A7F156

MOTHER BOARD
USER'S MANUAL

DEC.10.2002

Ver. 1

Copyright Notice

Using This Manual

This manual is designed to help you build a reliable Personal
Computer based on the A7F156 platform.

Chapter 1—Quick Reference

This chapter is for advanced users who want to quickly assemble a system.
The mainboard layout along with jumper and switch settings, and memory
configuration are provided.

Chapter 2—Introduction

This chapter includes an introduction, a checklist of the items that ship with
this mainboard, and a summary of the principal features and components.

Chapter 3—Hardware Installation

This chapter explains how to prepare your mainboard for use and how to
make the various connections to other computer components and peripheral
items.

Chapter 4—BIOS Configuration

This chapter explains how to use the system setup utility that is stored in the
mainboard's firmware.

Chapter 5—Driver and Utility

This chapter briefly describes the drivers and utility programs that are
packaged with the mainboard.

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1.2. I/O Ports
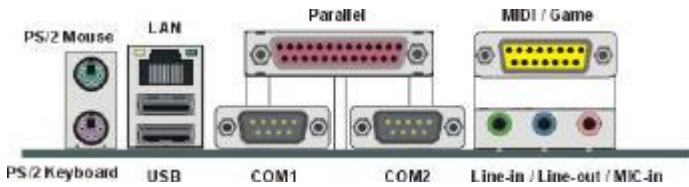
1.3. Front Panel Connector (JP1)

The following illustration shows the front panel connector pin assignments:
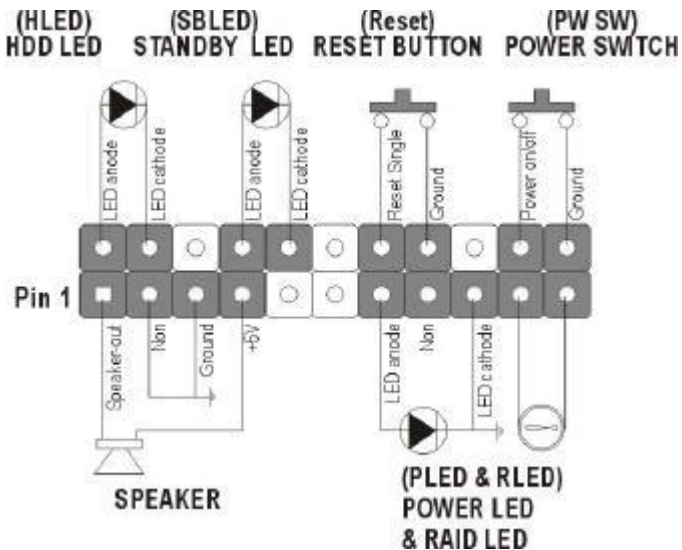
1.4. Jumper

JBAT1	1-2	Normal Mode			
	2-3	Clear CMOS			
JCK1 (CPU FSB)	1-2	100MHz FSB			
	Open	133MHz FSB			
	2-3	166MHz FSB			
JV1 (DIMM Voltage)	Voltage	2.5V	2.6V	2.7V	2.8V
	Pin 1-2	ON	OFF	OFF	OFF
	Pin 3-4	OFF	ON	OFF	OFF
	Pin 5-6	OFF	OFF	ON	OFF
	Pin 7-8	OFF	OFF	OFF	ON

1.5. PCI and AGP Frequency Setting

The PCI and AGP frequency settings are automatically set by the system

1.6. Memory Installation

Note: **This mainboard supports up to two double-sided or two single-sided DIMMs when the DDR DRAM interface is operating at 133 MHz. Installing DDR DIMM modules that exceed these specifications requires that the BIOS down-shifts the DRAM clocks to 100 MHz through a two-wire interface of the system clock generator.**

184-Pin DIMM DDR SDRAM Memory Configuration.

Each **184-pin** DIMM bank can install from 64MB up to 1GB of PC1600/PC2100/PC2700 compliant 2.5V single or double side buffered with or without ECC DDR SDRAM modules.

Bank 0 (DIMM1)	64MB, 128MB, 256MB, 512MB, 1GB
Bank 1 (DIMM2)	64MB, 128MB, 256MB, 512MB, 1GB
Bank 2 (DIMM3)	64MB, 128MB, 256MB, 512MB, 1GB
Total	3 GB

1.7. Connectors

CPU FAN	**CPU FAN :** This 3-pin header is used for connecting a CPU fan.
System FAN	**System FAN :** This 3-pin header is for connecting the case fan that keeps the system cool.
USB2~3	**Front USB connector :** This 10-pin header is used connecting front panel USB port 3 or 4 or 5 or 6.
IR	**Infrared (IR) connector :** This 5-pin header is used connect an IR port for use of IR devices.
WOL1	**Wake On LAN Connector :** This 3-pin header is used for remote wake up of the computer through a network card.
CD1	**CD-IN connector :** This 4-pin header is used for connecting the CD ROM audio input to the sound card.
AUX1	**Auxiliary-IN connector :** This 4-pin header is an auxiliary input connector.
PW2	**ATX power connector :** This 20-pin header is connect the power supply plug to ATX power connector to provide Pentium 4 standard power for devices.

2. Introduction

2.1. Overview

The high quality A7F156 is a high performance, enhanced function mainboard that supports Socket-A(Socket-462) processors that support a 333 MHz front side bus (FSB). This mainboard is designed around the latest and fastest VIA KT400 chipset in a standard ATX form factor.

The mainboard delivers workstation-level performance with an integrated AGP (Accelerated Graphics Port), bus mastering EIDE (Enhanced IDE) controller, and concurrent PCI bus. The mainboard accommodates DDR SDRAM (Synchronous DRAM) memory and supports ATA33/66/100/133.

In addition to superior hardware capabilities, provided with this platform are these features:

- Supports Socket 462 processors
- Supports a 66/100/133 memory bus
- Support for AGP 8X
- Supports up to 3 GB of PC1600/PC2100/PC2700 DDR SDRAM
- Advanced ECC memory controller
- Supports six USB2.0 ports accommodating Plug and Play devices
- Soft-off APM (Advanced Power Management)
- ACPI (Advanced Configuration and Power Interface)
- External modem ring on
- LAN wake up
- BIOS upgrade

2.2. Mainboard Specifications and Features

2.2.1. Hardware

CPU	AMD Socket 462 processors package, compatible Auto-detection CPU
VRM	Onboard Voltage Regulator Module Provides 1.05V to 1.825V operating voltage
Coprocessor Speed	CPU has built-in floating point unit 333/266/200 MHz FSB Athlon XP Socket-A system PCI bus clock 33 MHz
Chipset	VIA KT400 supports AGP 8X mode PC1600/PC2100/PC2700 DDR SDRAM and VT8235 (super-I/O integrated peripheral controller) support Ultra ATA100/133
DRAM	Three 184-pin DDR sockets, up to 3GB Supports 64 MB to 1GB DDR SDRAM memory types
EIDE Controller	Dual channel master mode hard disk controller supporting four Enhanced IDE devices Transfer rate up to 133MB/sec to cover PIO mode 4, multi-word DMA mode 2 drivers, and UltraDMA-133 interface Increased reliability using UltraDMA-133/100/66 transfer protocols Thirty-two levels (doublewords) of prefetch and write buffers Dual DMA engine for concurrent dual channel operation Support ATAPI compliant devices including DVD device Support PCI native and ATA compatibility modes

	Complete software driver support
Sound Chip	1 stereo DirectSound channel with source / volume control / mixer AC97 2.2 compliant
Enhanced I/O	One floppy disk controller One Standard/EPP/ECP parallel port connector Two 16550 compatible serial port connectors Two USB (Universal Serial Bus) ports One audio port connector, include line-out, line-in, mic-in, and midi/game ports
I/O Options	Two connectors for front panel USB ports 3/4, 5/6 One IrDA compatible infrared (IR) connector
Mouse	PS/2 mouse connector
Keyboard	PS/2 keyboard connector
Expansion Slots	One 32-bit 4X / 8X AGP slot Six 32-bit PCI slots
Power Management	Compliant with EPA, APM 1.2 and ACPI ATX soft-off power control Power on by keyboard and mouse Power on by external modem ring Power on by alarm Power on by LAN wake up Fan off in sleep mode
System Management	CPU and system voltage detection CPU and secondary fan RPM detection
Voltage Regulator	Switching regulator CPU voltage auto-detection
Form Factor	ATX form factor
Board Size	23 cm x 30.5 cm (9.1 x 12-inch)

