Power Or Reset System !      │
└─────────────────────────────────────────────────────┘
```

BIOS Image File is for nForce Chipset Only !

Award Flash Memory Writer Process Screen

4-6 BIOS SETUP --- CMOS Setup Utility

Warning and Tips: If changing CMOS Configuration causes difficulty in rebooting system, you can take the following measures:

1. At pressing the power button to reboot, press the "Insert" key at the same time. As soon as the screen displays the booting message, release the "Insert" key and press "Delete" key to enter CMOS Setup Utility . Then choose the "Load Optimized (Optimal) Defaults" menu to restore the default values for a new start. Or,
2. Open your machine cabinet and clear CMOS with jumper setting. Please refer to the Jumper Setting Section of this User manual.

4-6.1 CMOS Setup Utility

This mainboard comes with the AWARD BIOS from AWARD Software Inc. Enter the CMOS Setup Utility Main Menu by:

1. Turn on or reboot your system. After a series of diagnostic checks, the following message will appear:

<p align="center">PRESS <DEL> TO ENTER SETUP</p>

2. Press <DEL> key and the main program screen will appear as follows.

Phoenix - AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features	▶ Frequency/Voltage Control
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power Management Setup	Save & Exit Setup
▶ PnP/PCI Configurations	Exit Without Saving
▶ SmartDoc Anti-Burn Shield	

Esc: Quit   ↑↓←→ : Select Item
F10: Save & Exit Setup

Time, Date, Hard Disk Type...

3. Use the arrow keys on your keyboard to select an option, and press <Enter>. Modify the system parameters to reflect the options installed in your system.
4. You may return to the Main Menu anytime by pressing <ESC>.
5. In the Main Menu, "SAVE AND EXIT SETUP" saves your changes and reboots the system, and "EXIT WITHOUT SAVING" ignores your changes and exits the program.

4-6.2 Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. You only need to modify the configuration values of this option if you want to change your system hardware configuration or when the data stored in the CMOS memory gets lost or damaged.

Run the Standard CMOS Setup as follows:
1. Choose "Standard CMOS Setup" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

		Item Help
Date (mm:dd:yy)	Fri, Sep 5 2003	
Time (hh:mm:ss)	9 : 41 : 11	Menu Level ▶
IDE Channel 0 Master	WDC WD400BB-00DEA0	Change the day,
IDE Channel 0 Slave	None	month, year and
IDE Channel 1 Master	None	century
IDE Channel 1 Slave	None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All, But Keyboard	
Base Memory	640K	
Extended Memory	252928K	
Total Memory	253952K	

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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

Date (mm:dd:yy) The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss) The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Channel 0 / Channel 1 This field records the specifications for all non-SCSI **Master / Slave** hard disk drives installed in your system. Refer to the respective documentation on how to install the drives.

Phoenix - AwardBIOS CMOS Setup Utility
IDE Primary Master

		Item Help
IDE HDD Auto-Detection	Press Enter	
IDE Channel 0 Master	Auto	Menu Level ▶
Access Mode	Auto	To auto-detect the HDD's size, head... on this channel
Capacity	40022MB	
Cylinder	19158	
Head	16	
Precomp	0	
Landing Zone	19157	
Sector	255	

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

Drive A / Drive B Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:
360KB, 5.25 in.
1.2MB, 5.25 in.
720KB, 3.5 in.
1.44MB, 3.5 in.
2.88MB, 3.5 in.
None

Video Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in setup.

Halt On During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

Base Memory Typically 640KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory Above the 1MB boundary. Early IBM personal computers could not use memory above 1MB, but current PCs and their software can use extended memory.

Total Memory This option shows system memory capacity.

4-6.3 Advanced BIOS Features

Advanced BIOS Features improves your system performance or sets up system features according to your preference.

Run the Advanced BIOS Features as follows:

1. Choose "Advanced BIOS Features" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

Virus Warning	Disabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	Menu Level ▶
CPU L2 Cache ECC Checking	Enabled	
Quick Power On Self Test	Enabled	To choose the VIRUS
First Boot Device	Floppy	warning feature for
Second Boot Device	Hard Disk	IDE Hard Disk boot
Third Boot Device	CDROM	sector
Boot Other Device	Enabled	protection. If this
Swap Floppy Drive	Disabled	functions is enabled
Boot Up Floppy Seek	Disabled	and someone attempt
Boot Up NumLock Status	On	to write data into this
Typematic Rate Setting	Disabled	area, BIOS will show a
x Typematic Rate (Chars/Sec)	6	warning message on
x Typematic Delay (Msec)	250	screen and alarm beep
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Video BIOS Shadow	Enabled	

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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

 <F1>: "Help" gives options available for each item.
 <F5>: Get the previous values. These values are the values with which the user starts the current session.
 <F6>: Load all options with the BIOS default values.
 <F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

Virus Warning Allows you to enable/disable the Virus Warning function. If this function is enabled, some attempt to write data into BIOS will bring up a warning message on the screen.

CPU Internal / External Cache Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type up contain internal cache memory (L1), and most, but not all, modern PCs have additional (external) cache memory (L2). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for faster access by the CPU.

CPU L2 Cache ECC Checking To enable/disable CPU L2 Cache Error Correcting Code Checking .

Quick Power On Self Test Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third/ Boot Other Device The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The choices: Floppy; LS120; ZIP100; HDD; CDROM; USB-FDD; USB-ZIP; USB-CDROM; LAN; Disabled

Swap Floppy Drive When enabled, floppy drives A and B will be exchanging without any physical connection and modification on the cables.

Boot Up Floppy Seek When enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 270KB, 1.2MB, and 1.44MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to disabled to save time.

Boot Up NumLock Status Toggle between On or Off to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode.

Typematic Rate Setting When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.
When *Enabled*, you can select a typematic rate and typematic delay.

Typematic Rate (Chars / Sec) When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

Typematic Delay (Msec) Choices: 250; 500; 750; 1000. This option sets the time interval for displaying the first and the second characters. If enabled, the time interval is optional.

