WinFast® 5400MAX
User's Manual

Leadtek®

We Make Dreams a Reality

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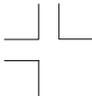Fremont, CA94538, U.S.A.
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WinFast 5400MAX User's Manual
Version A
December 1999

Contents

Chapter 1   Introduction

1.1   Overview

The WinFast 5400MAX Mainboard, integrating the SiS540 chipset, provides a high performance/low cost Desktop/Mobile solution for the Super socket 7 AMD K6-2/K6-III/K6-2+ CPUs based system. It incorporates PCI devices with superior integrating ability. They   include a high-performance 128-bit 2D/3D GUI engine with dual view, H/W DVD solution, AC'97 H/W audio, AC'97 S/W modem, Fast Ethernet with home networking, and dual USB controller with four ports. In addition, the chipset provides system-on-chip solution that complies with Easy PC Initiative which supports Instantly Available/OnNow PC technology, USB, Legacy Removal and Slotless Design, and FlexATX form factor.

With the Ultra-AGPTM technology and advanced 128-bit graphic display interface, the WinFast 5400MAX delivers over AGP 4x performance and up to 2 GBs memory bandwidth. The WinFast 5400MAX also provides powerful slice layer decoding DVD accelerator to improve the DVD playback performance. In addition to the standard interface for CRT monitors, the WinFast 5400MAX also provides a Digital Flat Panel Port (DFP) for a standard interface between a personal computer and a digital flat panel monitor. To extend functionality and flexibility, SiS also provides the "Video Bridge" (SiS301) to support the NTSC/PAL Video Output, Digital LCD Monitor and Secondary CRT Monitor, which reduces the external Panel Link transmitter and TV-Out encoder for cost effected solution. SiS540 also adopts Share System Memory Architecture which can flexibly utilize the frame buffer with a size up to 64MB.

SiS540 integrates all peripheral controllers/accelerators/interfaces. It also provides a total communication solution including 10/100Mb Fast Ethernet for Office requirement and 1Mb HomePNA for Home Networking. SiS540 offers AC'97 compliant interface that comprises digital audio engine with 3D-hardware accelerator, on-chip sample rate converter, and professional wavetable along with separate modem DMA controller. SiS540 also provides interface to Low Pin Count (LPC) operating at 33MHz clock which is the same as PCI clock on the host, and dual USB host controller with four USB ports that deliver better connectivity and 2 x 12Mb bandwidth.

The built-in fast PCI IDE controller supports the ATA PIO/DMA, and the Ultra DMA33/66 that supports a data transfer rate up to 66MBs. It provides the separate data path for two IDE channels that can eminently improve the performance under the multi-tasking environment.
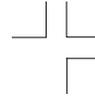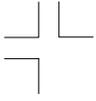
1.2   WinFast 5400MAX Photo
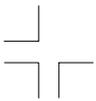
1.3   WinFast 5400MAX Mainboard Layout
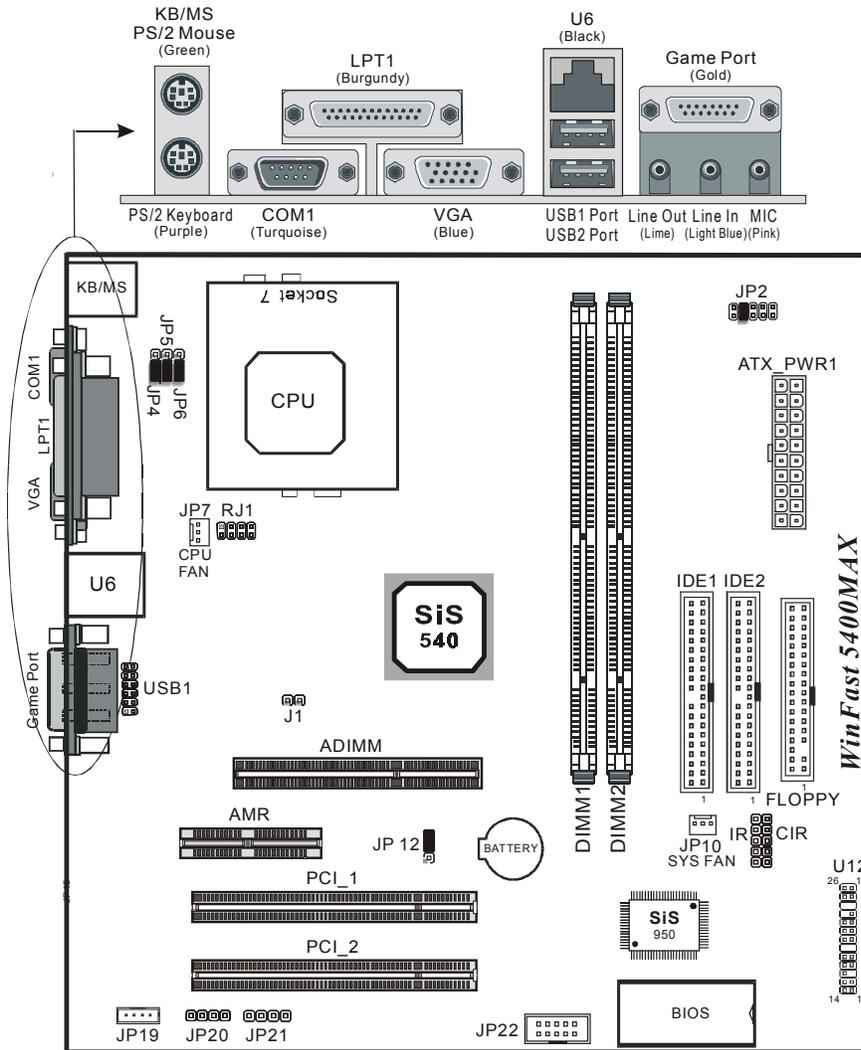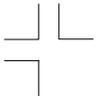
1.4 WinFast ADIMM-DCT Photo

1.5 WinFast ADIMM-128 Photo
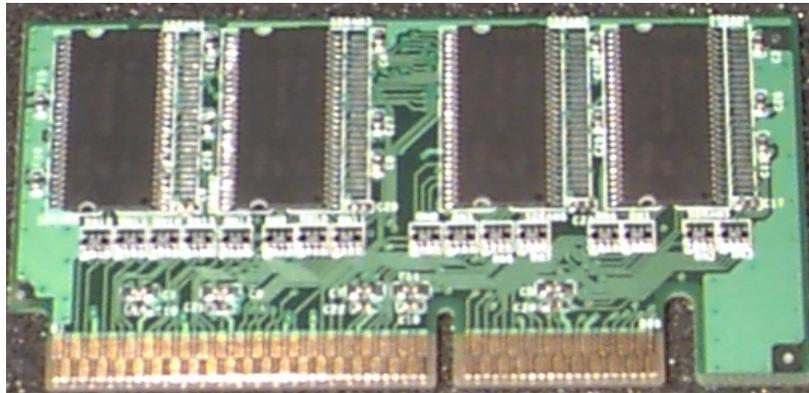
4   WinFast 5400MAX Mainboard
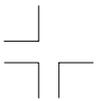
1.6   Features
- Supports Intel/AMD/Cyrix/IDT Pentium CPU Host Bus at 66/83/90/96/97/100 MHz with 3.3V Bus Interface.
- Integrated 2MB/1MB/512K Level 2 Cache Controller
- Integrated High Performance PC133 SDRAM/VCM DRAM Controller
- Meet PC99 Requirements
- PCI 2.2 Specification Compliant
- High Performance PCI Arbiter with 2 PCI Master support
- Fast PCI IDE Ultra DMA 66/33 Master/Slave Controller
- Integrated Ultra-AGPTM VGA for Hardware 2D/3D Video/Graphics Accelerators
  —cooperate with SiS301 Video Bridge to support
     NTSC/PAL Video Output
     Digital LCD Monitor
     Secondary CRT Monitor
- Advanced PCI H/W Audio & S/W Modem
  —Meets ACPI 1.0 requirements
  —PCI Bus Power Management Interface Spec. 1.0
- Integrated DMA and Interrupt Controller
  —Distributed DMA Support
  —Serial IRQ
- Integrated Keyboard Controller and PS/2 interface
  —Provides RTC H/W year 2000 solution
- Dual Universal Serial Bus Host Controller with four USB ports
- 12C Bus/SMBUS Series Interface
- Integrated Fast Ethernet controller with 10/100 megabit per second (Mbps)