2.2.2. Software

BIOS	AWARD AGP/PCI BIOS
	2M-bit Flash BIOS with ESCD (Extended System Configuration Data) block
	Supports APM, Plug and Play, Multi-Boot, DMI and EIDE devices
	Supports ACPI
	Supports high-capacity LS-120 and ZIP removable media drive
Driver and Utility	IDE Bus mastering Ultra DMA driver
	AC97 codec audio driver
	Flash utility for BIOS upgrade
	System Environment Monitoring Utility
Operating System	Operates with MS_DOS, Windows 3.x/9x/ME/XP/2000/NT, OS/2, Novell NetWare/UnixWare, and SCO Unix

2.3. Mainboard Layout

Note: *Because of optional items and design changes, your mainboard may not be identical to the one shown in the illustration.*

Key to Mainboard Components

NO.	Name	Function
1	Socket 462	CPU socket
2	PW2	ATX standard power connector
3	DIMM1~3	DDR SDRAM Memory module slots
4	IDE1	IDE 1 connector (blue)
5	IDE2	IDE 2 connector (blue)
6	IDE3	IDE 3 connector (red) [Optional]
7	IDE4	IDE 4 connector (red) [Optional]
8	FDD1	Floppy drive connector
9	PCI 1~6	32-bit PCI Slots
10	AGP1	Accelerated Graphics Port (AGP) Slot
11	JP1	Front Panel Connector
12	USB2	Front USB Connector
13	USB3	Front USB Connector
14	IR	IrDA compliant Infrared (IR) connector
15	AUX1	Audio AUX-In header
16	CD1	Audio CD-In header
17	WOL1	LAN/Modem Wake up Connector
18	System FAN	System FAN Connector
19	CPU FAN	CPU FAN Connector
20	JV1	DIMM Voltage 2.5V~2.8V
21	JCK1	CPU FSB Jumper
22	JBAT1	Clear CMOS
23	D15	CPU Thermal Diode
24	BAT1	RTC battery
25	U19	Flash BIOS

2.4. Microprocessor

The mainboard is designed to operate with the following processor:

Processor Type	Speed	FSB
AMD	XP1500+~XP2700+	200 / 266 / 333 MHz

An onboard switching voltage regulator provides the required 1.05 to 1.825 volts for the processor. The processor sends five VID (Voltage identification) signals to the switching voltage regulator. The switching regulator generates the correct voltage for the processor.

The mainboard's CPU socket is a surface mount, Socket 462 type ZIF (Zero Insertion Force) socket. The socket has 478 pins with 50 mil pin pitch.

> *Note:* *ZIF sockets are sockets designed for easy insertion of pin grid array (PGA) chips. The chip is dropped into the socket, and a lever is used to secure the chip in place.*

2.5. AC 97 Codec

- 18-bit ADC and 20-bit DAC resolution
- Compliant with AC'97 2.2 specifications
- 18-bit stereo full-duplex CODEC with independent and variable sampling rate
- 3D Stereo enhancement
- No external crystal/clock required
- Power supply digital: 3.3V; analog: 5V/3.3V
- Standard 48-pin LQFP package

2.6. Chipset

The A7F156 supports the VIA KT400 chipset. The KT400 chipset is optimized for the Pentium 4 processor.

In addition to future application support, the KT400 chipset was designed with the following features:

- Advanced packaging technology and industry leading electrical design innovations ensure long-term system reliability over wide operating conditions.

- The AGP8X interface providing the most advanced graphics support available, enabling graphics bandwidth of over 1GB/s.

- Two USB controllers provide high-performance peripherals with 480 Mbps of bandwidth, while enabling support for up to six USB ports.

- AC97 (ALC201A) two channels of audio.(Optional)

- AC97(ALC650) implementation delivers six channels of audio for enhanced sound quality and full surround sound capability.

- Dual Ultra ATA/100/133 controllers support faster IDE transfers to storage devices.

2.7. RAID (Optional)

Bus mastering design allows utilization of a RAID (Redundant Array of Independent Disks). A RAID is a set of two or more hard disks and a specialized disk controller, which controls the RAID function. Using a RAID, the user can write and read to more than one disk at the same time, that is, complete data duplication can be achieved, or, excess data can be transferred to another disk. The problems of disk failure are minimized with the use of a RAID.

This concludes Chapter 2. Chapter 3. covers hardware installation.

3. Hardware Installation

This chapter explains how to use your mainboard to build a powerful computer system. At a minimum, you will need the following components in order to build a fully functioning system.

- Computer case with P4 standard ATX power supply
- Socket 462 Processor
- One DDR SDRAM memory module
- One floppy disk drive
- One UDMA-66/100 IDE hard disk drive
- One CD-ROM drive
- One display monitor
- One mouse
- One PS/2 keyboard
- One set of loudspeakers

3.1. Unpacking

The A7F156 mainboard package contains the following items:

- One mainboard
- One IDE 66/100 40-pin ribbon cable
- One floppy 34-pin ribbon cable
- Driver and utility CD
- User's manual

After removing the mainboard from its anti-static bag, place it on a grounded or antistatic surface (component side up). Inspect the mainboard and contact your vendor immediately if it is damaged.

3.2. Installation

The A7F156 is designed to fit into a standard ATX form factor chassis. The pattern of the mounting holes and the position of the back panel connectors meet the ATX system board specification. The chassis comes with various mounting fasteners, which are made of metal or plastic. It is highly recommended to use as many metal fasteners as possible to mount the mainboard in the chassis for better grounding.

To install the mainboard you need to install the CPU and DDR memory modules, attach the connectors, and set the correct CPU speed in the CMOS setup.

3.3. Safety Measures

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the simple guidelines below to avoid damaging you computer:

- Always disconnect the mainboard from the ATX power supply, and disconnect the computer from the power outlet whenever you are working inside the computer case.

- If possible, wear a grounded wrist strap when you are installing the mainboard or working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the computer case, or the bare metal body of ay other grounded appliance.

- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.

- Leave each component inside the static-proof packaging that it ships with until you are ready to use the component for the installation.

3.4. Connector/Jumper Location

3.5. Attaching Connectors

3.5.1. Front Panel Connectors (JP1)

There are seven connectors on the mainboard for speaker, switches, and indicator lights on the system's front panel.
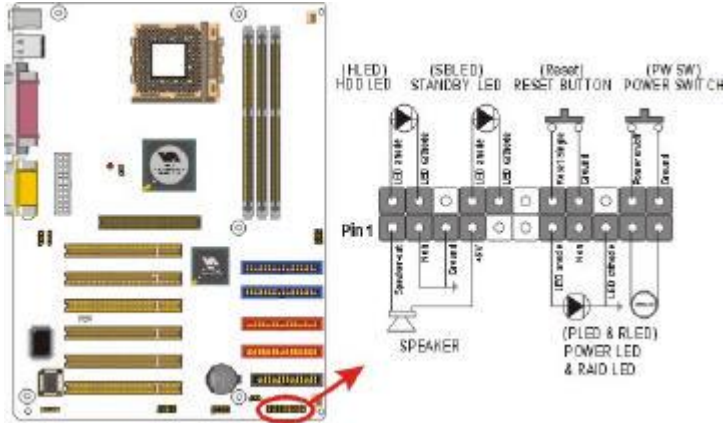
PW SW	This 2-pin connector connects to the case-mounted Power button.
RESET	This 2-pin connector connects to the case-mounted reset switch and is used to reboot the system.
SBLED	This 2-pin connector connects to the case-mounted Standby LED to indicate a standby status. The LED remains Lit even when the system is off to indicate that AC power is available. When the system enters standby mode, the LED starts blinking.
HLED	This 2-pin connector connects to the case-mounted HDD LED to indicate hard disk activity.
PWRLED & RLED	This 5-pin connector connects to the case-mounted and the power LED. The RLED switch is used to indicate Raid activity.
SPEAKER	This 4-pin connector connects to the case-mounted speaker.