Security Option If you have set a password, select whether the password is required every time the System boots, or only when you enter setup.
Choices: System; Setup(default)

OS Select For DRAM > 64MB Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on your system.

Video BIOS Shadow To enable / disable Video BIOS Shadow function. To enable the function will copy Video BIOS to shadow RAM to improve performance.

4-6.4 Advanced Chipset Features

Advanced Chipset Features is used to modify the values of chipset buffers. These buffers control the system options.

Run the Advanced Chipset Features as follows:

1. Choose "Advanced Chipset Features" from the Main Menu and a list of option will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

		Item Help
▶ DRAM Configuration	Press Enter	Menu Level ▶
▶ AGP & P2P Bridge Control	Press Enter	
▶ LDT & PCI Bus Control	Press Enter	DRAM timing and control
Memory Hole	Disabled	
VLink DATA Rate	8X	
Init Display First	PCI Slot	
System BIOS Cacheable	Disabled	

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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

▸ **DRAM Configuration:**

To press< Enter > on DRAM Configuration will reveal the following item(s).

Current FSB Frequency	BIOS shows the actual Front Side Bus frequency.
Current DRAM Frequency	BIOS shows the actual DRAM frequency.
DDR Timing Setting by	To manually/ automatically set the DDR Timing.
Max Memclock (Mhz)	To manually set the memory clock if you have set "by manual" in above option. Choice: 100; 133; 166; 200

▸ **AGP & P2P Bridge Control:**

To press< Enter > on AGP & P2P Bridge will reveal the following item(s).

AGP Aperture Size	Series of options are available: 32, 64, 128, 256M. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will automatically report the starting address of this buffer to the O.S. The default setting is 64MB.
AGP Driving Control	To automatically/manually set AGP Driving Control.
AGP Driving Value	To input AGP Driving Value if you have set "by manual" in above option.
AGP Fast Write	This item will enable the AGP mode into fast write mode. If your graphics card does not support this function, please do not enable this function.
DBI Output for AGP Trans.	To enable / disable the DBI Output for Transfer function.
AGP Master 1 WS Write	To enable / disable (default) the support of AGP Master 1 Waite State Write.
AGP Master 1 WS Read	To enable / disable (default) the support of AGP Master 1 Waite State Read.

‣ **LDT & PCI Bus Control:**

To press< Enter > on LDT & PCI Bus Control will reveal the following item(s).

Upstream LDT Bus Width To set Upstream LDT BUS Width.
Choices: 8 bit; 16 bit

Downstream LDT Bus Width To set Downstream LDT BUS Width.
Choices: 8 bit; 16 bit

LDT Bus Frequency To set LDT Bus Frequency.
Choices: Auto; 200MHz; 400MHz; 600MHz; 800MHz

PCI1 Master 0 WS Write To enable / disable the support of PCI1 Master 0 Wait State Write.

PCI2 Master 0 WS Write To enable / disable (default) the support of PCI2 Master 0 Wait State Write.

PCI1 Post Write To enable / disable (default) the support of PCI1 Post Write.

PCI2 Post Write To enable / disable (default) the support of PCI2 Post Write.

Memory Hole To enabled / disabled (default) the support of Memory Hole which is reserved for ISA card.
Choices: Disabled; 15MB-16MB

VLink Data Rate To set VLink Data Rate.
Choices: 8X; 4X

Init Display First Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display.

System BIOS Cacheable Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance.

4-6.5 Integrated Peripherals

Integrated Peripherals option allows you to get some information inside your system when it is working.

Run the Integrated Peripherals as follows:

1. Choose "Integrated peripherals" from the Main Menu and a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

		Item Help
▶ VIA onChip IDE Device	Press Enter	
▶ VIA onChip PCI Device	Press Enter	
▶ Super IO Device	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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

VIA OnChip IDE Device:

To press< Enter > on VIA OnChip IDE Device will reveal the following item(s).

Promise RAID Mode To enable/disable the Promise RAID on board.

On-Chip IDE Channel 10/11 The chipset contains a PCI IDE interface with support from two IDE channels. Select Enabled to activate the first and/or the second IDE interface. Select Disabled to inactivate an interface if you install a primary and/or second add-on IDE interface.
Choices: Enabled; Disabled

IDE Prefetch Mode The on-board IDE drive supports IDE prefetching for faster drive accesses. If the IDE device doesn't support prefetching, set this field to Disabled.
The choices: Enabled; Disabled

Primary Master / Slave PIO Secondary Master / Slave PIO Choose Auto or Mode 0~4. The BIOS will detect the HDD mode type automatically when you choose Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.
Choices: Auto(default); Mode 0; Mode 1; Mode 2; Mode 3; Mode 4

Primary Master / Slave UDMA Secondary Master / Slave UDMA Ultra DMA33/66/100/133 implementation is possible only if your IDE hard drive supports it, if the operating environment includes a DMA drive, and if your system software supports Ultra DMA33/66/100/133. Select "Auto" to enable BIOS support.
Choices: Auto(default); Disabled

IDE HDD Block Mode Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

K8AV-R

VIA OnChip PCI Device:

To press< Enter > on VIA OnChip IDE Device will reveal the following item(s).

VIA-3058 AC97 Audio Select *"Auto"* to use the on-chip audio of your system. If user wants to use add-on sound card, this item must be disabled.

OnChip USB Controller To enable/disable the onchip USB controller. Choices: All Enabled; All Disabled

OnChip EHCI Controller To enable/disable the onchip EHCI controller.

USB Keyboard Support Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

USB Mouse Support Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB mouse.

SuperIO Device:

To press< Enter > on SuperIO Device will reveal the following item(s).

Onboard FDC Controller Select Enabled if your system has a floppy drive controller (FDC) installing in the system board and you want to use it. If you install add-in FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Port 1 / Port 2 Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first and second serial ports.
Choices: Disabled; Auto;
3F8/IRQ4; 2F8/IRQ3;
3E8/IRQ4; 2E8/IRQ3

UART Mode Select The serial port on your system may offer a variety of infrared port modes. Click here for a description of various modes.
