Main Board
User's Manual

Table of Contents

Chapter 1

Introduction

1-1 Product Specifications

❑ **Processor**
- - Supports up to Socket-370 Intel processors up to866MHz
- - Supports 66/100/133 MHz system clock speeds
- - High efficiency **Switching Power Module** (VRM v8.4 compliant)

❑ **Chipset**
- - Intel Solano GMCH+ICH1(2)+FMH three AGPset with integrated 2D/3D graphics controller

❑ **DRAM Memory**
- - Three 3.3V 168-pin DIMM sockets support up to 512MB
- - Supports PC-100/133 DIMMs at 100/133MHz FSB Freq.

❑ **Expansion Slots**
- - One **CNR** slot for Soft audio modem riser only
- - Six 32-bit PCI slots with full master sharing controller (Rev 2.2 compliant)

❑ **4Mb Boot-Block Flash ROM**
- - Intel 4Mb FWH(Firmware Hub)
- - Award System BIOS, supports PnP, APM, DMI,ACPI & Multi-device booting features(floppy, LS120, CD-ROM, HDD(IDE, SCSI), ZIP-ATAPI etc.)
- - **BIOS Wonder** technology including ChipAway Virus, Flash BIOS Write Protect, Embedded Flash Utility, Built-in **Hard Disk Backup firmware**
- - **Optional TWIN BIOS** with Instant BIOS Recovery for triple BIOS insurance

❑ **Embedded Ultra DMA-66 PCI IDE controller**
- - Supports two IDE ports up to 4 ATAPI devices
- - Supports up to PIO Mode 4 up to 16.6MBps, Multi Mode 4 up to 66MBps with bus mastering
- - Bus Master software drivers for all well known multi-task operating systems

❑ **Embedded Super I/O Functions**
- - W83627 LPC I/O chip with System Monitor Hardware
- - One parallel supports SPP/ECP/EPP and two serial (16550A compliant) ports
- - One floppy disk drive connector supports up to 2.88MB, Japanese 3- Mode and 1Mbps transfer rate
- - Supports HPSIR, ASKIR and CIR function shared with 2nd serial port
- - Supports Game/MIDI port (for soft-audio)

❒ **Double Stack Back-Panel I/O Connectors with PC99 Colored Codes**
- PS/2 Mini-DIN keyboard and mouse ports
- Two Channel USB ports
- Two D-SUB 9-pin male serial ports
- **One-15-pin DSUB female VGA port**
- One D-SUB 25-pin female Printer port
- One D-SUB 15-pin female Game/MIDI port
- Audio Line-out, Line-in and Mic-in jacks

❒ **Embedded PCI Audio Subsystem**
- Built-in Sample Rate Converter to ensure all internal operation at 48KHz
- Full-duplex operation for simultaneous recording and playback
- Built-in FM-emulation music synthesizer
- External high quality AC`97CODEC provides 90dB+ SNR CD quality audio
- Using wavetable data on the system memory
- Hardware SoundBlaster Pro for Windows DOS box and real-mode DOS legacy compatibility
- Complete software driver support for Win95/98/NT

❒ **Optional External PCI Audio Subsystem**
- **Creative 5880** audio chip
- Advanced 64-Voice Wavetable synthesizer
- Programmable independent sample rate form 4KHz to 48KHz for record and playback
- Full-duplex operation for simultaneous recording and playback
- Supports MS DLS (Downloadable sample) level-1 technology with limitless variety of instrument samples using PC RAM
- Up to 8MB wavedata provides 128 GM, GS and WT-32 compatible instruments and 10 drum kits
- Supports HRTF 3D positional audio with MSDS, DS3D, DirectMusic, Aureal A3D and Creative EAX(Environment Audio Extensions) APIs
- Supports S/PDIF-out for digital audio (for example compressed AC3 data)
- 4-channel speaker audio support is easy to build up a Home Theater environment
- PCI v2.1 compliant and full Legacy DOS software compatible

❒ **Embedded USB Controller**
- USB host controller (UHCI v1.0 compliant) with Root Hub

❒ **Embedded 3D AGP VGA**

- 3D Hyper pipelined architecture with PDP(Parallel Data Processing), PPI (Precise Pixel Interpolation)
- 3D graphics visual enhancements
- Texture color keying/ Chroma keying can be globally enabled or disabled
- Integrated 24-bit 230MHz RAMDAC
- Full 2D H/W acceleration with up to 1600 x 1200 in 8-bit color at 85Hz refresh
- Motion Video acceleration for 30fps software DVD
- Digital video output
  * 1024x768 85MHz Flat Panel Monitor/ Digital CRT Interface
  * Use an external TV encoder for NTSC and PAL TV out support
   * Independent gamma correction, saturation, brightness and contrast for overlay
- Optional LTI-II slot for Panel Link LCD monitor and TV out

❏ **Embedded System Monitoring Hardware Subsystem**
- 5 external voltage inputs for CPU Vcore, 3.3v, 1.5v, +/-12v, +5v, 5Vsb, Vbat
- 2 temperature inputs VT1 for System temperature VT2 for CPU thermal diode
- 4 VID inputs pin for CPU Vcore identification
- 2 Fan speed (CPU and System) monitoring and control with ON/OFF control in suspend

❏ **Board Dimensions**
- Standard ATX form factor, 305mm x 220mm, 4 Layers

❏ **Switching Power Supply Requirement**

Output Voltage	Max. Regulation Requirement	Min.Current Requirement(Amps)
+12V	+/- 5%	5.5
+5V	+/- 5%	15
+3.3V	+/- 5%	15
-5V	+/- 10%	0.5
-12V	+/- 10%	0.5
+5VSB	+/- 5%	0.75

Table 1-1

⚠ 3.3V at 15Amps is necessary to guarantee full loading operation because some AGP cards and memory modules have high current consumption.