3.5.2. Audio CD-In Connector (CD1)

This connector enables you to connect a CD-ROM to the mainboard and receive stereo audio input.
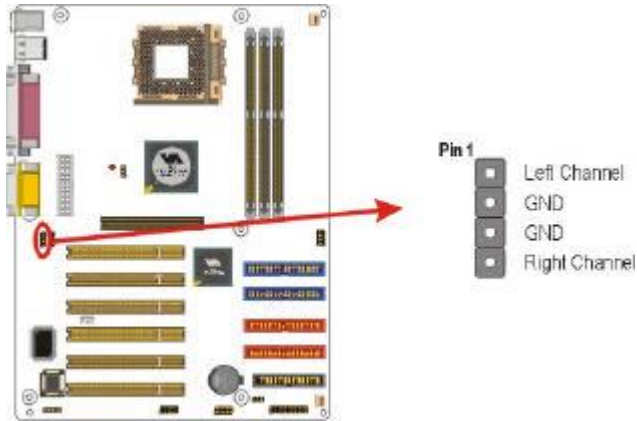
3.5.3. Audio AUX-IN Connectors (AUX1)

This connector enables you to connect a stereo audio input from CD-ROM, TV-tuner, or MPEG card.
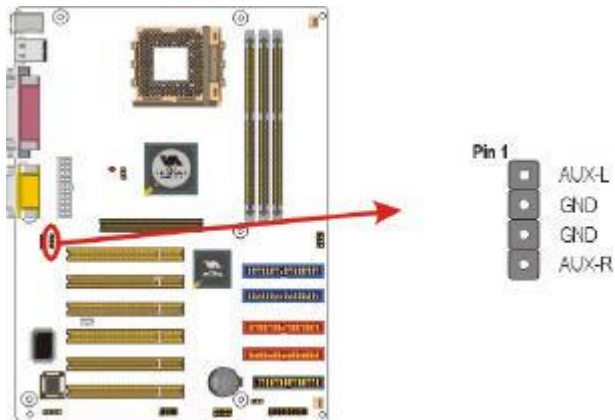
3.5.4. Infrared Connector (IR)

This 5-pinheader connects to an optional wireless transmitting and receiving infrared module via a cable and a bracket. Configure BIOS to enable the IrDA port if you attach an infrared module to this connector. Refer to Integrated Peripherals in Chapter 4 for details.
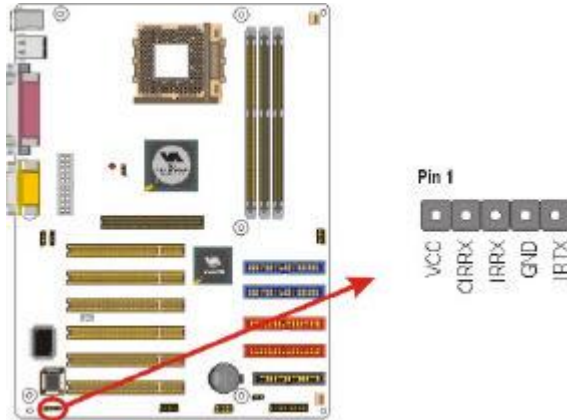
3.5.5. LAN/Modem Wake up connectors (WOL1)

This 3-pin header is used for remote wake up of the computer through a network or modem signal.
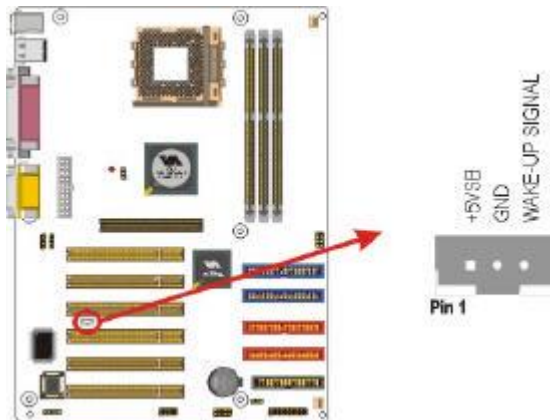
3.5.6. Front USB Header (USB2~3)

The mainborad provides two onboard 10-pin of dual USB port (port 3,port 4, port 5 and port 6) header. The header on the same signal with USB port 1 and port 2 on the back panel.
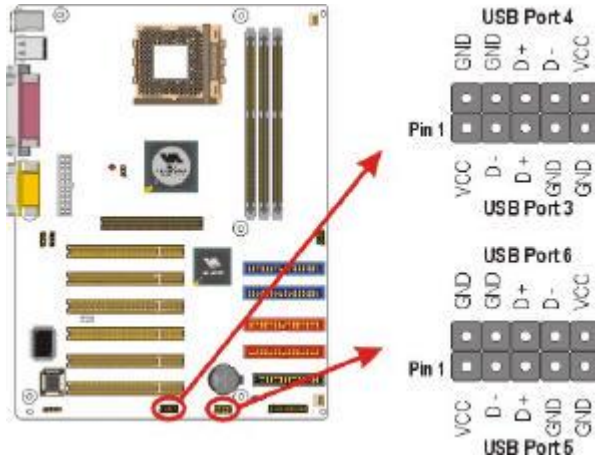
3.5.7. Floppy Drive Header (FDD1)

A floppy disk drive ribbon cable has two connectors to support two floppy disk drives. The connector with twisted wires always connects to drive A; the connector with untwisted wires connects to drive B. You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds with pin 1 of the I/O port connector.
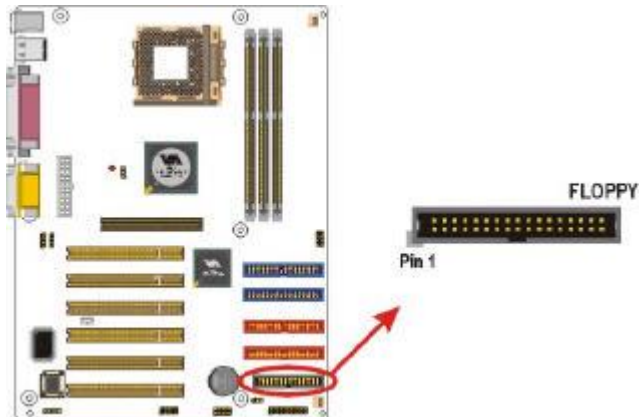
3.5.8. IDE Connectors

An IDE drive ribbon cable has two connectors to support two IDE
drives. If a ribbon cable connects to two IDE drives at the same time,
one of them has to be configured as Master and the other has to be
configured as Slave by setting the drive select jumpers on the drive.

Consult the documentation that came with your IDE drive for details
on jumper locations and settings. You must orient the cable
connector so that the pin 1 (color) edge of the cable corresponds to
pin 1 of the I/O port connector.
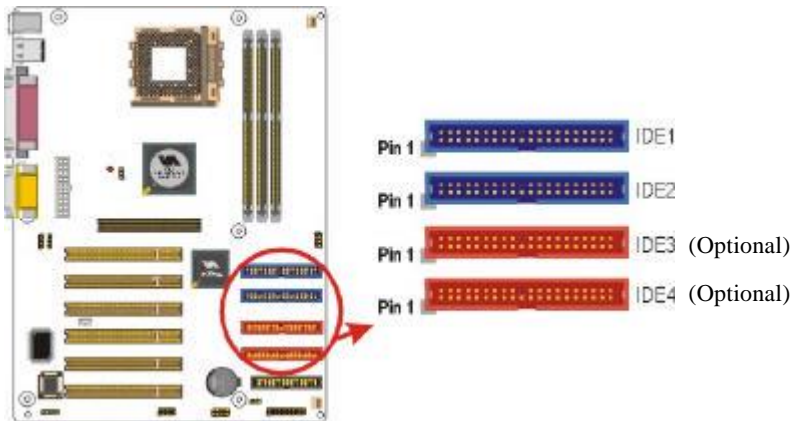
3.5.9. Back Panel Connectors

The back panel provides external access to PS/2 style keyboard and mouse connectors, two serial ports, one parallel port, dual USB ports, and audio Line-out, Line-in, Mic-in, game/midi ports which are integrated on the mainboard. The figures below show the location of the back panel I/O connectors.

PS/2 Mouse and PS/2 Key board Ports

Connect a PS/2 mouse to the green 6-pin mini DIN connector. The system will automatically assign IRQ 12 to the PS/2 mouse if one is connected.
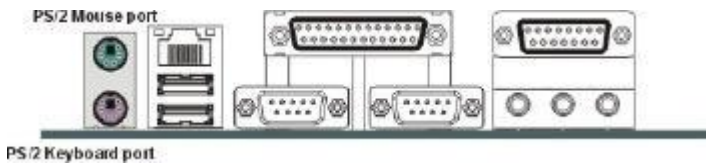
Connect a PS/2 keyboard to the purple 6-pin mini DIN connector. If you want to connect a standard AT size (large DIN) connector, you must use an adapter.