The choices: Normal(default); IrDA; ASKIR; SCR

X UR2 Duplex Mode This options controls the operating mode between receiving and transmitting of IrDA or ASKIR or SCR. The operating mode will be synchronous bi-directional transmission and reception when Full mode is selected. Nevertheless, the operating mode will be asynchronous bi-directional transmission and reception when Half mode is selected.
Choices: Half; Full

Onboard Parallel Port This item allows you to determine onboard parallel port controller I/O address setting.
Choices: 378H/IRQ7; 278H/IRQ5; 3BC/ IRQ7; Disabled

Parallel Port Mode Select an operating mode for the on-board parallel (printer) port.
Choices: SPP; EPP; ECP; ECP+EPP

X ECP mode Use DMA Select a DMA channel for the port when you choose ECP or ECP+EPP mode for the Parallel Port Mode.
Choices: 1; 3

Game Port Address This item allows you to select the Game Port Address.
Choices: Disabled, 201, 209

Midi Port Address To configure the onboard Midi port address.
Choices: Disabled, 330, 300

Midi Port IRQ This item allows you to select the Midi Port IRQ.
Choices: 5, 10(default)

4-6.6 Power Management Setup

Power Management Setup allows you to set the system's power saving functions.

Run the Power Management Setup as follows:

1. Choose "Power Management Setup" from the Main Menu and a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

		Item Help
ACPI function	Enabled	
ACPI Suspend Type	S1(POS)	
Power Management Option	User Define	
HDD Power Down	Disabled	
Suspend Mode	Disabled	
Video Off Option	Suspend -> Off	
Video Off Method	V/H SYNC+Blank	
MODEM Use IRQ	3	
Soft-off by PBTN	Instant-off	
Run VGABIOS if S3 Resume	Auto	
AC Loss Auto Restart	Off	
▶ IRQ/Event Activity Detect	Press Enter	
PS2 KB Wakeup Select	Hot Key	
PS2KB Wakeup from S3/S4/S5	Disabled	
x Power Button Lock	Disabled	
PS2MS Wakeup from S3/S4/S5	Disabled	
USB Resume from S3 (Optional)	Disabled	
VGA	Off	
LPT & COM	LPT/COM	
HDD & FDD	On	
PCI Master	Off	
PowerOn by PCI Card	Disabled	
Modem Ring Resume	Disabled	
x Date (of Month)	0	
x Resume Time (hh: mm: ss)	0 : 0 : 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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

ACPI Function Select Enabled(default) only if your computer's op-
erating system supports the Advanced Configura-
tion and Power Interface (ACPI) specification.
Currently, Windows 98SE/ME, Windows 2000 and
Windows XP supports ACPI.

ACPI Suspend Type This item allows you to select the ACPI Suspend
type. You can select S3(STR) for Suspending To
RAM if your system supports this mode. Or you can
select S1(POS) for Power On Suspend under ACPI
mode.
Choices: S1(POS)(default);S3(STR); S1&S3

Power Management This option allows you to select the type (or degree)
Option of power saving for Doze, Standby, and Suspend
modes.
This table describes each power management
mode:

Max Saving	Maximum power savings. Inactivity period is 1 minute in each mode.
User Define	Set each mode in dividually. Select time-out period in the section for each mode stated below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

HDD Power Down When enabled after the set time of system inactivity,
the hard disk drive will be powered down while all
other devices remain active.

Suspend Mode When enabled after the set time of system inactivity,
the whole system will be suspended.

Video Off Option To set Video Off mode of the system.
Choices: Always On; Suspend -> Off

Video Off Method This determines the manner by which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal snchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the Display Power Management Singaling (DPMS) standard of the Video Electronics Standards to select video power management values.

MODEM Use IRQ To set IRQ Modem should use. If users do not have a modem, please set NA.

Soft-Off by PWRBTN To turn off the system instantly or after 4 seconds by power button.

Run VGABIOS if S3 Resume To enable/disable to run VGABIOS if S3 Resume. Choices: Auto; Yes; No

AC Loss Auto restart To enable/disable to run VGABIOS if S3 Resume. Choices: Auto; Yes; No

IRQ/Event Activity Detect:

To press< Enter > on IRQ/Event Activity Detect will reveal the following item(s).

PS2KB Wakeup Select	If keyboard power on function is set at "Password", this item shows up to allow you to type a password for the power-on function. Choices: Hot key; Password
PS2KB Wakeup from S3/S4/S5	To set the hot key to boot up the system.
PS2MS Wakeup from S3/S4/S5	To enable/disable PS/2 Mouse Wakeup function.
(Optional) USB Resume from S3	This item allows you to enable / disable the USB device Wakeup function from S3 mode.
VGA	To enable/disable VGA Wakeup function.
LPT & COM	To enable/disable LPT & COM Wakeup function.
HDD & FDD	To enable/disable HDD & FDD Wakeup function.
PCI Master	To enable/disable PCI Master Wakeup function.
Wake Up On PME	To enable / disable(default) the Wake on PME function.
Modem Ring Resume	To enable / disable(default) the wake on ring signal function. An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) awakens the system from a soft off state.
RTC Alarm Resume	To enable / disable the RTC Alarm Resume function.
Date (of Month) Resume Time (Hour / Minute / Second)	If RTC Alarm Resume is enabled, this field allows you to set the Alarm Date, Hour, Minute and Second. Date Choices: 01 ~ 31 Hour Choices: 00 ~ 23 Minute Choices: 00 ~ 59 Second Choices: 00 ~ 59

IRQs Activity Monitoring:
To press< Enter > on IRQs Activity Monitoring will reveal the following item(s).

IRQ3,4,5,7,9,10,11,12, To enable/disable IRQ Assignment.
13,14,15

4-6.7 PnP / PCI Configuration

PnP/PCI Configuration allows you to modify the system's power saving functions.