1-2 Product Features

- Innovative SeePU technology for jumperless CPU installation
- Superior Overclocking capability with up to 150MHz frequency
- Complete CPU protection with OVT (Over Voltage Protect) and OCP (Over Current Protect) technology
- System Monitor Hardware
- Poly-fuse over-current protection with error warning for keyboard circuitry
- ACPI STR (Suspend to RAM) ready !
- Chassis intrusion detection with mnemonics during power loss
- Optional hardware audio provides full DOS S/W compatibility to support legacy gaming and educational markets
- Complete Data Security:
  ***Flash BIOS write protection** against unauthorized access
  ***Trend ChipAway Virus** for a 100% virus free system boot-up
- Advanced Management Features**:**
  * Power-on events:
    WOL(Wake-on-LAN) network card, Modem ring, RTC Alarm
  * Software power-off control for Win95
  * Over-ride power button
  * Three states advanced Power-failure recovery: Always On, Always Off, Last state
  * Blinking Power-LED in suspend
  * Hardware Reset Protect
- System lockup recovery
  * Once software or hardware lockups, system will causes an SMI# or a system reset to recover from system hang

1-3 Package Contents

This product comes with the following components:

❒ One mainboard

❒ One 40-pin Ultra DMA-66 IDE connector ribbon cable (Figure 1-1)

   * Color coded connection for UDMA/66 cable

   Blue to mainboard, Gray to Master and Black to slave

❒ One 34-pin floppy disk drive ribbon cable (Figure 1-2)

❒ One Serial port extension bracket

❒ One User's Manual

❒ One CD-ROM that includes

   - Award Flash EPROM Utility

   - Award DMI Utility for DOS
   - Intel Bus Master IDE drivers for Win95/98

   - Intel Security Driver

   - Audio drivers for Win9x, NT4.0, Win2000

   - Optional**Creative 5880** audio driver for Win98, NT and Win2000

   - Optional **AIRBAG2000** software group including Acrobat Reader,

     Sheperd2000, Trend PC-cillin, Norton AntiVirus, ADOBE ActiveShare,

     Appio and X-stop

Optional Items

❒ Optional **LTI-II** Panel link adapter for LCD/TV-out

Figure 1-1   UDMA66 IDE cable

Figure 1-2   Standard Floppy cable

Memo

Chapter 2

Hardware Setup

If your mainboard has already been installed in your computer you may still need to refer to this chapter if you plan to upgrade your system's hardware.

⚠ **Be sure to disconnect the power cable from the power source before performing any work on your mainboard, i. e. installing a CPU, memory module, changing a jumper setting, etc. Not doing so may result in electrical shock!**

2-1 Introduction to Jumpers

Jumpers are used to select between various operating modes. A jumper consists of a row of gold colored pins that protrude from the surface of the mainboard. It is important not to confuse jumpers with connectors or headers.

⚠ **Putting jumper caps on anything that is not a jumper may result in damaging your mainboard. Please refer to Section 1-3, Mainboard Layout, for the location of jumpers on your mainboard.**

As indicated in Figure 2-1 below, a cap is used to cover the pins of a jumper, resulting in shorting those pins that it covers. If the cap is removed from the top of the pins, the jumper is left "open." The number 1 shown both in the diagram below and in all multiple pin jumper and header diagrams in this manual indicates the pin designated with the number 1. The numbering of the remaining pins follows in sequence.
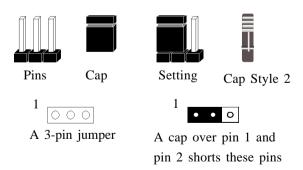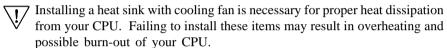
Pins   Cap   Setting   Cap Style 2

A 3-pin jumper

A cap over pin 1 and pin 2 shorts these pins

Figure 2-1

2-2 Installing a CPU in a Socket 370

The Intel Socket 370, designed for the Celeron and Coppermine processors, has been incorporated as a standard mainboard specification.To insert your CPU into Socket 370 please do the following:
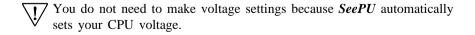
1. Locate a small dot marked on the top surface of the CPU close to one if it's corners. The same corner will also be cut off, leaving a noticeable notch in the CPU's corner. These markings indicate Pin 1 of the CPU.

2. Pull up the lever of Socket 370 so that it is perpendicular with the surface of the mainboard. Gently insert the CPU with Pin 1 at the same corner of Socket 370 that contains the end of the lever. Allow the the weight of the CPU to push itself into place. Do not apply extra pressure as doing so may result in damaging your CPU. Snap the lever back into place.

   Installing a heat sink with cooling fan is necessary for proper heat dissipation from your CPU. Failing to install these items may result in overheating and possible burn-out of your CPU.

2-3 Setting Your CPU's Parameters

This board support plug and play CPU configuration, if you install a CPU on this mainboard, the board will automatically detect and set CPU parameters. It is no longer necessary to make many jumper settings as on conventional mainboards.