1.7   Package Content

Accessories:
- This manual
- IDE cable ×1
- FDD cable ×1
- Ultra ATA 66 IDE cable ×1

Optional Accessories:
- WinFast ADIMM-128
- WinFast ADIMM-DCT
- USB module ×1
- 3D shuttle glasses

WinFast Software CD Pack
- On board VGA driver (Support Win95/Win98/Windows 2000/Win NT4.0)
- PC Health Utility for Win95/98
- Hardware Smart Guardian Utility for Win85/98
- AC97 Codec Driver
- LAN Driver
- AWARD Flash Utility
- This manual in PDF format

1.8 Specifications

CPU Support
- Intel Pentium Processors 166 to 200MHz and up to 233 MHz. Intel Pentium processors with MMX technology
- Cyrix 6×86MX PR166+~PR233+ and up to 333MHz M-II processors
- AMD 166 to 300MHz K6 and up to 533 MHz K6-2/K6-3/K6-2+
- IDT WinChip 180 to 225MHz and WinChip2 240 to 266MHz
- 321-pin ZIP socket

L2 Cache
- Pipelined Burst SRAM, onboard 2MB/1MB/512K

Super I/O chip (SiS950) on board
- One Parallel (SPP/ECP/EPP)
- Two Serial (16650A) compliant
- One floppy drive connector

Integrated 128-bit 2D/3D Graphics Accelerator
- Advanced HW Acceleration for DVD Playback Including MC and IDCT
- Ultra-AGP™ Architecture
- Fully Direct×6 Compliant Graphics Engine
- UMA Architecture with 2/4/8/16/32/64 system memory sharable as display memory
- Resolution up to 1920×1200 256/32K/64K/16M Color at 80Hz NI
- Support VESA DDC1, DDC2B & DDC 3.0
- Driver Support for Windows 95/98, Windows NT 4.0, Windows 2000
- WinFast ADIMM-128: Optional Extended Graphics Memory (EGM) on ADIMM card for 128-bit memory accessing
- WinFast-DCT (optional): Support SiS 301 Video Bridge Interface for Dual Display NTSC/PAL TV or secondary CRT monitor or TFT digital LCD monitor

Integrated 3D Positional Audio Controller
- 64-voice polyphony wavetable synthesizer
- DirectSound 3D accelerator for IID, IAD and Doppler effects
- Full-duplex, independent sample rate converter for audio recording and playback.

- AC'97 V2.1 Interface for External Audio Codec
- SoundBlaster Pro/16 compliant—Driver support for Windows 95/98, Windows NT 4.0, and Windows 2000.

Integrated Ethernet
- IEEE802.3, 10BASE-T, 100BASE-TX Standards
- Supports On-Now, Wake-on-LAN, PCI Power Management 1.0a
- Driver Support for Windows 95.98, Windows NT 4.0, Windows 2000
- 1Mbps Home PNA Controller (optional)

Modem
- AC'97 AMR/MDC HSP Modem Support

Integrated PC133 SDRAM Controller
- 2 DIMMs up to 1GB of system memory
- Virtual channel memory (VCM) support
- Synchronous or Asynchronous host/SDRAM/PCI bus frequency
- Support for suspend-to-RAM (STR) and suspend-to=-disk
- Support 4 USB ports

Power Management
- ACPI 1.0, APM 1.2 compliant
- Wake-up events include power button, hot-key, keyboard password, modem ring, Ethernet, home PNA, RTC alarm
- System sleeping states S1, S3, S4, S5

Dual Ultra 33/66 IDE Controller
- support up to PIO mode 4, Multi-word DMA mode 2 and Ultra DMA 33.66 MB/sec
- Bus master drivers for all well known OS

Other feature support
- 2 PCI masters
- LPC 1.0 interface
- Integrated RTC w/Y2K support
- Integrated keyboard/PS2 mouse controller
- 12C/SM bus requirement
- Hardware monitor support

Chapter 2   Quick Settings

2.1   Switch/connector position and description

2.1.1   Jumper position

Please refer to following figure to locate jumpers and connectors. Connection instruction for each connector/jumper is given in Chapter 3.

1	KB/MS	7	USB1	15	JP21	21	CIR
2	JP4, 5, 6	8	Game port	16	JP2	22	U12
3	LPT1,	9	J1	17		23	JP10
	COM1,	10	ADIMM		ATX_PWR	24	JP22
	VGA	11	JP12	1		25	PCI_1,
4	JP7	12	AMR	18	IDE1, 2	PCI_2	
5	RJ1	13	JP19	19	FLOPPY		
6	U6	14	JP20	20	IR		
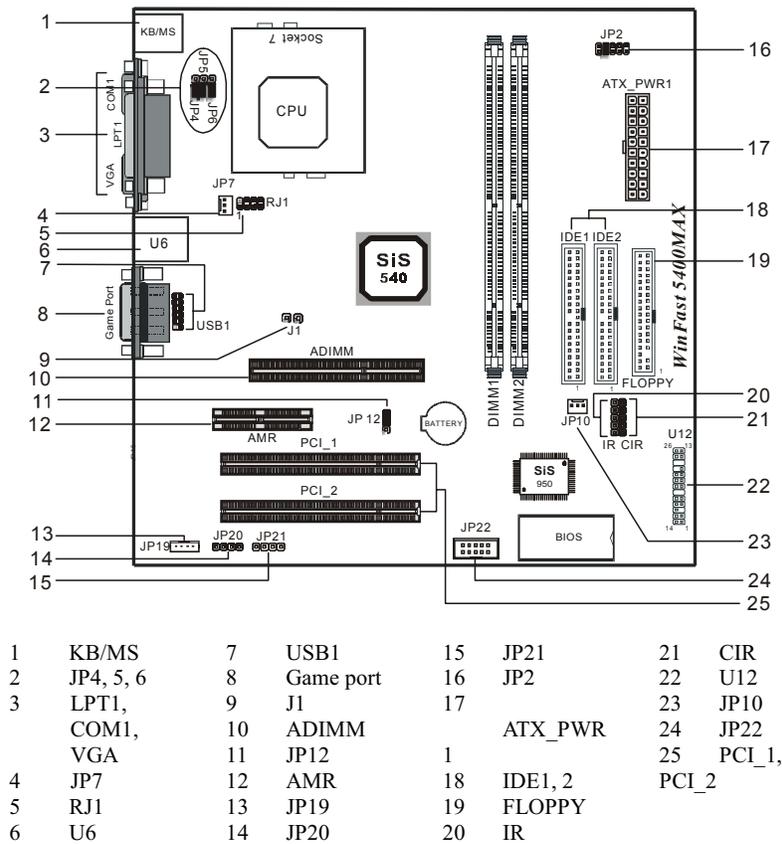
Figure 2.1   Jumper Position

2.1.2 Jumper Description

The following table gives the description of the part each jumper or connector plays.