Run the PnP/PCI Configuration as follows:

1. Choose "PnP/PCI Configuration" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
PnP PCI Configurations

		Item Help
PNP OS Installed	No	
Reset Configuration Data	Disabled	
Resources Controlled by	Auto(ESCD)	
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	

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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.
<F5>: Get the previous values. These values are the values with which the user starts the current session.
<F6>: Load all options with the BIOS default values.
<F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

PNP OS Installed Allows you to configure the PNP devices by BIOS or O/S.
Choices: No(by BIOS); Yes(by O/S)

Reset Configuration Data Normally, you leave this Disabled(default). Select Enabled to reset Extended System Configuration Data (ESCD), when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

Resource Controlled By The Plug and Play Award BIOS can automatically configure all the boot and Plug and Play compatible devices. If you select *Auto*, all the interrupt request (IRQ) and DMA assignment fields will not appear, as the BIOS automatically assigns them. If you select Manual, the IRQ Resources item will appear for your configuration (see below).

IRQ Resources Press Enter. Please refer to the list below:

Phoenix - AwardBIOS CMOS Setup Utility
IRQ Resources

		Item Help
IRQ-3 assigned to	PCI Device	
IRQ-4 assigned to	PCI Device	
IRQ-5 assigned to	PCI Device	
IRQ-7 assigned to	PCI Device	
IRQ-9 assigned to	PCI Device	
IRQ-10 assigned to	PCI Device	
IRQ-11 assigned to	PCI Device	
IRQ-12 assigned to	PCI Device	
IRQ-14 assigned to	PCI Device	
IRQ-15 assigned to	PCI Device	

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

PCI/VGA Palette Snoop This option allows the BIOS to preview VGA status, and to modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used a MPEG card.

Assign IRQ For VGA To enable/disable to assign IRQ for VGA.

Assign IRQ For USB To enable/disable to assign IRQ for USB.

4-6.8 SmartDoc Anti-Burn Shield

This section helps you to get more information about your system in-cluding CPU temperature, FAN speed and voltage. It is recommended that you contact your mainboard supplier to get proper values about the setting of the CPU temperature.

Run the "SmartDoc Anti-Burn Shield" as follows:

1. Choose "SmartDoc Anti-Burn Shield" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
SmartDoc Anti-Burn Shield

		Item Help
Vcore	1.56V	
VDD	2.51V	
3.3V	3.26 V	
+5V	5.02V	
+12V	11.75V	
-12V	-11.74V	
+1.5V	1.53V	
+5Vsb	5.05V	
Voltage Battery	3.24V	
CPU Internal Temp.	60˚C	
System Temp.	33˚C	
CPU FAN Speed	5232 RPM	
System 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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

　<F1>: "Help" gives options available for each item.
　<F5>: Get the previous values. These values are the values with which the user starts the current session.
　<F6>: Load all options with the BIOS default values.
　<F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

Vcore Shows CPU core actual voltage value.

VDD Shows North Bridge actual voltage value.

3.3V, +5V, +12V, -12V, Shows actual voltage value of all these default volt-
+1.5V, 5VSB age value on board.

Voltage Battery Shows voltage value of the battery on board.

CPU Internal Temp. Shows current CPU internal temperature.

System Temp. Shows current system temperature.

CPU FAN Speed These fields display the current speed of the CPU
fan.

System FAN Speed These fields display the current speed of the Sys-
tem fan.

4-6.9 Frequency/Voltage Control

Run the "Frequency/Voltage Control" as following:

1. Choose "Frequency/Voltage Control" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

		Item Help
Auto Detect PCI Clk	Enabled	
Spread Spectrum	Disabled	
CPU Clock	200MHz	
CPU Vcore Select	Default	
AGP Voltage Select	1.5V	
DIMM Voltage Select	2.6V	
2.5V Select	2.5V	

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

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp / PgDn / + / - keys.

   <F1>: "Help" gives options available for each item.
   <F5>: Get the previous values. These values are the values with which the user starts the current session.
   <F6>: Load all options with the BIOS default values.
   <F7>: Load all options with the Setup default values.

3. Press <ESC> to return to the Main Menu when you finish setting up all items. The following item descriptions are provided as a quick guide to your setup.

PCI Clock Auto Detection	To enable / disablethis auto detection function on PCI clock.
Spread Spectrum	This function will reduce the EMI (Electromagnetic Interference) in your system. If you do not have an EMI problem, leave this item disabled.
CPU Clock	This item allows you to set CPU Clock. Choices: 200MHz ~250MHz in 1MHz stepping.
CPU Vcore Select	To configure the CPU Voltage. Usually, to raise CPU voltage will raise the chance of CPU overclocking and yet risk damage of CPU. Choices: Default; 0.800V ~1.700V in 0.05V stepping
AGP Voltage Select	To configure the AGP Voltage. Choices: 1.5V; 1.6V; 1.7V; 1.8V
DIMM Voltage Select	To configure the DIMM Voltage. Choices: 2.6V; 2.7V; 2.8V; 2.9V
2.5V Voltage Select	To configure the VDD Voltage. Choices: 2.5V; 2.6V; 2.7V; 2.8V

4-6.10 Load Optimized Defaults

When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

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

Phoenix - AwardBIOS CMOS Setup Utility

▶ Standard CMOS Features	▶ Frequence/Voltage Control
▶ Advanced BIOS Features	Load Optimized Defaults
▶ Advanced Chipset Features	Set Supervisor Password
▶ Integrated Peripherals	Set User Password
▶ Power management	Load Optimized Defaults [Y/N] Y	t Setup
▶ PnP/PCI Configurat	ut Saving
▶ SmartDoc Anti-Burn Shield	

Esc: Quit F10: Save & Exit Setup	↑↓→← : Select Item
Change CPU Clock & Voltage	

"Y" is for "Yes", and "N" is for "No".

Pressing "Y" loads the BIOS Optimized default values to restore the BIOS to its original status.