1. After installing all your hardware into your PC system, turn on your system's power. Enter the CMOS Setup Utility by pressing the Delete key when your BIOS identification screen appears.

2. Move the cursor to Frequency/Voltage Control Setup menu and press Enter. Find the CPU bus frequency at the left hand side of the BIOS screen. Commands for operating the cursor in BIOS are found at the Bottom right of the BIOS screen.

3. Set the CPU bus frequency according to your processor's specifications.

4. Press Esc to return to the CMOS Setup Utility, press F10 to Save and Exit Setup and choose 'Y' to confirm. The system will automatically reboot and during startup you will see the correct CPU type shown on the screen.
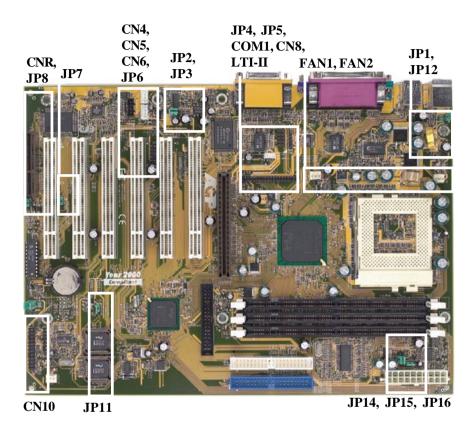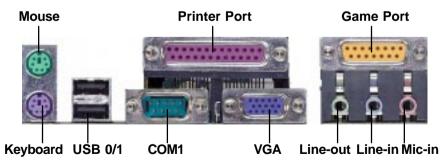
   You do not need to make voltage settings because *SeePU* automatically sets your CPU voltage.

⚠️ **Overclocking**

Operating a CPU at a higher frequency than it's specification allows is called overclocking. If the CPU frequency is set at a higher frequency than it's specification allows, it may or may not run at that frequency, depending on the quality of your CPU and the extent to which the frequency has been overset. The mainboard manufacturer highly discourages overclocking as it may result in data loss, CPU burnout, system failure, etc.

Many Intel processors are frequency locked processors and are not able to perform overclocking. Regardless of whether the processor is a frequency locked, overclocking may cause some processors to hang when turning on the system. When the processor hangs, the screen remains blank and the system does not boot. To solve this problem, do the following.

1. Turn off the computer and then press and hold the Home key on your keyboard

2. Turn on your computer, wait for five seconds and then release the Home key.

3. Enter BIOS and reconfigure your CPU parameters as described in this section.

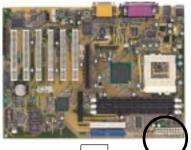| JP & CN No.	Function	JumperSetting/Connector	Page
JP1	PS/2 keyboard Power On Funtion	1-2: Disable (default); 2-3: Enable	15
JP2/JP3	Audio Line out/ Speaker out	1-2: Line out (default); 2-3: Speaker out	15
JP4	Smart Bus Connector	SMCLK / GND / SMBDAT / VCCS	15
JP5	Chassis Intrusion Dectection	5 Vsb / CASE Open / GND	16
JP6	Infrared / Consumer Infrared	VCC5 — VCC5 Stand By / Key — x / Ir-RX — CIR-RX / GND — GND / IRTX — x / VCC — x	16
JP7	Onboard Audio	1-2: Enable (default); 2-3: Disable	16
JP8	AC'97 CODEC selector (optional)	1-2: CODEC on board (default); 2-3: CODEC on CNR	16
JP11	Clear CMOS Data	1-2: Normal(default); 2-3: Enable (Clear)	17
JP12	USB Power On Function	1-2: Disable; 2-3: Enable (default)	17
JP14/JP15	System Bus Frequency	JP14 JP15 / Auto(default) 1–2 1–2 / 100MHz 1–2 2–3 / 133MHz 2–3 Open	17
JP16	Optional Boot BIOS select	1-2: Boot BIOS select (default) / 2-3: BIOS1(Power-on only)/BIOS2(Power-on+Reset)	18
CN4	AUX_IN Connector	GND L R	19
CN5	CD_IN Connector	GND L R	19
CN6	Mono-in/out Connector	GND L R	19
CN7	COM2		
CN8	WOL (Wake on LAN)	5VSB / GND / Wakeup	20
CN10	Over-ride Power Button Connector	Power LED Speaker Connector Key Lock Over-ride Power Button Turbo LED Green LED IDE Activity LED Green Switch Reset Switch	13
	Keyboard Lock & Power Indicator LED Connector		
	Green Switch Connector/ Green LED Connector		
	System Reset Switch Connector		
	Speaker Connector		
	IDE Activity LED Connector		
	Turbo LED Connector		
CN11	ATX Power Supply Connector		12
FAN1/FAN2	CPU/System cooling Fan Connector		20
LTI-II	LTI-II Riser		20
PS/2 Ports(CN2)	PS/2 Mouse and Keyboard Ports		18
USB Ports(CN3)	USB (Universal Serial Bus) ports		18

2-4 Connector and Jumper Settings

Connectors are used to link the system board with other parts of the system, including the power supply, the keyboard, and the various controllers on the front panel of the system case.