Jumper/Connector	Description
JP2	CPU voltage selection
JP4, 5, 6	CPU speed ratio selection
JP12	Clear CMOS data
U12	Case Signal Connector—PWRBTN, RESET,KEY LOCK, SPEAKER, HDD_LED, POWER_LED, ACPILED
IR	IR connector
CIR	CIR connector
J1	SPDIF connector (output)
JP7/CPU FAN	CPU fan connector
JP10/SYS FAN	System fan connector
KB/MS	PS/2 mouse (upper), PS/2 keyoard (lower) connector
U6	Ethernet, USB1, and USB2 connector
LPT1, COM1, VGA	Printer, COM1, VGA connector
Game Port	Midi/Joystick, Mic In, Line In, Line Out
JP21	Audio connector (CD)
JP20	Video input connector
JP19	Audio connector (AUX)
IDE1	Hard disk (Primary IDE)
IDE2	Hard disk (Secondarry IDE)
ATX_PWR1	ATX power connector
FLOPPY	Floppy disk
JP22	COM2
PCI_1, PCI_2	PCI1, PCI2 slots
AMR	Audio Modem Riser
DIMM1, DIMM2	Memory module 1, 2
ADIMM	For VGA shared memory card (WinFast ADIMM-128) or TV, VGA and DVI card (WinFast ADIMM-DCT)
USB1	For two USB connectors
RJ1	3D glasses connector/Home PNA (Optional)

2.2 CPU Setting

2.2.1 CPU voltage and speed ratio setting
—Done with jumpers

Jumpers for setting CPU voltage and speed ratio are JP2 and JP4, 5, 6 as indicated below. Brief definitions of the pins are also given here. Please refer to section 2.3 or 2.4 of this chapter for detailed setting information for the specific CPU you have chosen.

JP2: CPU voltage setting

Pin 1-2: VID 0
Pin 3-4: VID 1
Pin 5-6: VID 2
Pin 7-8: VID 3
Pin 9-10: VID 4

JP4, 5, 6: CPU speed ratio

JP4: BF 2
JP5: BF 1
JP6: BF 0

: Short   : Open
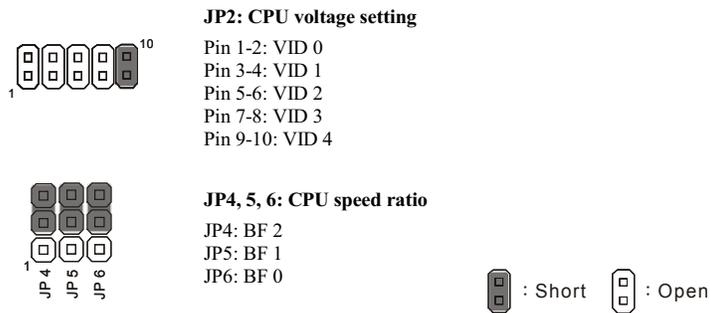
2.2.2 CPU/SDRAM clock frequencies setup
—Done with <<< X-BIOS >>> in BIOS setup

CPU/SDRAM clock frequencies setup is done with the X-BIOS setup in BIOS Setup, a setup field that reads *CPU Host/SDRAM/PCI Clk* in the *X-BIOS* Menu allows you to select a set of clock frequencies for CPU and SDRAM clock. The options are: *95/95/31MHz*, *95/126.31MHz*, *96/96/32MHz*, *97/97/32MHz*, *97/129/32MHz*, *99/99/33MHz*, *99/132/33*, *100/100/33MHz*, *100/133/33MHz*, *100/150/37MHz*, *105/140/35MHz*, *110/147/36MHz*, *112/112/37MHz*, *115/153/38MHz*, *120/120/30MHz*, *133/100/33MHz*, *133/133/33MHz*, *134/134/33MHz*, *138/138/34MHz*, *140/140/35MHz*, *145/145/36MHz*, *147/147/36MHz*, *150/100/37MHz*, *160/160/27MHz,* and 1*66/110/32MHz*. The default is 66/100MHz.

The BIOS has also been enhanced so that it is able to identify the CPU clock frequency selected during BIOS setup. If the selected CPU clock is not acceptable, the system will hang up and the screen will go blank after exiting BIOS Setup.

At this point, press "DEL" key to re-enter BIOS Setup to change the setup value, or press any other key to accept the default.

Note: *If you shut down the engine very quickly after booting, say "within 1-2 seconds", the BIOS may be confused and makes a wrong identification of the setup value, resulting in system hang-up as mentioned above.*

2.3   CPU Setting Reference

You can refer to the following tables for your desired CPU settings. Instruction for the settings given in section 2.4 is based on these tables and serves as a quick reference. You can skip these takes and go directly to section 2.4.

Table for all Vcore Voltage Selection on CPU (JP2)

VID0 (Pin1-2)	VID1 (Pin3-4)	VID2 (Pin5-6)	VID3 (Pin7-8)	VID4 (Pin9-10)	OUTPUT VOLTAGE
OPEN	OPEN	OPEN	OPEN	SHORT	1.30±1%
SHORT	OPEN	OPEN	OPEN	SHORT	1.35±1%
OPEN	SHORT	OPEN	OPEN	SHORT	1.40±1%
SHORT	SHORT	OPEN	OPEN	SHORT	1.45±1%
OPEN	OPEN	SHORT	OPEN	SHORT	1.50±1%
SHORT	OPEN	SHORT	OPEN	SHORT	1.55±1%
OPEN	SHORT	SHORT	OPEN	SHORT	1.60±1%
SHORT	SHORT	SHORT	OPEN	SHORT	1.65±1%
OPEN	OPEN	OPEN	SHORT	SHORT	1.70±1%
SHORT	OPEN	OPEN	SHORT	SHORT	1.75±1%
OPEN	SHORT	OPEN	SHORT	SHORT	1.80±1%
SHORT	SHORT	OPEN	SHORT	SHORT	1.85±1%
OPEN	OPEN	SHORT	SHORT	SHORT	1.90±1%
SHORT	OPEN	SHORT	SHORT	SHORT	1.95±1%
OPEN	SHORT	SHORT	SHORT	SHORT	2.00±1%
SHORT	SHORT	SHORT	SHORT	SHORT	2.05±1%
OPEN	OPEN	OPEN	OPEN	OPEN	NO CPU
SHORT	OPEN	OPEN	OPEN	OPEN	2.1±1%
OPEN	SHORT	OPEN	OPEN	OPEN	2.2±1%
SHORT	SHORT	OPEN	OPEN	OPEN	2.3±1%
OPEN	OPEN	SHORT	OPEN	OPEN	2.4±1%
SHORT	OPEN	SHORT	OPEN	OPEN	2.5±1%
OPEN	SHORT	SHORT	OPEN	OPEN	2.6±1%
SHORT	SHORT	SHORT	OPEN	OPEN	2.7±1%
OPEN	OPEN	OPEN	SHORT	OPEN	2.8±1%
SHORT	OPEN	OPEN	SHORT	OPEN	2.9±1%
OPEN	SHORT	OPEN	SHORT	OPEN	3.0±1%
SHORT	SHORT	OPEN	SHORT	OPEN	3.1±1%
OPEN	OPEN	SHORT	SHORT	OPEN	3.2±1%
SHORT	OPEN	SHORT	SHORT	OPEN	3.3±1%
OPEN	SHORT	SHORT	SHORT	OPEN	3.4±1%
SHORT	SHORT	SHORT	SHORT	OPEN	3.5±1%

Table for CPU Speed Ratio Setting (JP4, 5, 6)

Ratio	BF2 (JP4)	BF1 (JP5)	BF0 (JP6)
2X/6X	1-2 PIN SHORT	1-2 PIN SHORT	2-3 PIN SHORT
2.5X	1-2 PIN SHORT	2-3 PIN SHORT	2-3 PIN SHORT
3.0X	1-2 PIN SHORT	2-3 PIN SHORT	1-2 PIN SHORT
3.5X	1-2 PIN SHORT	1-2 PIN SHORT	1-2 PIN SHORT
4.0X	2-3 PIN SHORT	1-2 PIN SHORT	2-3 PIN SHORT
4.5X	2-3 PIN SHORT	2-3 PIN SHORT	2-3 PIN SHORT
5.0X	2-3 PIN SHORT	2-3 PIN SHORT	1-2 PIN SHORT
5.5X	2-3 PIN SHORT	1-2 PIN SHORT	1-2 PIN SHORT