4-6.11 SET SUPERVISOR / USER PASSWORD

These two options allow you to set your system passwords. Normally, the supervisor has a higher priority to change the CMOS setup option than the users. The way to set up the passwords for both Supervisor and Users are as follows:

1. Choose "Change Password" in the Main Menu and press <Enter>. Then following message appears:

<div align="center">

"Enter Password : "

</div>

2. The first time you run this option, enter your password up to 8 characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears prompting you to confirm the password:

<div align="center">

"Confirm Password : "

</div>

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you have entered before.
7. Move the cursor to Save & Exit Setup to save the option you have just configured; otherwise the old password will still be there the next time you turn your system on.
8. Press <Enter> to exit to the Main Menu.

RxD , TxD Active The option controls the speed between receiving and transmitting of IrDA or ASKIR when using.
Choices: Hi,Hi; Hi,Lo; Lo,Hi; Lo,Lo

IR Transmission Delay When UART Mode is selected in IrDA or ASKIR mode, it allows you to enable / disable IR Transmission Delay.

EPP Mode Select Select EPP Mode when you choose EPP or ECP+EPP mode in the Parallel Port Mode.
Choices: EPP1.7; EPP1.9

4-6.12 SAVE & EXIT SETUP

SAVE & EXIT SETUP allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

        `"SAVE to CMOS and EXIT (Y/N) ?  Y "`

"Y" is for "Yes", and "N" is for "No".
Press <Enter> key to save the configuration changes.

4-6.13 EXIT WITHOUT SAVING

EXIT WITHOUT SAVING option allows you to exit the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

        `"Quit Without Saving (Y/N) ?  N "`

"Y" is for "Yes", and "N" is for "No".
You may change the prompt to "Y" and press <Enter> key to leave this option .

Chapter 5 RAID & RAID Driver

Promise RAID Controller PDC20378 / 20376

Promise RAID (Redundant Array of Independent Disks) Controller PDC 20378 is to provide RAID configuration of RAID 0, RAID 1, and RAID 0+1 modes, while PDC20376 is to RAID configuration of RAID 1 and RAID 2 only. RAID Drivers are enclosed in a Driver CD as well as a Floppy diskette to support various RAID systems (Windows 98SE/Me/ 2000/XP) setup.

This Chapter is to introduce the SATA RAID / SATA + PATA RAID Configurations with PDC20378 :

5-0 About Disk Array

5-0-1 Disk Array Interpretation

A "Disk Array" is formed from a group of 2 or more disk drives with the RAID (Redundent Array of Independent Disks) technology. The aim of a Disk Array is to provide better performance and/or data fault tolerance.

5-0-2 Disk Array Member

The individual disk drive in an array is called a "member". Each member of a specific disk array is coded in their "reserved sector" with configuration information that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the system.

5-0-3 Disk Array Types Supported by PDC20378/PDC20376

1. RAID 0 (or Striping mode): supported by both PDC20378 and PDC20376
   RAID 0 is a group of 2 to 4 Disk Drives configured together with RAID technology to provide better data transfer performance than a single drive since the workload is balanced between the array members. Reads and Writes of RAID 0 data are interleaved between multiple drives. When any disk member fails, it affects the entire array. The disk array size is equal to the number of drive members times the smallest member capacity. For example, one 1GB and three 1. 2GB drives will form a 4GB (4x1GB) disk array.

2. RAID 1 (or Mirroring mode): supported by both PDC20378 and PDC20376
   RAID 1 is a group of 2 Disk Drives configured together with RAID Technology to provide the fault tolerance function. Writes duplicate data on to RAID 1 while reads are performed in parallel. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond , the remaining drive will continue to function. This is called Fault Tolerance.
   The drive capacity of RAID 1 is half the total drive capacity of two equal-size drive.

3. RAID 0+1 (Mirror/Stripe): supported by PDC20378 only
   RAID 0+1 is formed by a RAID 0 member mirrored to another RAID member to establish a RAID 0+1 Array. RAID 0+1 requires at least 4 disk drive to set up the RAID 0+1 configuration.

5-1. SATARAID and PATA RAID Layout on K8AV-R

1 IDE RAID connector (IDE3) supporting 2 PATA RAID Hard Disks (supported by PDC20378)

2 SATA connectors ATA1/ATA2 supporting 2 SATARAID Hard Disks

Chipset Promise PDC20378 supporting SATA/PATA RAID Interfaces
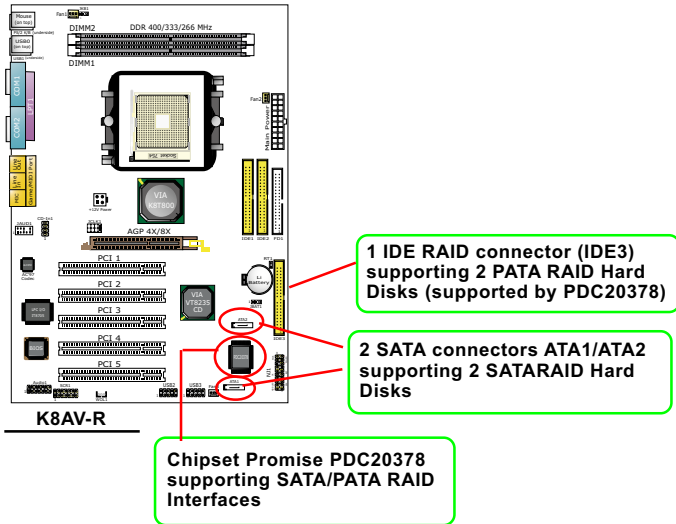
5-2. First Step to Set up RAID - Populate Disk Drives

1. Connect 1 SATA Disk Drive to ATA1 and 1 SATA Disk Drive to ATA2.
2. Connect 1 PATA Disk Drives to IDE3.
3. 3 Disk drives can be set up into RAID 0 or 1 Array.

5-3. To Enter RAID BIOS

At booting system, the following screen will appear after "POST".

```
FastTrak 378 (tm) BIOS Version 1.00.1.34
(c) 2002-2005 Promise Technology. Inc. All rights reserved.


No Array is defined...................

Press <Ctrl-F> to enter FastBuild (tm) Utility or
Press <ESC> to continue booting...