> **The power supply connector is the last connection to be made while installing a mainboard. Before connecting the power supply, please make sure it is not connected to the power source.**

ATX Power Supply Connector (CN11)

The power cord leading from the system's power supply to the external power source must be the very last part connected when assembling a system.

> To support this function, a switching power supply with a minimum of **750mA** 5VSB is required.

12V	⑳ ⑩	5V
5VSB	⑨ ⑲	5V
PW-OK	⑱ ⑧	-5V
Ground	⑦ ⑰	Ground
5V	⑯ ⑥	Ground
Ground	⑤ ⑮	Ground
5V	④ ⑭	PS-ON
Ground	③ ⑬	Ground
3.3V	② ⑫	-12V
3.3V	① ⑪	3.3V

The ATX power supply provides a single 20-pin connector interface which incorporates standard +/-5V, +/-12V, optional 3.3V and Soft-power signals. The Soft-power signal, a 5V trickle supply is continuously supplied when AC power is available. When the system is in the Soft-Off mode, this trickle supply maintains the system in it's minimum power state.
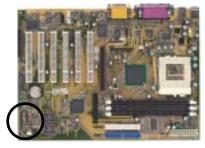
Power-On By Modem

While in Soft-off state, if an external modem ring-up signal occurs, the system wakes up and can be remotely accessed. You may enable this function in BIOS's Power Management Setup menu.
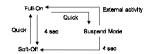
Poly-fuse Over Current Protection

The poly-fuse protects the system from dangerous voltages the system might be exposed to via the keyboard or USB connectors. In case of such exposure, the poly-fuse will immediately be disconnected from the circuit, just like a normal fuse. After being disconnected for a certain period of time, the poly-fuse will return to its normal state, after which the keyboard or USB can function properly again. Unlike conventional fuses, the poly-fuse does not have to be replaced, relieving the user wasted time and inconvenience.
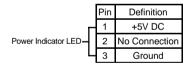
Front Panel Connector Set (CN10) A through F

A. Over-ride Power Button Connector

The power button on the ATX chassis can be used as a normal power switch as well as a device to activate Advanced Power Management Suspend mode. This mode is used for saving electricity when the computer is not in use for long periods of time. The Soft-OFF by PWR-BTTN function in BIOS's Power Management Setup menu must be set to "Delay 4 Sec." to activate this function.

When the Soft-OFF by PWR-BTTN function is enabled, pushing the power button rapidly will switch the system to Suspend mode. Any occurrence of external activities such as pressing a key on the keyboard or moving the mouse will bring the system back to Full-On. Pushing the button while in Full-On mode for more than 4 seconds will switch the system completely off. See Over-ride Power Button Operation diagram.

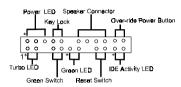**Over-ride Power Button Operation**

B. Power Indicator LED Connector

The power indicator LED shows the system's power status. It is important to pay attention to the correct cables and pin orientation (i.e., not to reverse the order of these two connectors.)

Pin	Definition
1	+5V DC
2	No Connection
3	Ground

Power Indicator LED

Software Power-Off Control

This mainboard can be powered down using the Windows 95/98 Software Power-Off function. To power down your computer, click the START button on the Windows 95/98 task bar. Select "Shut Down The Computer" and the system turns off. The message "It is now safe to turn off your computer" will not be shown when using this function.

Power LED   Speaker Connector
Key Lock   Over-ride Power Button

Turbo LED   Green LED   IDE Activity LED
Green Switch   Reset Switch

C. Green Switch/Green LED Connector

Some ATX cases provide a Green switch which is used to put the system in Suspend mode. In Suspend mode, the power supply to the system is reduced to a trickle, the CPU clock is stopped, and the CPU core is in it's minimum power state. The system is woken up whenever the keyboard or mouse is touched. The system resumes in different ways as defined by Power Management Setup screen in BIOS.

D. System Reset Switch Connector

This connector should be connected to the reset switch on the front panel of the system case. The reset switch allows you to restart the system without turning the power off.

Pin	Definition
1	System
2	GND

E. Speaker Connector

Pin	Definition
1	Speaker Signal
2	No Connection
3	No Connection
4	+5V DC

F. IDE Activity LED Connector

The IDE activity LED lights up whenever the system reads/writes to the IDE devices.

G. Turbo LED Connector

This mainboard does not have a Turbo/De-turbo speed modes. So the turbo LED will always light.

Blinking LED in Suspend Mode

While in Suspend mode, the LED light on the front panel of your computer will flash. Suspend mode is entered by pressing the Override Power Button, pushing the Green button on your ATX case, or enabling the Power Management and Suspend Mode options in BIOS's Power Management menu.
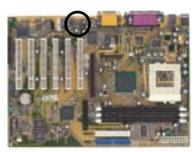
PS/2 Keyboard Power On Function (JP1)

1 ▪ Disabled   1 ▪ Enabled

This board is able to be turned on by the keyboard. To use this function, enable the Power On Function option in BIOS's Integrated Peripherals screen (See section 3-8). You must also set this jumper's cap to pins 2-3 to use this function. Some out-of-date keyboards may require larger current than supplied by the Suspend 5V of modern power supplies. When using older keyboards disable this function.
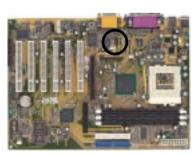
Audio Line_out or Speaker_out (JP2/JP3)

JP2 1 ▪▪o   JP2 1 o▪▪
JP3 ▪▪o   JP3 o▪▪

Line_out (default)   Speaker_ out

This jumper allows you to select between audio line-out or speaker out function. Set both JP2 and JP3 pins to 1-2 for line-out function or set both JP2 and JP3 pins to 2-3 for speaker out function..
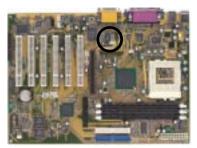
Smart Bus Connector (JP4)

This connector supports Aux-input for connecting DVD or other audio devices.