2.4 Settings for Different CPU Types—A Quick Reference

AMD® K6 Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
166MHZ	2.9			66/100/33
200MHz				66/100/33
233MHZ	3.2			66/100/33
266MHz				66/100/33
300MHz	2.2			66/100/33
K6-2-300				100/100/33
K6-2-333				66/100/33

(Cont.) AMD® K6 Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
K6-2-350		JP 4 JP 5 JP 6	1	100/100/33
K6-2-400	2.2	JP 4 JP 5 JP 6	1	100/100/33
K6-2-450+		JP 4 JP 5 JP 6	1	100/100/33
K6-2-533		JP 4 JP 5 JP 6	1	97/97/32.3
K6-2-450		JP 4 JP 5 JP 6	1	100/100/33
K6-3-400	2.4	JP 4 JP 5 JP 6	1	100/100/33
K6-3-450		JP 4 JP 5 JP 6	1	100/100/33

Cyrix® MII Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
PR300 (66*3.5)		JP 4 JP 5 JP 6	1	66/100/33
PR300 (75*3)	2.9	JP 4 JP 5 JP 6	1	75/100/33
PR233 (83*3)		JP 4 JP 5 JP 6	1	83/125/31.3

12   WinFast 5400MAX Mainboard

Cyrix® 6x86/6x86L Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
6x86 PR166	3.5	JP 4 JP 5 JP 6	1	66/100/33
6x86L PR166	2.8	JP 4 JP 5 JP 6	1	66/100/33
6x86 PR200	3.5	JP 4 JP 5 JP 6	1	66/100/33
6x86L PR200	2.8	JP 4 JP 5 JP 6	1	66/100/33

Cyrix® 6x86MX Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
PR200 (66*2.5)		JP 4 JP 5 JP 6	1	66/100/33
PR233 (75*2.5)		JP 4 JP 5 JP 6	1	75/100/37.5
PR233 (66*3)	2.9	JP 4 JP 5 JP 6	1	66/100/33
PR233 (83*2)		JP 4 JP 5 JP 6	1	83/125/31.3
PR266 (75*3)		JP 4 JP 5 JP 6	1	75/100/37.5
PR266 (66*3.5)		JP 4 JP 5 JP 6	1	66/100/33

(Cont.) Cyrix® 6x86MX Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
PR266 (83*2.5)	2.9	JP 4 JP 5 JP 6	1	83/125/31.3

Intel® Pentium® MMX™ Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
166MHz		JP 4 JP 5 JP 6	1	66/100/33
200MHz	2.8	JP 4 JP 5 JP 6	1	66/100/33
233MHz		JP 4 JP 5 JP 6	1	66/100/33

IDT C6™ Processor

CPU Speed	CPU Voltage (Vcore)	JP4, 5, 6 (BF2, 1, 0 Setting)	JP2 (Vcore Setting)	CPU Host/SDRAM/ PCI Clk (X-BIOS in BIOS Setup)
200MHz		JP 4 JP 5 JP 6	1	66/100/33
225MHz	3.3	JP 4 JP 5 JP 6	1	75/100/37.5

2.5   Other Jumper Setting

Clear CMOS Data (JP12)

Setting	Function
1	Normal (Default)
1	Clear CMOS data

14   WinFast 5400MAX Mainboard

Chapter 3   Hardware Setup

Static Precaution

Static-sensitive electrical discharge can damage electronic components. To prevent damage to your system board, it is important to handle it very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

- Use a grounded wrist strap designed for static discharge.
- Make sure you are static protected while unpacking. Touch a grounded metal object before you remove the board from the anti-static bag.
- Handle the board by its edges only; do not touch its components, peripheral chips, memory modules, or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the system board and peripherals back in their anti-static bags when not in use.
- For grounding purposes, be sure your computer system's chassis provides excellent conductive contact between its power supply, case, the mounting fasteners, and the system board.

3.1   CPU Installation

Please refer to section 2.3 to 2.4 of Chapter 2 *Quick Installation*

Note: When handling the processor package, avoid placing direct pressure on the label area of the fan.

3.2   Memory Installation

The mainboard provides two 168-pin DIMM (Double In-Line Memory Module) sockets, DIMM1 and DIMM2. You can use SDRAM from 8MB, 16MB, 32MB, 64MB, 128MB, 256MB to 512MB per DIMM socket, or you can use VCM from 32MB, 64MB, and 128MB.

IF you use 100Mhz CPU Bus/SDRAM bus synchronous frequency, you must use the qualified SDRAM which meets PC-100 Specifications.

IF you use 133Mhz CPU Bus/SDRAM bus synchronous frequency, you must use the qualified SDRAM which meets PC-133 Specifications.

DIMM Installation Procedures

The DIMM slot has two keys marked "VOLT" and "DRAM" so that the module will only fit in one direction. Note that the module must be a 3.3V unbuffered DIMM.

Step 1: Insert the module in the DIMM socket as shown, then push it in position.

Step 2: The plastic clip at two ends of the DIMM socket will automatically close.
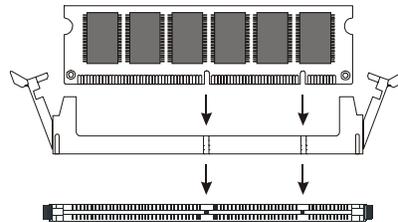
3.3 ADIMM Installation

Step 3: Position the optional card (WinFast ADIMM-128 or WinFast-DCT) over the ADIMM slot and insert one end of the board in the slot first.

Step 4: Firmly but gently press the bus connector on the bottom of the card into the slot. Be sure the metal contacts on the bottom of the host adapter are securely seated in the slot.

Step 5: For ADIMM-DCT, anchor the card's mounting bracket to the computer chassis and have it fastened with screws.
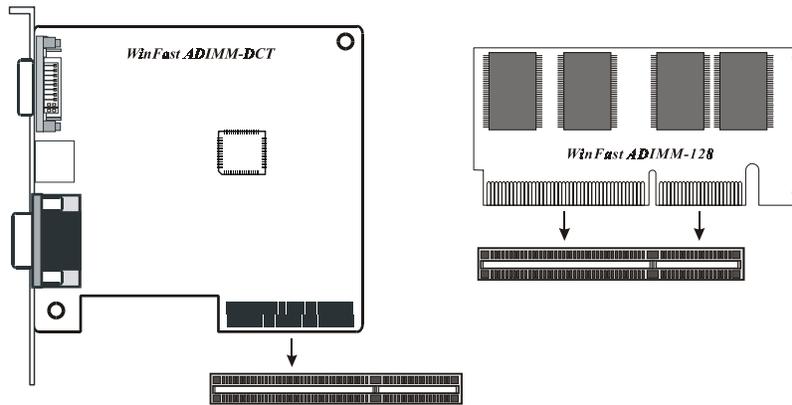
3.4 Connecting Instruction

How each connector is connected and what it does are described here in detail. See Figure 2.1 on Page 5 to locate connectors.

U12

Case Signal Connector (U12)

- Pins [1 & 2] PW-BTN: Allows connecting to a push the power button on the system's case.
- Pins [4 & 5] RESET: Connects to the reset button on the system's case. The reset button is used to "cold-boot" the system without actually turning off the power, reducing wear and tear on the power supply. Avoid rebooting the system when the HDD LED is blinking.
- Pins [7-10] SPEAKER: Connects to the speaker on the system's case.
- Pins [12 & 13] IDE1 and [25 & 26] IDE2: IDE1/IDE2 hard disk LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD LED is lit.
- Pins [14-16] PWR-LED: Power LED. It is always lighted after the system power is on.
- Pins [17 & 18: Reserved
- Pins [20-22] ACPI-LED: For ACPI LED connection on the case.
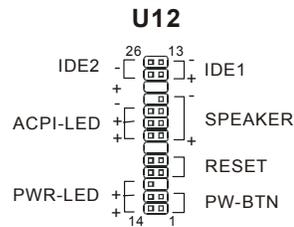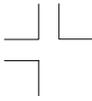
Hard Disk Connector

IDE1 IDE2

The on-board Enhanced IDE controller can support up to 4 IDE hard drives or other ATAPI devices, such as CD-ROMs. This controller, as with all Enhanced IDE controllers, consists of both Primary (IDE 1) and Secondary (IDE 2) ports. Each port has an associated connector and cable, which can support up to 2 ATAPI devices each.