LAN Port

Connect a device to the LAN port on the back panel.
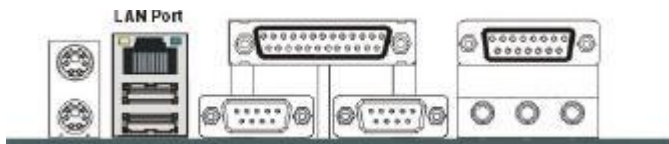
Universal Serial Bus Ports

You can connect two USB 2.0 devices or USB hubs to the USB ports.
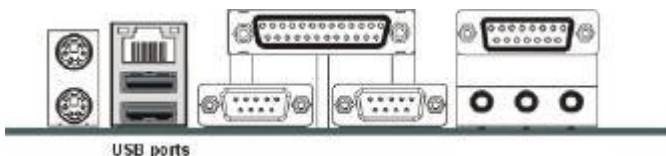
The USB ports provide a hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, scanner, printer and telephony devices, and also support MPEG-1 and MPEG-2 digital video. The USB2.0 ports have a maximum bandwidth of 480 Mbits/sec (equivalent to 60 Mbytes/sec), and up to 127devices can be attached. Fast devices can use the full bandwidth, while lower-speed ones can transfer data using a 60 Mbits/sec sub-channel.

Parallel Port

Connect a printer or other parallel device to the burgundy-colored 25-pin parallel port. You can set the parallel port IRQ and parallel port mode in BIOS. Refer to Integrated Peripherals in Chapter 4 for details.
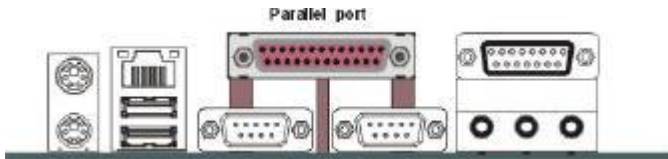
Serial Port

Connect a serial device such as a mouse or modem to the 9-pin serial port. You can set the serial port IRQs in BIOS. Refer to integrated Peripherals in Chapter 4 for details.
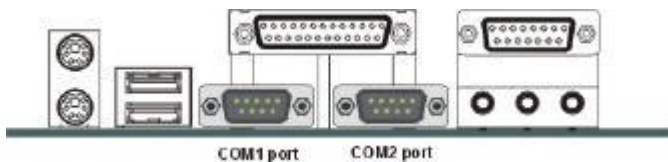
Note: Serial printers must be connected to the serial port.

Audio Line-Out Port

You can connect various audio devices to this audio jacks. Connect headphones or powered speakers to the line-colored lineout connector.

Line-Out port
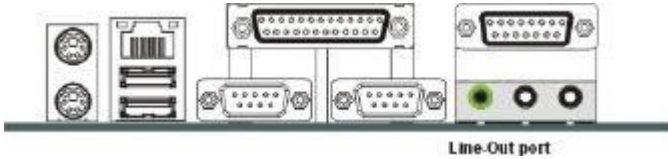
Audio Line-In Port

You can connect a tape player or another audio source to the light blue Line-in connector to record audio on your computer or to play audio through your computer' s sound chip and speakers.

Line-In port
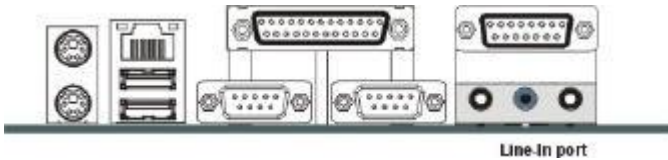
Audio Mic-In Port

You can connect a microphone to the pink microphone connector to record audio to your computer.

Mic-In port
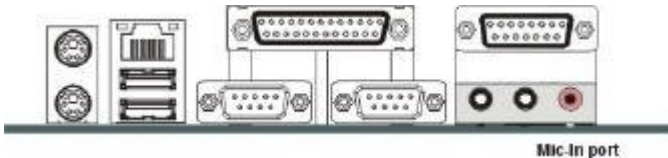
Audio MIDI/GAME Port

You can connect a joystick, game pad, or other game device to the gold 15-pin game port. You can also connect a MIDI device for playing or editing audio.

MIDI/GAME port
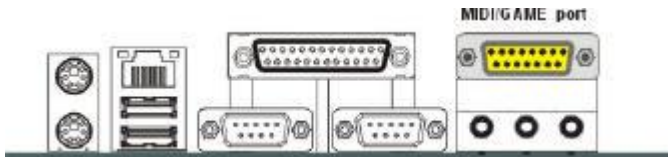
3.5.10. Power Supply Connector (PW2)

The ATX power supply has a single lead connector with a clip on one side of the plastic housing. There is only one way to plug the lead into to ATX power connector. Press the lead connector down until the clip snaps into place and secures the lead onto the connector.
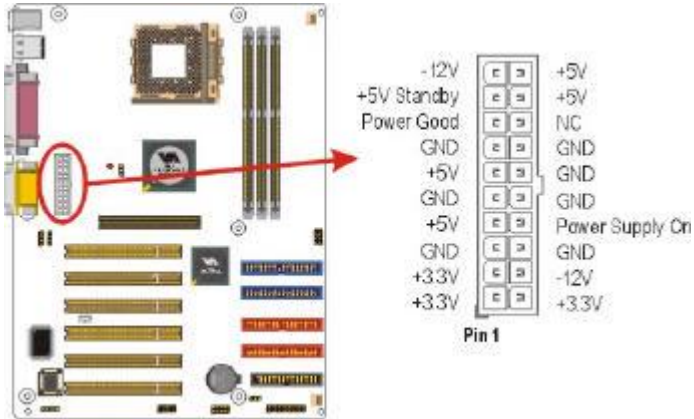
Warning: *Incorrect installation of the power supply could result in serious damage to the mainboard and connected peripherals. Make sure the power supply is unplugged from the AC outlet before connecting the leads from the power supply.*

3.5.11. CPU/System Fan Power Supplies

There are three fan connectors on the mainboard for the cooling fans. The connectors support fans of 12VDC/500mAMP (six watt) or less. When the system goes into sleep state, fans should be shut down to eliminate audible noise and reduce power consumption. You can monitor the fan speed by way of the VT8235 Chip (providing the fan comes with a tachometer output).
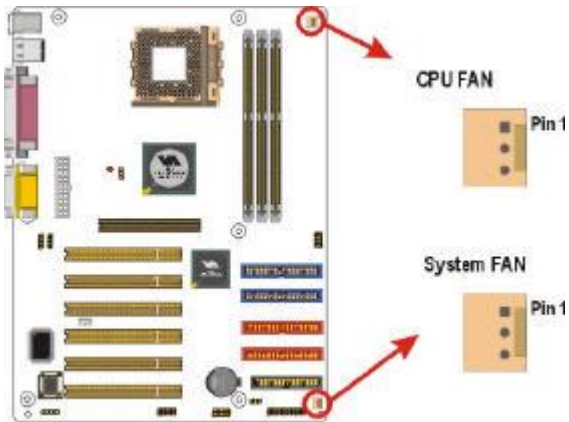
3.5.12. PCI Connector (PCI1~PCI6)

PCI connector is one of equipment interfaces that connects peripheral equipment and motherboard. Its transfer speed is faster than traditional ISA. PCI is the mainstream transfer interface for extra adopter.

3.5.13. CPU Thermal Diode (D15)

When CPU temperature is overhead the system will shutdown. Red LED of CPU thermal diode will light up. You should press "power button" over 4 seconds, then system can be booted up.

CPU Thermal Diode
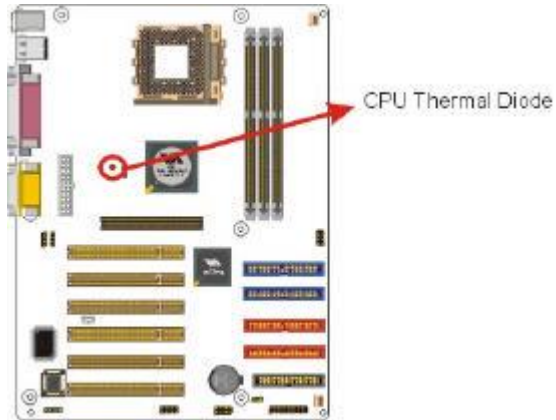
3.6. Installing the CPU

3.6.1. Before You Begin

1. Be sure that your processor kit includes the following items:

    One processor with the fan or heat sink attached
    One power cable (for CPU with cooling fan attached)

2. Place the mainboard on a workbench (not in a chassis). Be sure
    that the mainboard is empty (that is, no DIMMs, cables, or
    cards are installed) and that the holes for the fan or heat sink
    support pegs are empty.