1 o — SMCLK
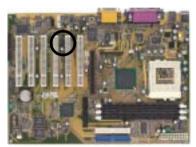o — GND
o — SM8DAT
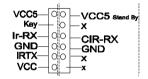o — VCC5

Chassis Intrusion Detection (JP5)

This board supports the chassis instruction monitoring feature of the management extension hardware by means of a mechanical or photo sensor switch attached to the motherboard through this 1x3-pin chassis security header. The mechanical switch is set to open for normal computer operation.

```
1  O —5 Vsb
   O —CASE Open
   O —GND
```

IR/CIR Connector (JP6)

If you enable the IR/CIR Address Select in BIOS's Integrated Peripherals menu the IR/CIR port will let you select the IRQ and IR/CIR Mode to support IR/CIR functions.

```
VCC5 —        — VCC5 Stand By
 Key —        — x
Ir-RX —       — CIR-RX
 GND —        — GND
IRTX —        — x
 VCC —        — x
```

Onboard Audio (JP7)

1 `■■ ○`   1 `○ ■■`
   Enable   Disable

This function allows you to enable and disable the on board audio. You must set the jumper's cap to pins 1-2 to enable or set pins 2-3 to disable this function.
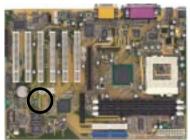
AC'97 CODEC selector (JP8)

1 `■■ ○` Onboard CODEC (Default)

1 `○ ■■` CNR (Soft-Audio/Modem riser)

Short pin 1-2 to enable onboard AC`97 CODEC. Short pin 2-3 to enable CNR (Soft Audio/Modem riser).

Clear CMOS Data (JP11)

1 • • ○
Normal (default)

1 • • ○
Clear CMOS data

To clear the contents of the CMOS, please follow the steps below.

1. Disconnect the system power supply from the power source.

2. Set the jumper cap at location 2~3 for 5 seconds, then set it back to the default position.

3. Connect the system's power and then start the system.

4. Enter BIOS's CMOS Setup Utility and choose Load Setup Defaults. Type Y and press enter.

5. Set the system configuration in the Standard CMOS Setup menu.
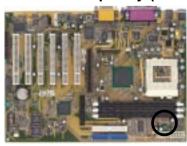
USB Device Power On Function (JP12)

1 • • ○
Disable

1 • • ○
Enable (default)

This board is able to be turned on by a USB keyboard (hot key/Password) or a USB mouse click. To use this function, select a device of your choice at the Power on Function option in BIOS's Integrated Peripherals screen. You must also set JP12/JP13 jumper caps to pins 2-3 to use this function.
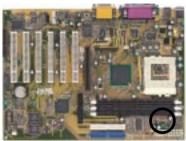
CPU Bus Frequency (JP14/JP15)

	JP14	JP15
Auto(default)	1 ~ 2	1 ~ 2
100MHz	1 ~ 2	2 ~ 3
133MHz	2 ~ 3	Open

This jumper allows the CPU bus frequency to be determined either by the CPU or the user. Set both jumper cups to pin 1-2 (default) if you are not sure what frequency your CPU support.

Optional Boot BIOS Select (JP16)

1 ▣ Boot BIOS select (default)

1 ▣ BIOS 1 (Power on only)/
BIOS 2 (Power on + Reset button)

This feature allows you to select a BIOS to boot up your system. Set the pin to 1-2 to enable Boot BIOS select in the BIOS Features Setup and then select either BIOS 1 or BIOS 2 for startup (see section 2-4).The feature also allows you to manually shift to another BIOS once the BIOS fail to boot. Set pin to 2-3 to boot from BIOS 1 and then press the power on button to boot up or press reset and power on button hold for 2-3 second and then release to boot from BIOS 2.
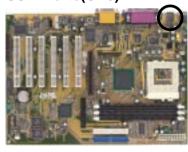
PS/2 Mouse and Keyboard Ports (CN2)

If a PS/2 mouse is used, BIOS will automatically detect and assign IRQ12 to the PS/2 mouse.

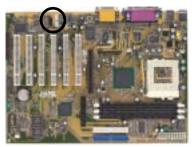| Pin	Definition
1	Data
2	No Connection
3	Ground
4	+ 5V (fused)
5	Clock
6	No Connection

USB Ports(CN3)

If you want to use a USB keyboard, you must enable the USB keyboard support function in BIOS's Integrated Peripherals menu. USB is an open industry standard, providing a simple and inexpensive way to connect up to 125 devices to a single computer port. Keyboards, mice, tablets, digitizers, scanners, bar-code readers, modems, printers and many more can all be used at the same time.
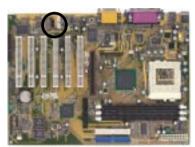
This board contains a USB Host controller and includes a root hub with two USB ports. Two USB peripherals or hub devices are able to be connected.