All IDE devices have jumpers, which allow the user to configure the device as either "Master" or "Slave". A Master device is one that is ALONE on the IDE cable, whereas a Slave device is installed as a SECOND device on the same cable. Keep in mind that the Master device will appear before the Slave device in the CMOS Setup, as well as the Operating System software. *Refer to the device documentation for jumper settings.

The Secondary IDE port can be used for up to 2 additional ATAPI devices. Normally it's recommended that you connect your first hard drive to the Primary port, and the first CD-ROM to the Secondary.

Make sure to align the RED stripe on the ribbon cable with Pin-1 on the mainboard IDE connector. On most hard drives and CD-ROMs, the RED stripe should be oriented towards the power connector of the device.

Mainboard IDE Port
Slave Drive
Master Drive
Blue Connector
Gray Connector
Black Connector
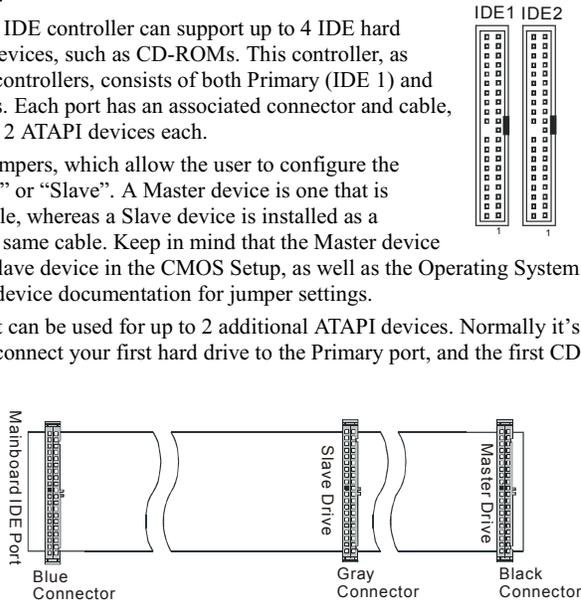
When using Ultra ATA 66 IDE cable (as shown right), the black color connector on the cable is for Master drive, gray color is for Slave drive and blue color is for connecting to IDE port onboard.

Floppy Disk Connector

FLOPPY

The on-board floppy controller supports 2 floppy disk drives. Make sure the RED stripe on the ribbon cable is oriented towards Pin-1. Notice the "twist" between the sets of connectors on the floppy cable. The floppy drive "A" position is at the END of the cable, whereas floppy drive "B" is hooked to one of the connectors on the other side of the twist.
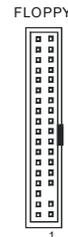
RJ45 Ethernet Connector and USB Connectors (U6)

U6
(Black)

RJ45 LAN connector and two USB peripheral devices connectors.

RJ45
USB1 Port
USB2 Port
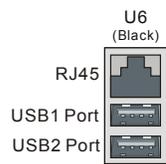
Cooling Fans (JP7, JP10)

JP7   JP10

SYS FAN (JP10), CPU FAN (JP7) are small 3-pin Header Connectors that provide 12-Volt power for CPU and System cooling fans. Plug in the fan cable to the connector.

CPU FAN   SYSTEM FAN

Hardware Setup   17
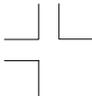
Stereo Audio/Video In Connectors (JP19, 20, 21)

JP19 allows you to receive stereo audio input from an internal CDROM drive, JP19 for other auxiliary audio sources and JP20 for vide input.

JP19 AUX
L G G R

JP20 VIDEO
L G G R

JP21 CD
G L G R
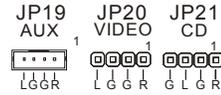
Power Supply Connector (ATX_PWR1)

This mainboard features an ATX-style Power Supply Connector. This connector is keyed to prevent connection in the wrong direction. Line up the locking mechanism on the connector from the Power Supply with the tab on the mainboard connector. Press down until the two connectors are locked.

ATX_PWR1

3.3V			3.3V
-12V			3.3V
GND			GND
PW-ON			5V
GND			GND
GND			5V
GND			GND
-5V			PW-OK
5V			5VSB
5V			12V
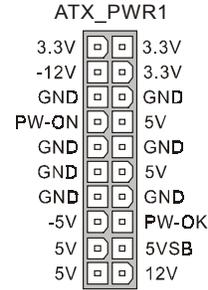
Serial, Parallel and VGA Ports

LPT1
(Burgundy)

COM1
(Turquoise)

VGA
(Blue)
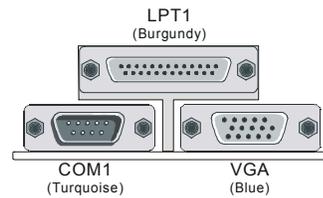
A 25-pin D-Sub header is provided on the back panel for a multi-mode bi-directional parallel port. One 9-pin D-Sub headers is provided on the back panel for Serial port COM1. One VGA port is also provided.

IrDA-Compliant Infrared Module Connector (IR, CIR)

The IrDA connector bracket hooks directly to this connector on the mainboard. This connector provides support for the optional wireless transmitting and receiving infrared module.

IR   CIR
1   1
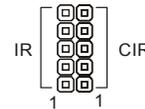
Midi/Joystick, MIC, Line In, Line Out

- Midi/Joystick: Allow you to connect game joystick or game pad for playing games or connect Midi devices for playing or editing audio.
- Mic: Allows microphones to be connected for inputting sound.
- Line In: Allows tape players or other audio sources to be recorded by your computer or played through the Line Out.
- Line Out: Connected to headphones or speakers with amplifier.

Game Port
(Gold)

Line Out   Line In   MIC
(Lime)   (Light Blue) (Pink)
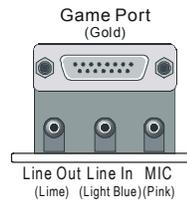
PS/2 Keyboard and Mouse Connector

These two connectors are located on the back panel of the mainboard.

(Green)
KB/MS
PS/2 Mouse

PS/2 Keyboard
(Purple)
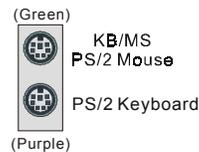
18   WinFast 5400MAX Mainboard
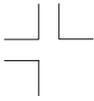
COM2 Connector (JP22)

If your purchase does not include 3D Glasses and Home PNA cards. This is what the connection will look like.
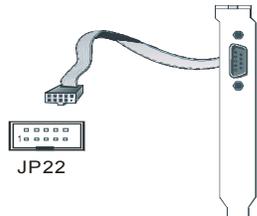
JP22

3D Glasses + COM2 Connector (JP22) +Home PNA (RJ1) –Optional

For JP22 and RJ1 connection

These two connectors are used for connecting serial port COM2 (JP22) and RJ1 (for 3D glasses and Home PNA).