```
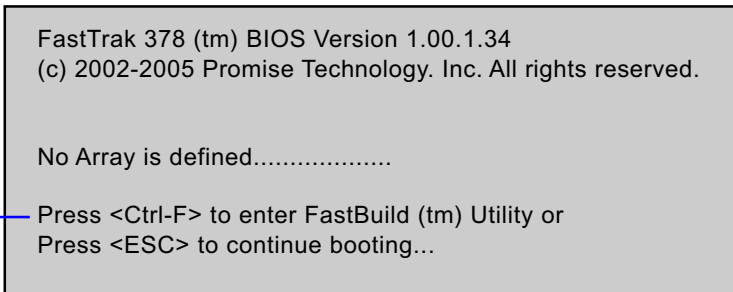
Following the instruction on the screen, press <Ctrl-F> to enter the FastBuild (tm) Utility.

5-4. To Enter the Main Menu of FastBuild Utility

The Main Menu will pop out as below:

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

```
                        [ Main Menu ]


            Auto Setup..............................[1]
            View Drive Assignemnts..........[2]
            Define Array............................[3]
            Delete Array............................[4]
            Rebuild Array.........................[5]




                    [ Keys Available ]

  Press 1~5 to Select Option                      [Esc] Exit
```
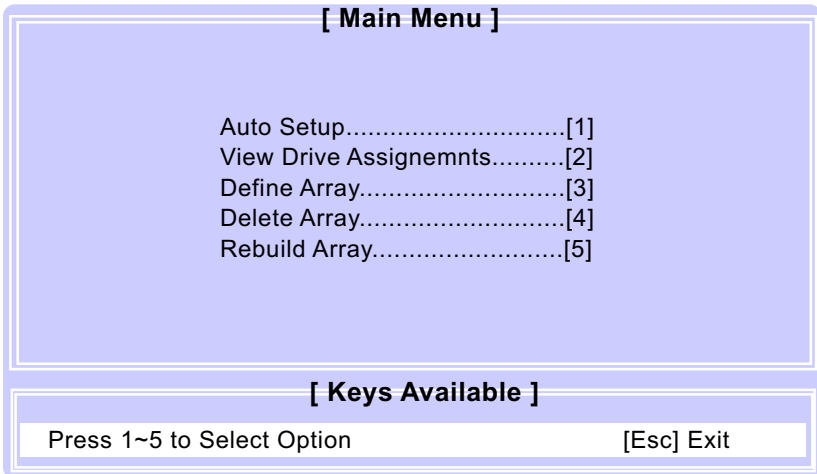
1. Auto Setup.........[1]
   Press figure "1" on keyboard to enter Auto Setup of RAID."Auto Setup"
   is available only if there are free disk drive detected in system.

2. View Drive Assignment.........[2]
   Press figure "2" on keyboard to view the drive assignment detected
   in system.

3. Define Array.........[3]
   Press figure "3" on keyboard to view the defined Array already set up
   in system.

4. Delete Array.........[4]
   Press figure "4" on keyboard to enter the "Delete Array" field for
   deleting Array already set up in system.

5. Rebuild Array.........[5]
   Press figure "5" on keyboard to enter the "Rebuild Array" field for
   rebuilding a defective array or RAID member. "Rebuild Array" is
   available for "RAID 1 (Mirror)" or "RAIA 0+1 (Mirror/Stripe)" mode.

5-5. View Drive Assignment before RAID Setup

Press "2" to enter "View Drive Assignment" so that you can see the status of all disk drives detected by RAID BIOS.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[View Drivers Assignments]

Channel:ID	Drive Model	Capacity (MB)	Assignment	Mode
1: Mas ST380023AS		80026	Free	U5
2: Mas ST380023AS		80026	Free	U5
3: Mas QUANTUM FIREBALLP AS3		30020	Free	U2
3: Mas ST330620A		30020	Free	U2

[Keys Available]

[Esc] Exit   MODE (D = DMA, U = UDMA)

Two drives are detected in one channel 3 as free drives (available for RAID setup)

Totally 4 drives are detected by RAID BIOS

Two drives are detected in channel 1 and 2 as free drives (available for RAID setup)

5-6. Enter "Auto Setup" for RAID Setup

Press "1" to enter "Auto Setup" so that you can see the RAID choices.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Performance   **Press " <--- " key to change RAID option.**

[Array Setup Configuration]

Mode ....Stripe
Spare Drive 0
Drive(s) Used in Array..........................4
Array Disk Capacity (size in MB)..........120080

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save

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5-7. Choose " Security" for RAID 0+1 (Stripe/Mirror)

Press "1" to enter "Auto Setup" so that you can see the RAID choices.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security —— **Security (0+1) mode is selected.**

[Array Setup Configuration]

Mode ....Mirror/Stripe
Spare Drive 0
Drive(s) Used in Array.........................4
Array Disk Capacity (size in MB)..........60000

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
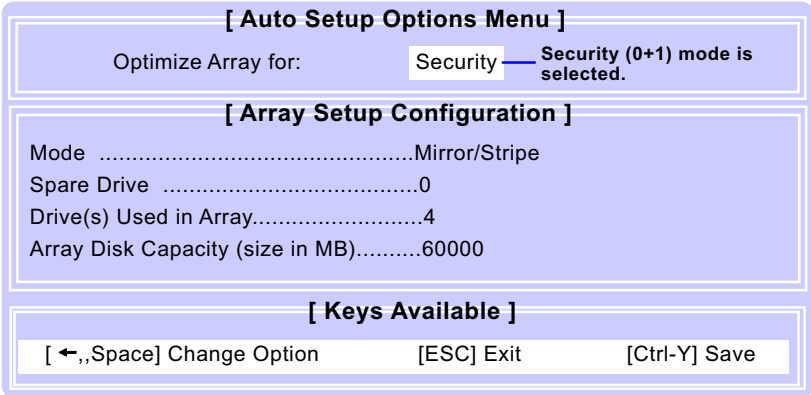
5-8. Press <Ctrl-Y> to Save the Choice

When a RAID mode is chosen, press < Ctrl-Y> to save the choice.