Auxiliary CD-ROM Audio-in Connector (CN4)

Use the auxiliary audio cable enclosed with your CD-ROM disk drive to connect the CD-ROM to your mainboard. This will enable your CD-ROM's audio function.
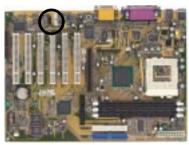
CD-ROM Audio-in Connector (CN5)

Use the audio cable enclosed with your CD-ROM disk drive to connect the CD-ROM to your mainboard. This will enable your CD-ROM's audio function.

Optional Audio Mono -in/out Connector (CN6)

Use the mono audio cable enclosed with your CD-ROM disk drive to connect the CD-ROM to your mainboard. This will enable mono audio in/out function.

WOL (Wake-on-LAN) Connector (CN8)

Enable the Wake Up On LAN selection in BIOS's Power Management Menu to use this function. The capability to remotely manage PCs on a network is a significant factor in reducing administrative and ownership costs. Magic Packet technology is designed to give WOL (Wake-on-LAN) capability to the LAN controller. When a PC capable of receiving wake up command goes to sleep, the Magic Packet mode in the LAN controller is enabled. When the LAN controller receives a Magic Packet frame, the LAN controller will wake up the PC. This header is used to connect an add-in NIC (Network Interface Card) which gives WOL capability to the mainboard.

```
1  ⊙  — 5 Vsb
   ⊙  — GND
   ⊙  — Wake up
```

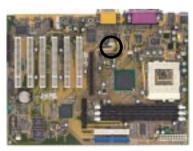## CPU/System Cooling Fan Connectors (FAN1/FAN2)

These added connectors allow the fan to draw their power from the mainboard instead of the disk drive connector.

The board's management extension hardware is able to detect the CPU and system fan speed in rpm (revolutions per minute). These connectors supports 3-pin cooling fans with minimum of 3500 RPM. The wiring and plug may vary depending on the manufacturer. On standard fans, the red is positive (+12V), the black is ground, and the yellow wire is the rotation signal.

```
⊙  — GND
⊙  — +12V
⊙  — NC
```

LTI-II Riser (LTI1) Optional

This connector is to be connected to an optional TV/LCD/2nd CRT Output adapter card.

2-5 Main Memory Configuration

The DRAM memory system consists of three banks and the memory size ranges from **16~512 MBytes**. It does not matter which bank you want to install first.

DRAM Specifications

FSB Freq. (MHz)	System Memory Bus Freq. (MHz)	Display Cache interface Freq. (MHz)
66	100	133 or DVMT
100	100	133 or DVMT
133	100	133 or DVMT
133	133	Internal Graphics Disable

DIMM type : 3.3V, unbuffered, registered, 64/72-bit SDRAM with SPD*

Module size: Single/double-side 16/32/64/128/256 MBytes

Parity   : Either parity or non-parity

⚠️ This mainboard supports up to 2 double sided or 3 single sided DIMMs at 133MHz system memory bus.

⚠️ This mainboard supports 3.3v, unbuffered, 4-clock, SDRAM DIMM only. Buffered, 5V, or 2-clock SDRAM DIMMs should not be used.
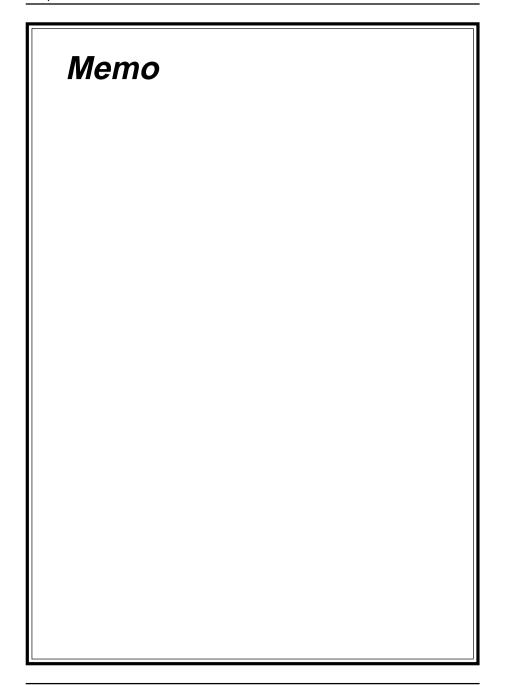
⚠️ Due to loading anomalies, using DIMM with an 'n x 4' DRAM base on this mainboard is not recommended. For example, a DIMM that uses sixteen 16Mb x 4 devices should not be used.

SPD (Serial Presence Detect)
This is an EPROM that contains speed and design information about the memory module. The mainboard queries the module and makes adjustments to system operation based on what it finds.

ECC DRAM Capability
This mainboard can be configured to support ECC (Error Check and Correct) function when utilizing parity DIMM modules. To utilize the chipset's ECC features, you must use a 72-bit DIMM module.These modules are automatically detected during bootup. However, the user must configure the DRAM Data Integrity Mode to "ECC" in BIOS's SeePU&Chipset Features Setup menu to enable the ECC function. ECC detects double bit errors and detects and corrects single bit memory errors on the fly without user intervention. Errors may be generated by a defective memory module, conflicting memory speeds between different banks, DMA, etc.

Memo

Chapter 3

Award BIOS Setup Program

Award's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This information is stored in CMOS RAM so that it can retain the setup information, even when the power is turned off.