JP22
(COM2)

RJ1

JP22
(COM2)

RJ1
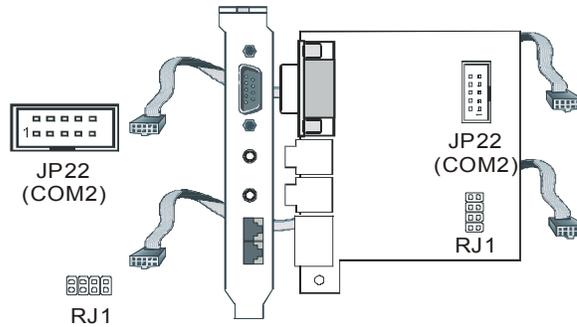
3D glasses connection

This card provides 2 sets of 3D glasses connection sockets for two persons' use at the same time.

JP22

RJ1
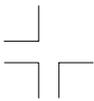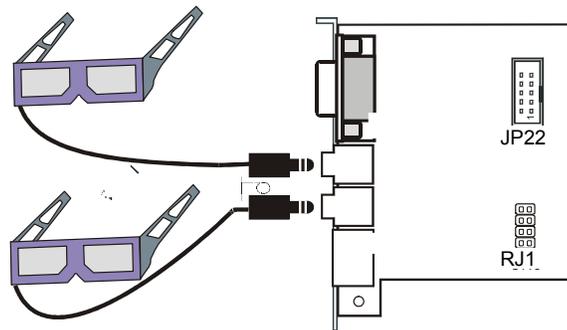
Home PNA connection
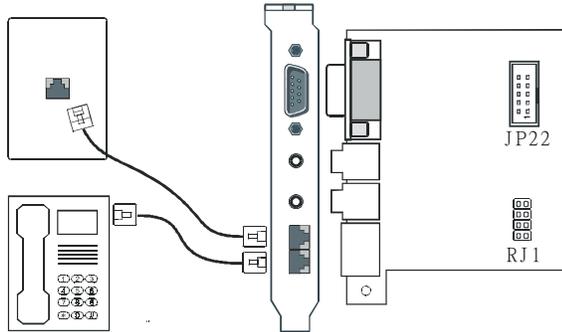
USB1 Connector

This is for connecting a two-USB-connector on the back panel.
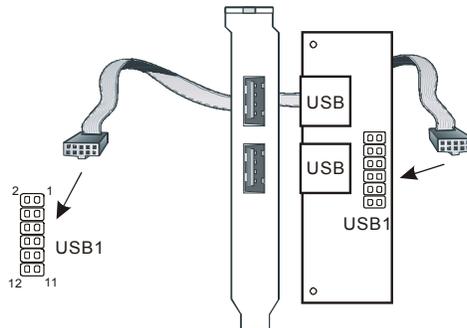
Chapter 4   BIOS Setup

The BIOS Setup (also called CMOS Setup) is where many hardware configuration options are set and stored. This configuration information will remain in the BIOS until it is changed, or cleared by removing the battery. CMOS (Complementary Metal Oxide Semiconductor) refers to the chip in which the BIOS information is stored.

This mainboard also features a *Flash* BIOS. A Flash BIOS can be upgraded by software programs, thereby eliminating the need to replace the "BIOS Chip" on the mainboard.

This chapter describes the AwardBIOS Setup program. The Setup program allows you to modify basic system configuration settings. The settings are then stored in the CMOS RAM that retains the information when the power is turned off.

The rest of this chapter is a configuration guide for Setup.

The AwardBIOS is activated once you boot the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When three preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy disk, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program by pressing **Del**.

The AwardBIOS supports an override to CMOS settings, which will reset your system to its default configuration if you discover your computer is no longer able to boot up after making and saving system changes with Setup.

The best advice is to alter settings you have thorough knowledge of. Do not change settings without a good reason. The defaults are for the best performance and reliability. Even a seemingly small change to the Chipset setup may unstablize the system.

4.1   Main Menu

CMOS Setup Utility – Copyright (C) 1984-1999 Award Software	
Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status	<<< X-BIOS >>> Load Basic Defaults Load Best Defaults Set Password Save & Exit Setup Exit Without Saving
Esc : Quit F10 : Save & Exit Setup	↑ ↓ ← → : Select Item

∗ Description of selected item is shown in the column on the bottom of the screen.

When you enter the AwardBIOS CMOS Setup Utility, a Main Menu as shown appears on the screen. The Main Menu allows you to select from several Setup functions and two exit

choices. Use the arrow keys to select among the items and press Enter to accept and enter the submenu.

4.2 Standard CMOS Features

```
┌─────────────────────────────────────────────────────────────────────────┐
│        CMOS Setup Utility – Copyright (C) 1984-1999 Award Software        │
│                          Standard CMOS Features                          │
├───────────────────────────────────────────────────┬─────────────────────┤
│ Date (mm:dd:yy) :          Fri, Jan   1 1999       │     Item Help       │
│ Time (hh:mm:ss) :          00 : 00 : 00            │                     │
│                                                    │                     │
│ IDE Primary Master         Press Enter None        │                     │
│ IDE Primary Slave          Press Enter None        │                     │
│ IDE Secondary Master       Press Enter None        │                     │
│ IDE Secondary Slave        Press Enter None        │                     │
│                                                    │                     │
│ Drive A                    1.44M, 3.5 in           │                     │
│ Drive B                    None                    │                     │
│                                                    │                     │
│ Video                      EGA/VGA                 │                     │
│ Halt On                    All,But Keyboard        │                     │
│                                                    │                     │
│ Base Memory                   640K                 │                     │
│ Extended Memory            130048K                 │                     │
│ Total Memory               131072K                 │                     │
├───────────────────────────────────────────────────┴─────────────────────┤
│   ↑ ↓ ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit     │
│      F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults  │
└─────────────────────────────────────────────────────────────────────────┘
```

* The Item Help column contains the description of selected item.

Date

For information only. The day of the week derives from the date information.

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave

After pressing [Enter], a sub-menu will display as follows:

```
┌─────────────────────────────────────────────────────────────────────────┐
│        CMOS Setup Utility – Copyright (C) 1984-1999 Award Software        │
│                          IDE Primary Master                              │
├───────────────────────────────────────────────────┬─────────────────────┤
│ IDE HDD Auto-Detection     Press Enter             │     Item Help       │
│                                                    │                     │
│ IDE Primary Master         Auto                    │                     │
│                                                    │                     │
│ Capacity                                           │                     │
│ Access Mode                Auto                    │                     │
│                                                    │                     │
│ Cylinder                   0 MB                    │                     │
│ Head                       0                       │                     │
│ Precomp                    0                       │                     │
│ Landing Zone               0                       │                     │
│ Sector                     0                       │                     │
├───────────────────────────────────────────────────┴─────────────────────┤
│   ↑ ↓ ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit     │
│      F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults  │
└─────────────────────────────────────────────────────────────────────────┘
```

22   WinFast 5400MAX Mainboard

* The Item Help column contains the description of selected item.

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

IDE HDD Auto-Detection

The "IDE HDD Auto-Detection" utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You do not need the "IDE HDD AUTO DETECTION" utility. The BIOS will Auto-detect the hard disk size and model during POST.

The AwardBIOS supports 3 HDD modes: NORMAL, LBA and LARGE mode. Generic access mode that is neither the BIOS nor the IDE controller will make transformations during accessing.

NORMAL Mode:

The maximum numbers of cylinders, head & sectors for NORMAL mode are 1024, 16 and 63.

no.of Cylinder(1024) x no. of Head(16) x no. of Sector(63) x no. per sector(512) = 528 Megabytes

If you set the HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) Mode:

This is a new HDD accessing method to overcome the 528 Megabyte bottleneck.

The number of cylinders, heads and sectors shown in the setup may not be the number physically contained in the HDD. During the HDD accessing, the IDE controller will transform the logical address described by sector, head and cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode can be larger than 8.4 GB for IDE hard drives. These BIOSes have built-in INT13 extension support.

Full support of hard drives beyond the 8.4-GB capacity requires support in both the BIOS and the operating system.