3.6.2. Installation Procedure

1. On the motherboard, identify the CPU Socket 462 and the
    cooling fan power supply connector CPU FAN.
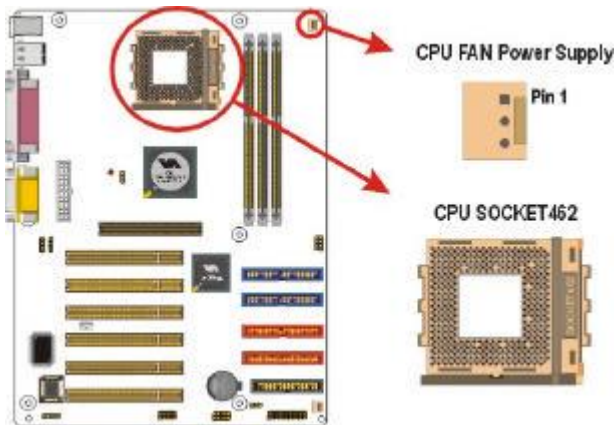
2. Push the CPU socket level slightly to the side and then raise it
    as far as it can go.

3. Identify the pin-1 corner of the Socket 462. The pin-1 corner is on the same side as the locking lever, as shown in the illustration below.
4. Identify the pin-1 corner of the processor (the pin-1 corner on the processor has a beveled edge).
5. Align the pin-1 corners and drop the processor into the Socket462. The processor should drop into place without any force. If it doesn' t seat properly, check that you have the pin-1 corner in the correct position.
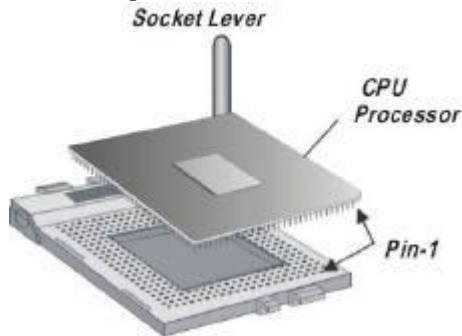
6. Swing the locking lever down to lock the processor in place and latch the lever under the catch on the side of the socket.
7. Plug the cable from the heat sink/cooling fan assembly into the processor cooling fan power supply CPU FAN.
8. Configuration of the processor is carried out using the system setup utility as described in Chapter 4. Configure the processor the first time you turn on the assembled computer.

3.6.3. Removing the Processor

First, remove the mainboard from the chassis. To remove the processor from the mainboard, follow these steps:
1. Disconnect the fan power cable from the mainboard.
2. Push the CPU socket lever slightly to the side and then raise it as far as it can go. You will feel a resistance as the processor is freed from the socket.
3. Remove the processor.

3.7. Installing System Memory

Maximum system memory supported by the mainboard is 3GB.

The mainboard has two DIMM Sockets. Memory can be installed using 184-pin DDR SDRAM DIMM memory modules. These are no jumper settings required for the memory size or type, which is automatically detected by the BIOS.
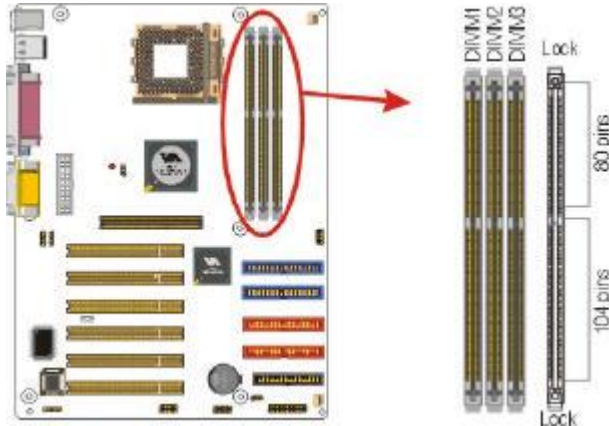
You must use 2.5V DIMMs in the mainboard. To determine the DIMM type, check the notches on the DIMMs.
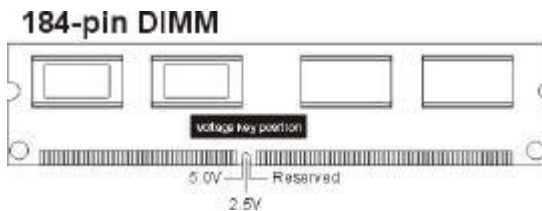
Install the 184-pin DDR SDRAM modules in any combination as follows:

Bank 0 (DIMM1)	64MB/128MB/512MB/1GB
Bank 1 (DIMM2)	64MB/128MB/512MB/1GB
Bank 2 (DIMM3)	64MB/128MB/512MB/1GB
Total System Memory	64MB ~ 3GB

3.8. Setting Jumpers

Refer to the following illustration and instructions to set the jumpers on your mainboard.

3.8.1. Clear CMOS Jumper (JBAT1)

You may need to clear the CMOS if your system cannot boot up because you forgot your password, the CPU clock setup is incorrect, or the CMOS setting need to reset to default values after the system BIOS has been updated.

Refer to the following solutions to reset your CMOS setting:

Solution A

1. Power off the system and disconnect the power cable.
2. Place a shunt to short pin 2 and pin 3 of JBAT1 for five seconds.
3. Place the shunt back to pin 1 and pin 2 of JBAT1.
4. Power on the system.

Solution B

If the CPU clock setup is incorrect, you may not be able to boot up .
In this case, follow these instructions:

1. Turn the system off, then on again.   The CPU will
   automatically boot up using standard parameters.
2. As the system boots, enter BIOS and set up the CPU clock.

---

*Note: If you are unable to enter BIOS setup, turn the system on
            and off a few times.*

3.8.2. CPU FSB (JCK1)

The 3-pin header is used for CPU FSB. You can set "100 MHz" or
"133 MHz", "166 MHz".

3.8.3. DIMM Voltage (JV1)

The 8-pin header is used for DIMM voltage. You can set "2.5V",
"2.6V", "2.7V", "2.8V".

3.9. Auto Power On

After losing AC power, the system will not turn on automatically
when the power comes back unless you set the options in BIOS.

This concludes Chapter 4 covers the BIOS setup program.

4. BIOS Configuration

After the hardware configuration of the mainboard is finished, and the system hardware has been assembled, the system may be powered up. At this point, CMOS setup should be run to ensure that system information is correct.

The mainboard employs the latest Award BIOS CMOS chip with support for Windows Plug and Play. This CMOS chip contains the ROM Setup instructions for configuring the mainboard's BIOS. The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

Using easy-to-use pull down menus, you can configure such items as:

> ▶ Hard drives, diskette drives, and peripherals
> ▶ Video display type and display options
> ▶ Password protection from unauthorized use
> ▶ Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup's options, and second, to make settings appropriate for the way you use the computer. This chapter provides clear explanations for all Setup options.

This program should be executed under the following conditions:

▶ When changing the system configuration
▶ When a configuration error is detected by the system and you are prompted to make changes to the Setup program
▶ When resetting the system clock
▶ When setting the CPU clock speed so that it automatically runs either fast or slow
▶ When redefining the communication ports to prevent any con flicts
▶ When making changes to the Power Management configuration
▶ When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

4.1. Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

1. If the error occurs before the display device is initialized, a series of beeps will be transmitted.
2. If the error occurs after the display device is initialized, the screen will display the error message.