When you turn on or restart the system, press the Delete key to enter the Award BIOS setup program. The primary screen as shown in Figure 3-1 is a list of the menus and functions available in the setup program. Select the desired item and press enter to make changes. Operating commands are located at the bottom of this and all other BIOS screens. When a field is highlighted, on-line help information is displayed on the right side of the screen.
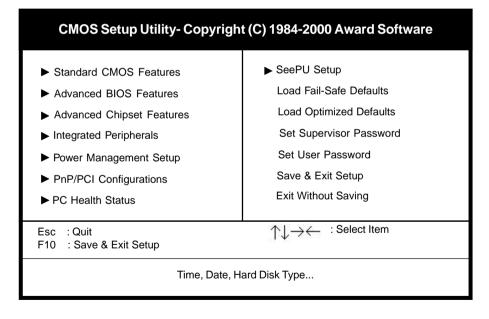
CMOS Setup Utility- Copyright (C) 1984-2000 Award Software	
▶ Standard CMOS Features	▶ SeePU Setup
▶ Advanced BIOS Features	Load Fail-Safe Defaults
▶ Advanced Chipset Features	Load Optimized Defaults
▶ Integrated Peripherals	Set Supervisor Password
▶ Power Management Setup	Set User Password
▶ PnP/PCI Configurations	Save & Exit Setup
▶ PC Health Status	Exit Without Saving
Esc : Quit F10 : Save & Exit Setup	↑↓→← : Select Item
Time, Date, Hard Disk Type...	

Figure 3-1 Setup Program Initial Screen

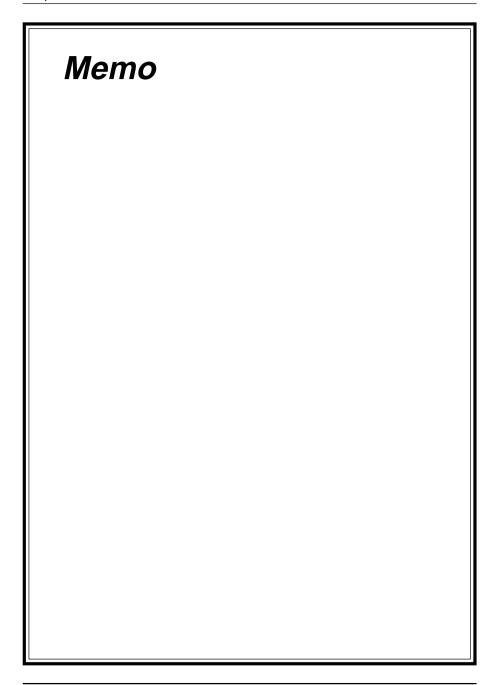# *Memo*

Chapter 4

Brief Software Driver Guide

The Mainboard Software Guide is found on the CD-ROM that is enclosed with your mainboard and is a PDF file which must be viewed with Adobe's freeware called Acrobat®Reader. The Acrobat Reader software is also included on the same CD-ROM. See the Readme.txt file in the CD-ROM's root directory for installation instructions of the Acrobat Reader. The Mainboard software guide discusses the following items:

The following items are discussed in the TXT or PDF files:

- Bus Master/PIO IDE Driver Installation
- USB Driver Installation
- Updating Your System BIOS
- Installing and Using a Desktop Management Interface (DMI) Utility for DOS
- Sound Drivers and Utility Installation
- AGP VGA Drivers for Win95/98/2000/NT
- Optional Creative 5880 audio driver for Win98, NT and Win2000

The DMI utility is a DOS utility, operating under Windows or other operating system might cause damage to the BIOS.
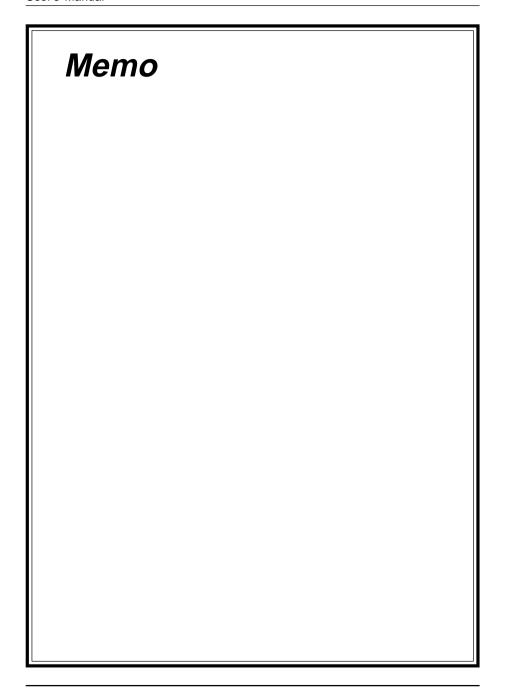
Memo

On Board I/O Addresses & IRQ Maps

System Resource	IRQ	I/O Address
1. Timer	IRQ0	040, 043
2. Keyboard	IRQ1	060, 064
3. Programmable INT	IRQ2	0020, 0021, 00A0, 00A1
4. COM2(B)	IRQ3	2F8, 2FF
5. COM1(A)	IRQ4	3F8, 3FF
6. Floppy	IRQ6	3F0, 3F7
7. LPT1	IRQ7	378, 37F
8. Real Time Clock	IRQ8	070, 071
9. PS/2 Mouse	IRQ12	060, 064
10. Math coprocessor	IRQ13	0F0, 0FF
11. IDE 1	IRQ14	1F0, 1F7
12. IDE 2	IRQ15	170, 177