Then select Y for "Create and Quick Initialize; or select N for "Create only".

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security

[Array Setup Configuration]

Mode ....
Spare Drive ....
Drive(s) Used in Array...
Array Disk Capacity (siz

Do you want to do quick initialize or
create only? (Yes/No)
Y - Create and Quick Initialize
N - Create Only

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
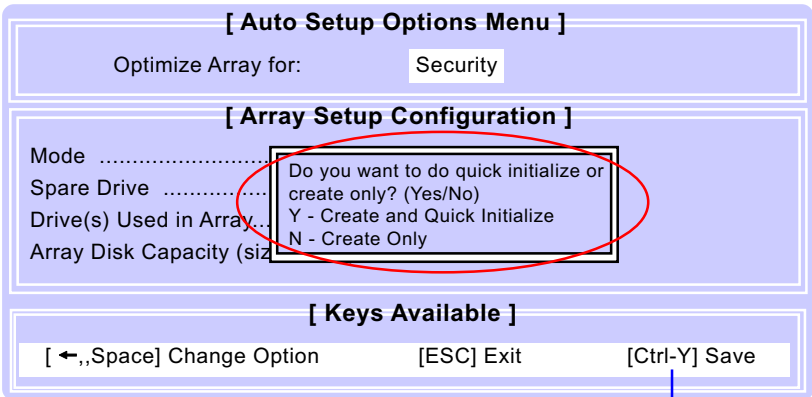
Press <Ctrl-Y> to save choice.

5-9. Create RAID only / Create and Quick Initialize

"Create Only" is for creating RAID without changing the disk data.
"Create and Quick Initialize" will create the RAID with clearing disk data.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security

[Array Setup Configuration]

Mode ....
Spare Drive ....
Drive(s) Used in Array...
Array Disk Capacity (siz

Choose Quick Initialize will delete any existing data on your hard disks.
Y - Continue, Others - Cancel

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
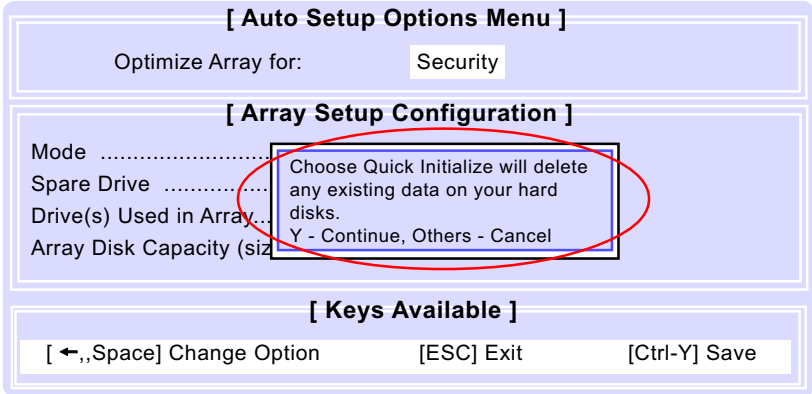
5-10. Array Created and Reboot System
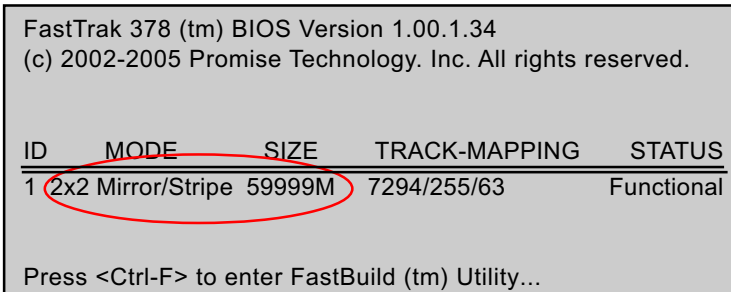
After choosing "Create Only" or Create and Quick Initialize", next screen
will prompt you to reboot system.
Press any key to reboot.

FastBuild (tm) Utility 2.01 (c) 2002-2005 Promise Technology, Inc.

[Auto Setup Options Menu]

Optimize Array for: Security

[Array Setup Configuration]

Mode ....Mirror/Stripe
Spare Drive ....
Drive(s) Used in Array...
Array Disk Capacity (size in MB)..........60000

Array Has been created....
<Press Any Key to REBOOT>

[Keys Available]

[←,,Space] Change Option   [ESC] Exit   [Ctrl-Y] Save
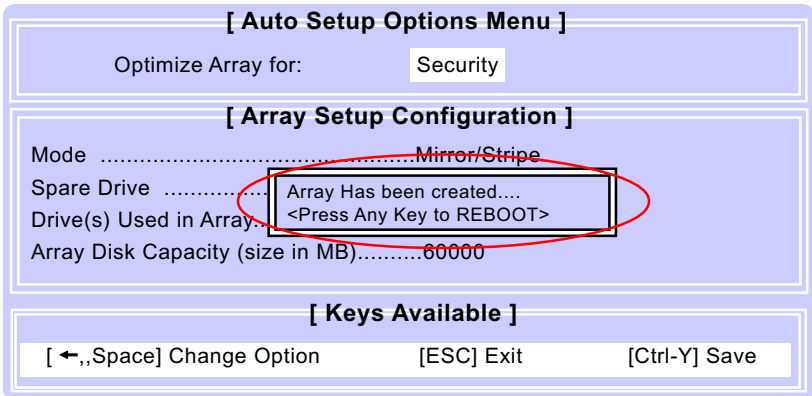
5-11. Mirror/Stripe Array Detected at Reboot System

At rebooting system, Mirror/Stripe Array (RAID 0+1) appears on screen after "POST".

```
FastTrak 378 (tm) BIOS Version 1.00.1.34
(c) 2002-2005 Promise Technology. Inc. All rights reserved.


ID    MODE        SIZE      TRACK-MAPPING      STATUS
1  2x2 Mirror/Stripe  59999M   7294/255/63        Functional


Press <Ctrl-F> to enter FastBuild (tm) Utility...