The table below shows the maximum hard drive partition size and total capacity supported by different operating systems:

Operating System	Max. Partition Size	Max. HDD Capacity
MS DOS	2.1 GB	< = 8.4 GB
Win95 OSR1	2.1 GB	>8.4 GB
Win95 OSR2	No limit	>8.4 GB

LARGE Mode:

This is an extended HDD access mode supported by Award Software. Some IDE HDDs contain more than 1024 cylinders without LBA support (in some cases, user does not want LBA). The Award BIOS provides another alternative to support these kinds of LARGE mode:

CYLS	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads are multiplied by 2. A reverse transformation process will be made inside INT 13h in order to access the right HDD address Maximum HDD size: no. Cylinder (1024) x no. Head (32) x no. Sector (63) x bytes per sector (512) = 1 Gigabyte

Note: *To support LBA or LARGE mode of HDDs, there must be some software involved. All software are located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System, which replaces the whole INT 13h. UNIX operating system do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB.*

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE drives. When you select type Auto for a hard drive, the BIOS detects its specifications during POST, every time the system boots.

Note: *We recommend that you select type Auto for all drives.*

If you do not want to select drive type Auto, other methods of selecting the drive type are available:
1. Match the specifications of your installed IDE hard drive(s) with the programmed values for types 1 through 45.
2. Select type USER and enter values into each drive parameter field.
3. Use the IDE HDD Auto-Detection function.

Here is a brief explanation of drive specifications:
- Type: The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.
- Capacity: Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.
- Access Mode: Auto, Normal, Large, or LBA
- Auto: The BIOS automatically determines the optimal mode.
- Normal: Max. number of cylinders, heads and sectors supported are 1024, 16 and 63.
- Large: For drives that do not support LBA and have more than 1024 cylinders.
- LBA (Logical Block Addressing): During drive accesses, the IDE controller transforms the data address described by sector, head and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.
- Cylinder: Number of cylinders.
- Head: Number of heads
- Precomp: Write precompensation cylinder
- Landing Zone: Landing zone
- Sector: Number of sectors

24 WinFast 5400MAX Mainboard

Drive A/Drive B

Select the correct specifications for the disk drive(s) installed. The choice: None, 360K (5.25 in), 1.2M (5.25 in), 720K (3.5 in), 1.44M (3.5 in), 2.88M (3.5 in).

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS also supports a secondary video subsystem. The choice: CGA40, CGA80, MONO, EGA/VGA.

Halt On

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

Options	Description
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stop for all other errors.
All, But Disk/Key	POST does not stop for a keyboard or disk error, but stops for all other errors.
All errors	If the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
No errors	POST does not stop for any error.

Memory

You can not change any values in the Memory fields, they are only for your information, The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory.

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to CPU.

- Base Memory: Typically 640 KB. Also called conventional memory. The DOS operating system and conventional applications use this area.
- Extended Memory: Above the 1-MB boundary.
- Total Memory: Total memory available of the system.

4.3   Advanced BIOS Features

CMOS Setup Utility – Copyright (C) 1984-1999 Award Software
Advanced BIOS Features

Anti-Virus Protection	**Enabled**	**Item Help**
CPU Internal Cache	**Enabled**	
External Cache	**Enabled**	
Quick Power On Self Test	**Enabled**	
First Boot Device	**HDD-0**	
Second Boot Device	**Floppy**	
Third Boot Device	**SCSI**	
Boot Other Device	**Enabled**	
Swap Floppy Drive	**Disabled**	
Boot Up Floppy Seek	**Disabled**	
Boot Up NumLock Status	**On**	
Gate A20 Option	**Fast**	
Typematic Rate Setting	**Enabled**	
Typematic Rate (Chars/Sec)	**30**	
Typematic Delay (Msec)	**250**	
Security Option	**Setup**	
OS Select For DRAM > 64MB	**Non-OS2**	
HDD S.M.A.R.T. Capability	**Disabled**	
Report No FDD For WIN 95	**No**	
Video BIOS Shadow	**Enabled**	
Cyrix 6x86/MII CPUID	**Enabled**	

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

* The Item Help column contains the description of selected item.

Anti-Virus Protection

This item is enabled by default; the AwardBIOS will monitor the boot sector to see if there is virus. If virus is found the BIOS will halt on the system and the following warning message will appear.

! PBVA WARNING !
Paragon Boot Virus analyzer has
detected virus activity on hard disk.
We recommend you to press:
[Enter] Boot from clean disk
[C] Continue Boot

Note: *When enabling this item, the monitoring boot sector virus only happens at the booting period. After entering the system this function is disabled automatically. So you can run any kind of program such as many disk diagnostic programs, which attempts to access boot sectors or the partition table of hard disk drive when it is running.*

CPU Internal/External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). When the CPU requests data, the system transfers the requested data

from the main DRAM into cache memory, for even faster access by the CPU. Select *Enabled* to enable cache.

Quick Power On Self Test

Select *Enabled* to reduce the amount of time required to run the POST. A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

First/Second/Third Boot Device, Boot Other Device

This field determines which drive to be searched first, second or third for the disk operating system (i.e. DOS). You can use these settings to select your Priority Boot Up drives for Floppy drive A, IDE Hard Disk Drive C, D, E, F, or SCSI.

Swap Floppy Drive

This field is effective only in a system with two floppy drives. This item allows you to determine whether to enable the swap floppy drive or not. (i.e. physical floppy disk A assigned to logical drive B or physical drive B to logical drive A)

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

Enabled: BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks.

Disabled: BIOS will not search for the type of floppy disk drive by track number.

Boot Up NumLock Status

This allows you to determine the default of the numeric keypad.

On: Keypad is number keys after boot up.
Off: Keypad is arrow keys after boot up.

Gate A20 Option
Gate A20 refers to the way the system addresses memory above1MB (extended memory). When set to *Fast*, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to *Fast* improves system speed, particularly with OS/2 and Windows.
The options are: *Fast* and *Normal.*

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard, system will use the default typematic rate delay of 250 msec and typematic rate of 6 chars/sec to repeatedly input. When enabled you can adjust both settings. For example, you could use such a feature to accelerate cursor movements with the arrow keys.
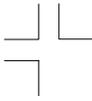
Enabled: Enable typematic rate setting.
Disabled: Disable typematic rate setting.

Typematic Rate (Chars/Sec)

If the field "Typematic Rate Setting" is set to *Enabled*, you are provided with options of the number of times a character repeats per second when you hold down a key.

The options are: *6*, *8*, *10*, *12*, *15*, *20*, *24*, and *30*.

Typematic Delay (Msec)

If the field "Typematic Rate Setting" is set to *Enabled*, the options here allow you to select the delay time in msec. before key strokes begin to repeat.

The options are: 250 (default), 500, 750, and 1000.

Security Option

If you have set a password at User Password option in main menu, select whether the password is required every time the System boots, or only when you enter Setup.

The options are: *System* and *Setup*.

OS Select for DRAM > 64MB

This item allows you to access memory that is over 64MB in OS/2. Choose OS2 when you are using OS2 and SDRAM size greater than 64 MB. For other operating systems choose Non-OS2.

The choice: Non-OS2, OS2.

HDD S.M.A.R.T. Capability Disabled

S.M.A.R.T. (Self-Monitoring, Analysis and reporting technology) is a technology developed to manage the reliability of the hard disk by predicting future device failures. The hard disk needs to be S.M.A.R.T. capable.

The options are: *Enabled* and *Disabled*.

Note: *S.M.A.R.T. cannot predict all future device failures. It should be used as a warning tool, not as a tool to predict the device reliability.*

Report No FDD for Win95

Select Yes to release IRQ6 when the system contains no floppy drive, for compatibility with Windows 95 logo certification. In the Integrated Peripherals screen, select Disabled for the Onboard FDC Controller field. You should choose "Yes" if your operating system is Windows 95 and without a floppy disk equipped in your computer.

The options are: *Yes* and *No*.