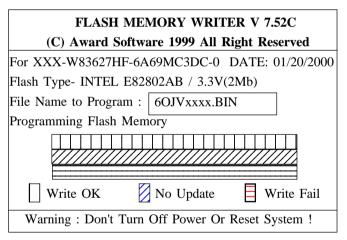✎**IRQ 5, 9, 10 and 11 are available for interface cards.**

Memo

Embedded Flash Utility

This mainboard is equipped with an Erasable Flash ROM and an Embedded Flash Utility which allows the user to update the BIOS to a newer version. Embedded Flash Utility eases BIOS upgrade and eliminate the compatibility issue between different Flash ROM type and version of Flash utility.

Update Your System BIOS

1. Start computer, upon post, press ALT+F2 Keys to enter AWDFLASH setup.

2. Insert the floppy disk with the latest BIOS file into the floppy drive A(or B)
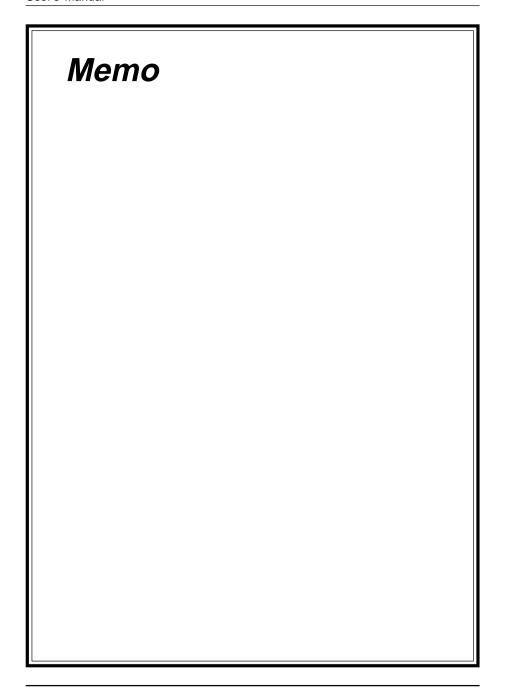
   and then press Enter to start programming.

Sample of Programing Flash Memory Screen

3. As programming finishes, the system will automatically Restart.

Note:

✎ Flash BIOS Protection must be set to Disabled in the Advance Chipset Feature from the CMOS Setup Utility menu. See Chapter 3.

✎ Don't turn off or restart your system during programming process.

✎ Make sure that your floppy diskette have only one BIN file to aviod confussion.

Memo

TwinBIOS Technology (Optional)

Introduction

We are pleased to introduce the Peer to Peer **TwinBIOS** technology, a new genaration BIOS system for your motherboard. Twin BIOS are phisically two BIOS chips, known as BIOS 1 and BIOS 2. If either one of the BIOS fails, the other BIOS will be ready to take over the Boot BIOS function. Wheather the problem is caused by a virus, flashing BIOS failure or a corrupted Boot BIOS chip, The other BIOS will always back you up.

❑ **Using the Backup BIOS Recovery**

This feature enable you to manually shift to another BIOS once the the BIOS fails to boot. Set (JP16) jumper pin to 2-3 and then press the reset button together with the power on button to boot up.
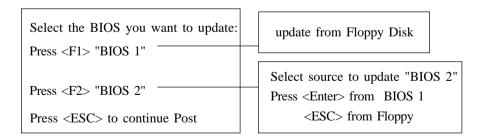
❑ **Selecting Boot BIOS**

Set (JP16) jumper pin to 1-2 to enable BIOS selection in the Advance BIOS Features setup from the CMOS Setup Utility menu. Select Boot BIOS and choose between BIOS 1 (default) or BIOS 2 option to boot your system.

❑ **Update BIOS Using Embbeded Flash Memory Utility**

A. Boot from BIOS 1

　　1. Start computer, upon post, press ALT+F2 Keys to enter AWDFLASH setup.

Select the BIOS you want to update:
Press <F1> "BIOS 1"
Press <F2> "BIOS 2"
Press <ESC> to continue Post

update from Floppy Disk

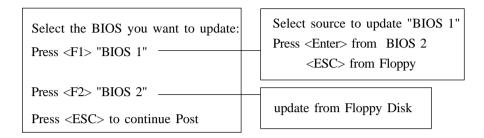| Select source to update "BIOS 2" |
| --- |
| Press <Enter> from BIOS 1 |
| <ESC> from Floppy |

Note:

✎ Flash BIOS Protection must be set to Disabled in the Advance Chipset Feature from the CMOS Setup Utility menu. See Chapter 3.

✎ Don't turn off or restart your system during programming process.

B. Boot from BIOS 2

1. Start computer, upon post, press ALT+F2 Keys to enter AWDFLASH setup.

Select the BIOS you want to update:

Press <F1> "BIOS 1" —————

Press <F2> "BIOS 2" —————

Press <ESC> to continue Post

Select source to update "BIOS 1"

Press <Enter> from BIOS 2

        <ESC> from Floppy

---

update from Floppy Disk

Note:

✎ Flash BIOS Protection must be set to Disabled in the Advance Chipset Feature from the CMOS Setup Utility menu. See Chapter 3.

✎ Don't turn off or restart your system during programming process.