After the POST routines are completed, the following message appears:

"Press DEL to enter SETUP"

To access the AWARD BIOS SETUP program, press the **<DEL>** key
to display the **"CMOS SETUP UTILITY"** screen:
These screens provide access to the utility' s various functions.
Listed below are explanations of the keys displayed at the bottom of the
screen:

```
                 Phoenix - AwardBIOS CMOS Setup Utility
┌──────────────────────────────────────────────────────────────────────┐
│  ► Standard CMOS Features           ► Frequency/Voltage Control        │
│  ► Advanced BIOS Features             Load Fail-Safe Defaults          │
│  ► Advanced Chipset Features          Load Optimized Defaults          │
│  ► Integrated Peripherals             Set Supervisor Password          │
│  ► Power Management Setup              Set User Password                │
│  ► PnP/PCI Configurations             Save & Exit Setup                │
│  ► PC Health Status                   Exit Without Saving              │
├──────────────────────────────────────────────────────────────────────┤
│  Esc : Quit        F9 : Menu in BIOS        ↑ ↓ → ←   : Select Item    │
│  F10 : Save & Exit Setup                                               │
├──────────────────────────────────────────────────────────────────────┤
│                    Time, Date, Hard Disk Type...                       │
└──────────────────────────────────────────────────────────────────────┘
```

Key	Function
Esc	**Escape key:** Exits the current menu
↑↓→←	**Cursor keys:** Scroll through the items on a menu
+/-/PU/PD	**Plus, minus, Page Up and Page Down keys:** Modify the selected field' s values
F10	**F10 key:** Saves the current configuration and exits setup
F1	**F1 key:** Displays a screen that explains all key functions
F5	**F5 key:** Loads previously saved values to CMOS
F6	**F6 key:** Loads a minimum configuration for troubleshooting
F7	**F7 key:** Loads optimum set of values for peak performance

4.2. Standard CMOS Features

Standard CMOS Features is the same for all three chipsets. Selecting **"Standard CMOS Features"** on the main program screen displays the following menu:

The Standard CMOS Setup utility is similar for all three chipsets and is used to configure the following features:

Date : Month, Day, Year

Time : Hour, Minute, and Second. Use 24 Hour clock format (for PM numbers, add 12 to the hour, you would enter 4:30 p.m. As 16:30).

▶ **IDE Primary/Secondary Master/Slave :** If you leave this item at "Auto," the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to "Manual" and then manually configure the drive by entering the characteristics of the drive in the items below (Capacity, Cylinder, Head, Precomp, etc.). Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to "None."

Drive A and Drive B : Select the type of floppy disk drive installed in your system. The options are:

- 360K, 5.25 in
- 1.2M, 5.25in
- 720K, 3.5in
- 1.44M, 3.5in
- 2.88M, 3.5in
- None" (Not Installed)

The "Not Installed" option could be used as an option for diskless workstations.

Video : Set this field to the type of graphics card installed in your system. If you are using a VGA or higher resolution card, choose the "EGA/VGA" option. The options are:

- MONO
- CGA 40
- CGA 80
- EGA/VGA

Halt On : This setting determines which type of errors will cause the system to halt during boot up. The options are:

- All Errors
- No Errors
- All, But Keyboard
- All, But Diskette
- All, But Disk/Key".

Base/Extended/Total Memory : These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

After you have made your selections in the Standard CMOS Setup screen, press **<ESC>** to go back to the main screen.

4.3. Advanced BIOS Features

Selecting **"Advanced BIOS Features"** on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items without introducing fatal errors to your system. Note that the page has a scroll-bar to scroll down to more items.

The following explains the options for each feature:

Virus Warning : When enabled, any attempt to write to the boot sector or partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus free, bootable floppy diskette to reboot and clean your system. The default setting is "Disabled".

CPU Internal Cache : This Setting enables the CPU internal cache. The default setting is "Enabled."

External Cache : :This setting enables the Level 2 cache.The default setting is "Enabled."

CPU L2 Cache ECC Checking : This item enables or disables ECC(Error Correction Code) error checking on the CPU cache memory. The default setting is "Enabled".

Processor Number Feature : Some new processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number,set this item to Disabled to suppress the processor number. The default setting is "Enabled."

Quick Power On Self Test : This will skip some diagnostic checks during the Power On Self Test (POST) to speed up the booting process. The default setting is "Enabled".

First/Second/Third Boot Device : Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time. The default settings are "Floppy", "HDD-0", or "LS120" respectively.

Boot Other Device : If you enable this item, the system will search all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices. The default setting is "Enabled".

Swap Floppy Drive : If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A. The default setting is "Disabled".

Boot Up Floppy Seek : If this item is enabled, it checks the geometry of the floppy disk drives at start-up time. You don' t need to enable this item unless you have an old diskette drive with 360K capacity. The default setting is "Disabled".

Boot Up NumLock Status : If set to "Off," the cursor controls will function on the numeric keypad. The default setting is "On".

Gate A20 Option : This option accesses memory above 1 MB using the fast gate A20 line when set to "Fast" (default). The other option is "Normal".

Typematic Rate Setting : If set to "Enabled," enables you to set the Typematic Rate and Typematic Delay. The default setting is "Disabled".

▶ **Typematic Rate (Chars/Sec) :** This setting controls the speed at which the system registers repeated keystrokes. The choices range from 6 to 30 Chars/Sec. The default setting is "6" Chars/Sec.

▶ **Typematic Delay (Msec) :** This setting controls the time between the display of the first and second characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms. The default setting is "250" ms.

Security Option : This setting controls the password feature. The options are "Setup" and "System." Selecting "Setup" will protect the configuration settings from being tampered with. Select "System" if you want to use the password feature every time the system boots up. The default setting is "Setup." You can create your password by using the "SUPERVISOR/USER PASSWORD" utility in the main program screen.

MPS Version Control For OS : Selects the operating system multiprocessor support version. The default setting is "1.4".

OS Select For DRAM > 64MB : Set to "OS2" if the system memory size is greater than 64 MB and the operating system is OS/2. The default setting is "Non-OS2".

Video BIOS Shadow : This function, when enabled allows VGA BIOS to be copied to the system.

Small Logo (EPA) Show : Enables and disables the EPA logo when booting up. The default setting is "Disabled".

After you have made your selections in the BIOS Features Setup screen, press **<ESC>** to go back to the main screen.

4.4. Advanced Chipset Features

Selecting **"Advanced Chipset Features"** on the main program
screen displays this menu:

This option displays a table of items that define critical timing
parameters of the mainboard. You should leave the items on this page
at their default values unless you are very familiar with the technical
specification of your system hardware. If you change the values
incorrectly, you may introduce fatal errors or recurring instability
into your system.

▶ **DRAM Clock/Drive Control**

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

Current FSB Frequency : This item display the front side bus (FSB) frequency. This is a display-only item. You cannot make changes to this field.

Current DRAM Frequency : This item display the front side bus (DRAM) frequency. This is a display-only item. You cannot make changes to this field.

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

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

- **DRAM CAS Latency :** This item enables you to optimize the speed at which data is accessed in a column by defining CAS latency time. The CAS latency defines the time delay (in CLKs) before SDRAM starts a read command after receiving it. Because reading data in a row is twice as fast, reducing this number can increase performance at the expense of stability. We recommand that you leave this item at the default value. The default setting is "1.5".

- **Bank Interleave :** Enable this item to increase memory speed. When enabled, separate memory banks are set for odd and even addresses and the next byte of memory can be accessed while the current byte is being refreshed.

- **Precharge to Active(Trp) :** This item allows you to precharge Command to Active Command Period. The Choice: 2T or 3T

- **Active to Precharge(Tras) :** This item allows you to Active Command to Precharge Command Period. The Choice: 5T or 6T

- **Active to CMD(Trcd) :** This item allows you to Active to CMD. The Choice: 2T or 3T

DRAM Burst Length : This item describes which burst lengths are supported by the devices on the mainboard.

Dram Queue Depth : This item allows you to select DRAM Queue Depth level. The options are "4 level", "3 level" and "2 level".

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

Write Recovery Time : These registers are normally set at system initialization time and not accessed after during normal system operation.

DRAM tWTR : DDR 400 tWIR timing control. The options are "1T" and "3T".

Press <**Esc**> to return to the Advanced Chipset Feature page.

▶ **AGP & P2P Bridge Control**

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

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

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

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

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

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

AGP Master 1 WS Write : This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, providing greater stability.

AGP Master 1 WS Read : This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing greater stability.

DBI Output for AGP Trans : AGP 8X transfer mode only. The options are "Disabled" and "Enabled".

Press <**Esc**> to return to the Advanced Chipset Feature page.

▶ **CPU & PCI Bus Control**

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

PCI1 Master 0 WS Write : When this item enabled, writing to the PCI bus is executed with zero wait state.
The Choice: Enabled or Disabled.

PCI2 Master 0 WS Write : When this item enabled, writing to the AGP bus is executed with zero wait state.
The Choice: Enabled or Disabled.