```

Congratulation!
Your system is now ready for operating system installation and RAID Driver Setup.

5-12 To Install Promise RAID Driver

Promise RAID Driver is incorporated in Support CD/Floppy Diskette for user's installation. This driver is intended for Windows 98/Me/NT4/2000/ XP/2003.

5-12-1 To Install RAID Driver on Windows 2000/XP

(1) Get ready the Floppy Diskette holding the RAID Driver.
   (This Driver Diskette should have been enclosed in the mainboard Package.)
(2) Check that Hard Disks are connected properly to the RAID conn-tors.
(3) Start your PC system and use RAID BIOS Setup Utility to configure RAID 0 / 1/ 0+1 to the hard disks.
(4) Restart System and apply the Windows 2000/XP CD to CD-ROM for operating system installation.
(5) On the Windows 2000/XP Setup screen, press "F6" key for RAID driver setup.

Windows Setup

Press F6 if you need to install a third party SCSI or RAID driver....

(6) On next screen press "S" to confirm the mass storage device setup.

Windows Setup

Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices(s):

     <none>

    * To specify additional SCSI adapters, CD-ROM drives, or special disk controllers for use with Windows, including those for which you have a device support disk from a mass storage device manufacturer, press S.

    * If you do not have any device support disks from a mass storage device manufacturer, or do not want to specify additional mass storage devices for use with Windows, press ENTER.

S=Specify Additional Device   Enter=Continue   F3=Exit

(7) On next screen apearing, insert the RAID Driver Diskette to Drive "A" and then press <Enter>.

Windows Setup

     Please insert the disk labeled

     Manufacturer-supplied hardware support disk

     into Drive A:

     *   Press ENTER when ready.

Enter=Continue   ESC=Cancel   F3=Exit

(8) On next screen appearing, choose the driver suitable for your operating system and press <Enter> to continue.

Windows Setup

You have chosen to configure a SCSI Adapter for use with Windows, using a device support disk provided by an adapter manufacturer.

Select the SCSI Adapter you want from the following list, or press ESC to return to the previous screen.

> Win SERVER 2003 Promise FastTrak 376/378 (tm) Controller
> WinXP Promise FastTrak 376/378 9tm) Controller
> Win2000 Promise FastTrak 376 (tm) Controller
> Win2000 Promise FastTrak 378 (tm) Controller

S=Specify Additional Device   Enter=Continue   F3=Exit

The Installation Program will then guide you through the rest of system setup. The RAID driver will then be installed into your system.

5-12-2 To Install RAID Driver on Windows 98SE/Me

(1) Get ready the Floppy Diskette holding the RAID Driver.
(2) Check that Hard Disks are connected properly to the RAID conn-
     ectors.
(3) Start your system and use RAID BIOS Setup Utility to configure
     RAID 0 / 1/ 0+1 to the hard disks.
(4) Restart System and format the bootable hard disks.
(5) Now, apply the Windows 98SE/ME CD to CD-ROM for
     operating system installation.
(6) With the Windows 98SE/ME installation complete, restart system
     for RAID driver setup.
(7) On the "Start" screen of your system, please click to the following
     path:

       \My Computer\properties\Device manager

(8) In the "Device manager" screen, you can see the item " PCI RAID
    Controller" with a yellow question mark on its left side, which indicates
    that the RAID controller is already detected by system but the driver
    is not installed yet. Please point to this item with your mouse and
    double click on it (or click the "Properties" button).

The question mark here indicates that RAID Controller Driver is not installed yet.
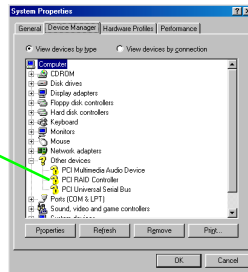

(9) Instantly, the "PCI RAID Controller Properties" screen shows up.
     Please click the "General" bar to continue.

(10) In the "General" screen, click "reinstall
    Driver" button to continue. Please note that
    the status of "Device Usage" should stay at
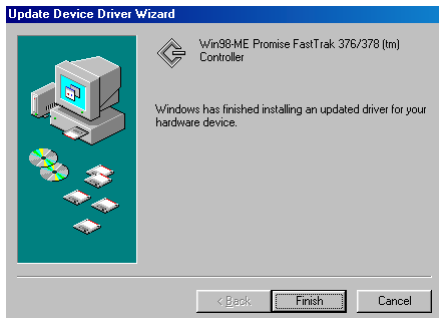   "Exists in all hardware profiles".
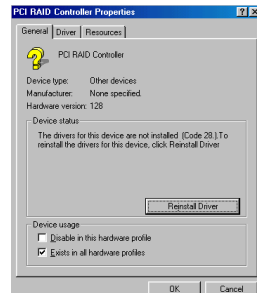
(11) In the "Update device Driver Wizard" screen, click "Next" to continue until you see a dialog box asking you to "Specify a location" for the driver. <u>You should **now** insert the SATA/SATA RAID Driver CD/ Diskette into CD-ROM/Drive A.</u>

(12) As illustrated in the picture below, check the item "Specify a location" and click the "Browse" button to find out the correct path for the driver. As the RAID Driver is in Drive A, please type into the blank bar the correct path and click "Next" to continue:

D:\Driver\Promise\PDC20376&378\Win98-me
   or
A:\Win98-me
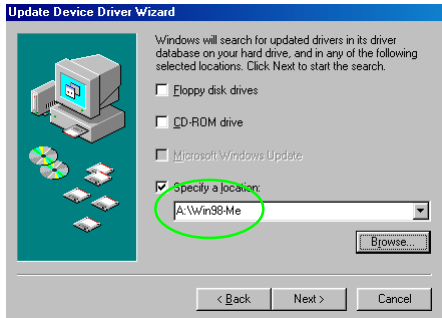
(13) The Update Device Driver Wizard will then go on installing the driver. In a few seconds, installation completes. Please click the "Finish" button on the screen to complete the installation.

Memo