PCI1 Post Write : This Item enable/disable AGP post write function, which means when CPU accessing the AGP data, the chipset can queue the instruction when the AGP bus is busy,then write the data when AGP bus is busy,then write the data when AGP bus is available.
The Choice:Enabled or Disabled.

PCI2 Post Write : This Item enable/disable AGP post write function, instruction when the AGP bus is busy,then write the data when AGP bus is busy,then write the data when AGP bus is available.
The Choice:Enabled or Disabled.

VLink 8X Support : North bridge supports a high speed 8-bit 8X 66MHz Quad data transfer interconnect (V-Link) to the south bridge.

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

Press <**Esc**> to return to the Advanced Chipset Feature page.

Memory Hole : If Set to "Enabled", when the system memory size is equal to or greater than 16M bytes, the physical memory address from 15M to 16M will be passed to PCI or ISA and there will be a 1 MB hole in your system memory. This option is designed for some OS with special add-in cards which need 15-16 MB memory space. The default setting is "Disabled."

System BIOS Cacheable : When set to "Enabled" (default), the System BIOS will be cached for faster execution.

Video RAM Cacheable : When enabled, the graphics card's local memory will be cached for faster execution. However, if any program writes to this memory area, a system error may result. The default is "Enabled."

CPU Vcore Select : You can select CPU core voltage. The options are default 1.1~1.85.

Press <**Esc**> to return to the previous screen.

4.5. Integrated Peripherals

Selecting **"Integrated Peripherals"** on the main program screen displays field.

This option displays a list of item that defines the operation of peripheral components on the system' s input/output ports.

USB 2.0 Support : You can select Enabled or Disabled USB2.0.

▶ **VIA OnChip IDE Device**

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

OnChip IDE Channel 0 : The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the primary IDE interface; select Disabled to deactivate this interface
The choice: Enabled or Disabled.

OnChip IDE Channel 1 : The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the primary IDE interface; select Disabled to deactivate this interface
The choice: Enabled or Disabled.

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

Primary/Secondary Master/Slave PIO : The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, or Mode 4.

Primary/Secondary Master/Slave UDMA : Ultra DMA/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If both of your hard drive and your system software support Ultra DMA/100, select Auto to enable BIOS support. The choice: Auto or Disabled.

Press <**Esc**> to return to the Integrated Peripherals screen.

▶   **VIA OnChip PCI Device**

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

VIA-3058 AC97 Audio : Auto and disabled the onboard audio chip. Disable this item if you are going to install a PCI audio add-on card.

VIA-3043 OnChip LAN : This item allows you to control the onboard LAN.
The choice: Enabled or Disabled.

Press <**Esc**> to return to the Integrated Peripherals screen.

▶ **Super IO Device**

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

Onboard FDC Controller : This option enables the onboard floppy disk drive controller.

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

Onboard Serial Port 2 : This option is used to assign the I/O address and address and interrupt request (IRQ) for onboard serial port 2 (COM2).

UART Mode Select : This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. UART Mode Select enables you to select the infrared communication protocol-Normal (default), IrDA, or ASKIR. IrDA is an infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

RxD , TxD Active : Define the voltage level for Infrared module RxD(receive) mode and TxD(transmit) mode. This setting has to match the requirements of the infrared module used in the system. The options are :

- Hi, Lo (default)
- Lo, Hi
- Lo, Lo
- Hi, Hi

IR Transmission Delay : When set to "Enabled"(default), utilizes the capability of the mainboard to allow faster infrared transmission rates. The options are "Enabled" and "Disabled"

UR2 Duplex Mode : This field is available when UART 2 Mode Selects is set to either ASKIR or IrDA. This item enables you to determine the infrared (IR) function of the onboard infrared chip. The option are "Full" and "Halt" (default).Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

Use IR Pins : Use this item to set the IR pins. The options are "IR-Rx2Tx2"(default) and "RxD2, TxD2".

Onboard Parallel Port : This option is used to assign the I/O address for the onboard parallel port. The options are:
- 378 / IRQ7 (default)
- 278 / IRQ5
- 3BC / IRQ7
- Disabled (disables the onboard parallel port).

Parallel Port Mode : There are four options: "SPP" (Standard Parallel Port), "EPP" (Enhanced Parallel Port), "ECP" (Extended Capabilities Port) and "ECP+EPP" and "Normal". Change the mode from "SPP"(default) to the enhanced mode only if your peripheral device can support it.

EPP Mode Select : Sets the EPP specification. There are two option "EPP1.7"(default) and "EPP1.9".

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

Game Port Address : Enables you to specify the I/O address of the game port. Options are "Disabled","201"(default), and "209".

Midi Port Address : Enables you to specify the I/O address of the MIDI port. Options are "Disabled","330"(default), and "300" and "290".

Midi Port IRQ : Enables you to specify the IRQ address of the MIDI port if installed. Option are "5" and "10"(default).

Press <**Esc**> to return to the Integrated Peripherals screen.

Init Display First : Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the mainboard.

OnChip USB Controller : Enable this item if you plan to use the Universal Serial Bus ports on this mainboard.

USB Keyboard/Mouse Support : Enable this item if you plan to use a USB keyboard/mouse.

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

After you have mode your selections in the BIOS Features Setup screen, press <ESC> to go back to the main screen.

4.6. Power Management Setup

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

ACPI Function : When set to "Enabled", turns on the ACPI Function . The default setting is "Disabled".

Note: ***ACPI (Advanced Configuration and Power Interface) is a power management specification that makes hardware status information available to the operating system. ACPI enables a PC to turn its peripherals on and off for improved power management. It also allows the PC to be turned on and off by external devices, so that mouse or keyboard activity wakes up the computer.***

ACPI Suspend Type : Use this item to define how your system suspends. If set to S1(POS) (default), the suspend mode is equivalent to a software power down. If set to S3(STR), the suspend mode is a suspend to RAM the system shuts down with the exception of a refresh current to the system memory.

Power Management Option : This item acts like a master switch for the power-saving modes and hard disk timeout. If this item is set to Max Saving, power-saving modes occur after a short timeout. If this item is set to Min Saving, power-saving modes occur after a your own timeouts for the power-saving modes.

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

Suspend Mode : The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Power Management event is detected. Options are from "1 Min" to "1 Hour" and "Disable." The default is "Disable."

Video Off Option : This option define if the video is powered down when the system is put into suspend mode.

Video Off Method : This setting controls the video off method in power saving mode. The default setting is "V/H SYNC+Blank" which disables V/H SYNC signals and blanks the screen. Other options are "DPMS" and "Blank Screen." The "DPMS" option allows the BIOS to control the video card if it has the DPMS (Display Power Management System) feature. The "Blank Screen" option is used when you do not have a "Green" monitor.

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

Soft-Off by PWRBTN : When set to "Instant-Off" (default), pressing the power button will turn off the system power. When set to "Delay 4 Sec." you have to press the power button and hold it for more than 4 seconds to turn off the system power. Otherwise, the system just goes into suspend mode. The options are "Instant-Off" and "Delay 4 Sec".

Run VGABIOS if S3 Resume : The options are "Auto", "Yes", "No". This item sets to run VGA BIOS when S3 resume.

▶ **IRQ/Event Activity Detect**

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

PS2KB Wakeup Select : This Option allows you to set hot key combination to turn on the system by keyboard.

PS2KB /PS2MS Wakeup from S3/S4/S5 : This option enables you to allow keyboard or mouse activity to awaken the system from power saving mode.

USB Resume from S3 : When set to Enabled, the system power will resume the system from a power saving mode if there is any USB port activity.

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

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

HDD & FDD : When set to "On," any activity from one of the listed system peripheral devices wakes up the system..

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

Power On by PCI Card : Use the item to enable PCI activity to wakeup the system from a power saving mode.

Modem Ring Resume : When set to "Enabled," any activity on the Modem port will wake up the system from a power saving mode. The options are "Enabled" and "Disabled" (default).

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

- **Date(of Month) :** This item selects the alarm date.
  Key in a DEC number:Min=1, Max=31.

- **Resume Time(hh:mm:ss) :**
  This item selects the alarm Time.
  [hh]
  Key in a DEC number:Min=0, Max=23.
  [mm/ss]
  Key in a DEC number:Min=0, Max=59.

▶ **IRQs Activity Monitoring**

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

Primary INTR
Press Enter to on/off the wake up ability of a specified IRQ.
The choice: OFF, or ON.

In the following is a list of IRQ's, Interrupt ReQuests,
which can be exempted much as the COM ports and LPT
ports above can. When an I/O device wants to gain the
attention of the operating system, it signals this by
causing an IRQ to occur.When the operating system is
ready to respond to the request,it interrupts itself and
performs the service.When On mode exist, activity will
neither prevent the system
from going into a power management mode nor awaken it.

IRQ3 (COM 2)
IRQ4 (COM 1)
IRQ5 (LPT 2)
IRQ6 (Floppy Disk)
IRQ7 (LPT 1)
IRQ8 (RTC Alarm)
IRQ9 (IRQ2 Redir)
IRQ10 (Reserved)
IRQ11 (Reserved)

IRQ12 (PS / 2 Mouse)
IRQ13 (Coprocessor)
IRQ14 (Hard Disk)
IRQ15 (Reserved)
The choice: Disabled or Enabled.

Press <**Esc**> to return to the previous screen.

4.7. PnP/PCI Configuration

This option displays a table of items that configures how PnP (Plug and Play) and PCI expansion cards operate in your in your system. Both the ISA and PCI buses on the Mainboard use system IRQs (Interrupt Requests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility; otherwise, the mainboard will not properly.

Selecting PnP/PCI Configurations on the main program screen displays this menu:

PNP OS Installed : Setting this option to Yes allows the PnP OS (instead of BIOS) to assign the system resources such as IRQ and I/O address to the ISA PnP device. The default setting is No.

Reset Configuration Data : The system BIOS supports the Plug and Play feature so the resources assigned to each peripheral have to be recorded to prevent them from conflicting. The location to store the assigned resources is called ESCD (Extended System Configuration Data) which is located in the system flash EEPROM. If this option is set to "Disabled," the ESCD will update automatically when the new configuration varies from the last one. If set to "Enable," the ESCD will be cleared and updated and then this option will automatically be set to "Disabled."

Resources Controlled By : The default setting is "Manual" which allows you to control IRQs and DMAs individually. The other option is "Auto" which will detect the system resources and automatically assign the relative IRQs and DMAs for each peripheral.

● **IRQ Resources :** The submenu allows you to individually assign an interrupt type for interrupts IRQ3 to IRQ15.

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

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

Press <**Esc**> to return to the previous screen.

4.8. PC Health Status

On mainboards the support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures and fan speeds:

Selecting "PC Health Status" on the main program screen displays this menu:

CPU Warning Temperature: Since the mainboard support CPU temperature monitoring and overhear alert. This item allows the user to set the threshold of CPU warning temperature. When CPU temperature over the threshold, system will slow down clock to prevent CPU damage.
The Choice:Disabled,50 C/122 F,53 C/127 F,56 C/133 F,60 C/140 F, 63 C/145 F,66 C/151 F,70 C/158 F

- Current System Temp
- Current CPU Temperature
- Current CPUFAN Speed
- Current System FAN Speed
- Vcore
- Vagp
- + 5 V
- +12 V
- -12 V

- - 5 V
- VBAT(V)
- 5VSB(V)

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

After you have made your selections in the PC Health Status Setup, press <**Esc**> to go back to the main program screen.

4.9. Frequency/Voltage Control

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

Auto Detect DIMM/PCI Clk : When this item is enabled, BIOS will disable the clock signal of free DIMM and PCI slots.

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

CPU Host/PCI Clock: This item can be used to set the system bus frequency for the installed processor. The options are:

- Default (default)
- 66/33 MHz
- 70/35 MHz
- 75/38 MHz
- 80/40 MHz
- 83/42 MHz
- 100/33 MHz
- 103/34 MHz
- 105/35 MHz

- 110/37 MHz
- 115/38 MHz
- 133/33 MHz
- 137/34 MHz
- 140/35 MHz
- 145/36 MHz
- 150/38 MHz

CPU Ratio : Use this item to select a multiplier for the system front side bus (FSB) frequency. The value of the multiplier must be set so that: Multiplier x Front side Bus Frequency = CPU Clock Speed.

For example, if you have a processor that is rated to run at 450 MHz and the system in running a front side bus frequency of 100 MHz, you should select a multiplier of 4.5 so that:

4.5 (Multiplier) x 100 MHz (front side bus) = 450 MHz (CPU clock)

After you have made your selections in the Frequency / Voltage Control Setup, press the <**Esc**> to return to the previous screen.

4.10. Load Fail-Safe Defaults Option

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

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

4.11. Load Optimized Defaults

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

4.12. Set Supervisor/User Passwords

The **"Supervisor/User Password"** utility sets the password.

The mainboard is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters.

Press **\<Enter\>** after entering the password. At the next prompt, confirm the new password by retyping it and pressing **\<Enter\>** again.

To disable the password, press **\<Enter\>** instead of entering a new password when the "Enter Password" dialog box appears. A message appears confirming that the password has been disabled.

If you have set supervisor and user passwords, only the supervisor password allows you to enter the BIOS Setup Program.

> *Note:* **If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt on jumper JP12 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP12.**

4.13. Save & Exit Setup Option

Selecting this option and pressing \<Enter\> will save the new setting information in the CMOS memory and continue with the booting process.

4.14. Exit Without Saving

Selecting this option and pressing \<Enter\> will exit the Setup Utility without recording any new values or changing old ones.

This concludes Chapter 4. Chapter 5 describes the drivers and utility programs that are packaged with the mainboard.

5. Driver and Utility

5.1 Flash Utility

The BIOS of the A7F156 mainboard can be upgraded by using a
Flash utility. A new version of the BIOS can be downloaded from the
factory's BBS and Web site. The system BIOS is stored in a 1 M-bit
Flash EEPROM that can be erased and reprogrammed by the Flash
utility.

There are two files in the D:\DRIVER\FLASH directory :

- FLASH.EXE   Flash utility for AWARD BIOS upgrade
- README.TXT   Text File of instructions

The Flash utility will not work with any memory manager software
running in the system. In order to make sure no memory manager
software is running, boot your system from a bootable floppy diskette
which does not contain CONFIG.SYS and AUTOEXE.BAT files. If
you are using MS-DOS 6.x, you can press the <F5> function key
when the "Starting MS-DOS." Message appears on the screen to by
pass the CONFIG.SYS and AUTOEXEC.BAT.

5.2. CD Driver Overview

To start your mainboard CD disc, insert into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click or run D:\ Autorun.exe (assuming that your CD-ROM drive is drive D:)

The A7F156 CD include
1. Install Mainboard Software (VIA)
2. Install Audio Device Software (AC97)

Click the links to install the listed software, read the online manual, read a list of the mainboard' s features, or browse to the Freetech homepage.

You can also browse the CD and install the software manually from Windows Explorer We recommend that you install all of the supplied software and drivers item for maximum performance.

This folder has 4 in 1drivers for Windows NT/ME/XP/2000/98/95.

The Installation Steps:
1. Insert the manufacturer's CD-ROM into your CD-ROM drive.
2. Click **Driver** Install.
3. Select the folder **Driver\Via\4in1**driver for WIN NT/ME/XP /2000/98/95 to start the installation:
4. Follow the instructions on the screen to complete the installation. After setup is completed, you need to restart the computer.

Software and drivers are provided for the ALC650 codec sound system that is integrated on this mainboard. The ALC650 codec allows the system to generate optimal sound effects. Drivers are provided for Windows NT/ME/XP/2000/98/95.

The manual Installation Steps:
1. Insert the manufacturer's CD-ROM into your PC's CD-ROM drive.
2. Click **Driver** Install.
3. Select the folder **Driver\Sound\ALC** driver for WIN NT/ME /XP /2000/98/95 to start the installation:
4. Follow the instructions on the screen to complete the installation. After setup is completed, you need to restart the computer.

5.3. Online Services

Flexus Computer Technology, under the Freetech brand name, has consistently won recognition for excellence in the design and manufacturing of high quality mainboards!

Our products are globally recognized among the leading cost-performance mainboards in the industry today and we are a certified ISO-9002 manufacturer!

Our customers are our partners! Flexus practices partnership service "not customer service"! Our attention to partnership service is aggressive and proactive, by using our global partnership service system. We create value for our partners in the high-end market and we are always ready to see to our partners' requirements, because at Flexus, we believe our partners' success is our success!

If you need technical support, information on products, or updated versions of the BIOS, drivers and utilities access the Internet and point your browser to:

www.freetech.com