Video BIOS Shadow

Determines whether video BIOS stored in the ROM of the video card will be copied to system RAM for speeding up the execution. Video BIOS Shadow will increase the video performance.

The options are *Enabled* and *Disabled*.

Cyrix 6x86/MII CPUID

Select *Enabled* if you are using Cyrix 6x86/MII CPU.

4.4   Advanced Chipset Features

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

```
CMOS Setup Utility – Copyright (C) 1984-1999 Award Software
                     Advanced Chipset Features

 Auto Configuration          Auto                    Item Help
 NA# Enable                  Enabled
 L2 Cache Burst RD Cycle     Delay 1 T
 Asyn/Sync Mode CPU/DRAM     Asynchronous
 RAS Active Time             6T
 RAS Precharge Time          2T
 RAS to CAS Delay            2T
 Mem/Com Output Timing       Delay 1T
 Lead-off time background    Delay 1T
 Lead-off time for R/W       Delay 1T
 Refresh Rate Control        15.6us
 Refresh Queue Depth         12
 SDRAM CAS Latency           3T
 PCI Peer Concurrency        Enabled
 Read Prefetch Memory RD     Enabled
 Assert TRDY After Prefet    1 QWs
 CPU to PCI Burst Mem. WR    Enabled
 CPU to PCI Post Write       Enabled
 AGP Aperture Size           64MB
 System BIOS Cacheable       Enabled
 Video   BIOS Cacheable      Enabled
 Memory Hole at 15M-16M      Disabled
 PCI Post Write Buffer       Enabled
 L2 Cache WT/WB Policy       WB
 Memory Parity Check         Enabled

   ↑ ↓  ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit
      F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults
```

* The Item Help column contains the description of selected item.

Auto Configuration

Auto Configuration selects predetermined optimal values of chipset parameters.

The options are: *Manual*, *Auto*, *100MHz*, and *133MHz.*

NA# Enable

Selecting Enabled permits pipelining, in which the chipset signals the CPU for a new memory address before all data transfers for the current cycle are complete, resulting in

faster performance.

The options are: *Enabled* and *Disabled*.

L2 Cache Burst RD Cycle

These Timing numbers are the pattren of cycles the CPU uses to read data from the cache.

The options are: *Norma*l, and *Delay 1T*.

Asyn/Sync Mode CPU/DRAM

This field can only be set to Synchronous when the frequency of CPU clock and the frequency of DRAM clock are the same and the skew between these two clocks is zero.

The options are: *Synchronous* and *Asynchronous*.

RAS Active Time

Select SDRAM ACT to PRE command period, tRAS.

The options include: *6T, 7T, 5T,* and *4T*.

RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.

RAS to CAS Delay

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe).

Mem/Com Output Timing

This field is used to control the timing to drive memory command onto memory bus. When heavy loading memory is used, signal propagation delay may be more than 1 clock. In this case, enabling this bit will force all memory command delay 1 clock except self refresh command and the reference clocks are adjustable clocks defined in regular 8Ch and 8Dh.

The options are: *Normal* and *Delay 1T*.

Lead-off time background

When set to *Delay 1T*, background commands are given 1 clock slower than the memory address (MA) is. When set to *Normal*, background command and MA are issued at the same time.

The options are: *Delay 1T* and *Normal*.

Lead-off time for R/W

When set to *Delay 1T*, memory Read/Write command is issued 1 clock slower than the memory address (MA) is. When set to 1, read command and MA are issued at the same time.

The options are: *Delay 1T* and *Normal*

Refresh Rate Control

This field allows you to select a refresh rate.

The options are: 15.6 us, 7.8 us, and 3.9 us.

Refresh Queue depth

This item controls the depth of refresh queue. To minimize the performance penalty caused by refresh cycles, the concept of refresh queue is introduced. Refresh request is arbitrated with other DRAM request. If a refresh request does not get served, it enters the refresh queue. The priority of refresh request is promoted to highest when the refresh queue is full.

The options are: *0*, *4*, *8*, and *12*.

SDRAM CAS Latency

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

PCI Peer Concurrency

When *Enabled* is selected, CPU to L2/DRAM accesses are allowed to perform concurrently with PCI-to-PCI accesses.

The options are: *Enabled* and *Disabled*.

Read Prefetch Memory RD

When this item is *Enabled*, the system is allowed to prefetch the next read instruction and initiate the next process.

The options are: *Enabled* and *Disabled*.

Assert TRDY After Prefet

When this field is selected 1 Qws, the chipset asserts its first TRDY# for a transaction after it prefetches 1 quadword of data from system memory. Otherwise, the chipset asserts its first TRDY# after 2 quadwords are prefetched.

The options are: *2Qws* and *1Qws*.

CPU to PCI Burst Mem. WR

When this option is enabled, the chipset is allowed to assemble long PCI bursts from the data held in its buffers.

CPU to PCI Post Write

When this field is *Enabled*, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

The options are: *Enabled* and *Disabled*.

AGP Aperture Size

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for APG information.

The options are: *4*, *8*, *16*, *32*, *64*, *128*, and *256MB*.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a
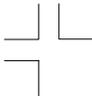
system error may result.

The options are: *Enabled* and *Disabled*.

Video BIOS Cacheable

Selecting Enabled allows caching of the video memory (RAM) at A0000h to AFFFFh, resulting in better video performance. However, if any program writes to this memory area, a memory access error may result.

The options are: *Enabled* and *Disabled*.

Memory Hole at 15M-16M

You can reserve this area of system memory for ISA adapter ROM.   When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The options are: *Enabled* and *Disabled*.

PCI Post Write Buffer

You can enable or disable the chipset's ability to use a buffer for posted writes initiated on the PCI bus.

The options are: *Enabled* and *Disabled*.

L2 Cache WT/WB Policy

Your selection for this field specifies the coherence policy for L2 cache and system DRAM. This field must be selected *WT* (Write Through) when BIOS is sizing the L2 cache. You can select *WB* (Write Back) to support L2 cache in write back mode once L2 cache sizing mode is finished.

The options are: *WT* and *WB*.

Lead-off time background

When set to *Delay 1T*, background commands are given 1 clock slower than the memory address (MA) is. When set to *Normal*, background command and MA are issued at the same time.

The options are: *Delay 1T* and *Normal*.

Lead-off time for R/W

When set to *Delay 1T*, memory Read/Write command is issued 1 clock slower than the memory address (MA) is. When set to 1, read command and MA are issued at the same time.

The options are: *Delay 1T* and *Normal*

Memory Parity Check

Select *Enabled* if the DRAM chips in your system support parity.

4.5 Integrated Peripherals

This Menu Setup allows you to configure your IDE, USB keyboard, Floppy Drive, Parallel Port, Serial Port and IR function.

```
CMOS Setup Utility – Copyright (C) 1984-1999 Award Software
                    Integrated Peripherals
```

Internal PCI/IDE	Both	Item help
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
Primary Master UltraDMA	Auto	
Primary Slave UltraDMA:	Auto	
Secondary Master UltraDMA:	Auto	
Secondary Slave UltraDMA:	Auto	
IDE Burst Mode	Enabled	
IDE Data Port Post Write	Disabled	
PS/2 mouse function	Enabled	
SIS-7018 AC97 AUDIO	Enabled	
SIS-7013 S/W Modem	Enabled	
SIS-900 10/100M ETHERNET	Enabled	
USB Controller	Enabled	
USB Keyboard Support	Disabled	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
UR2 Duplex Mode	Half	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
ECP Mode Use DMA	3	
Init Display First	PCI Slot	
System Share Memory Size	8 MB	
Frame Buffer Cache Size	32MV	
VGA Memory Clock (MHz)	66	

```
↑ ↓ ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit
       F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults
```

* The Item Help column contains the description of selected item.

Internal PCI/IDE

The chipset contains a PCI IDE interface that supports two IDE channels: Primary (IRQ 14) and Secondary (IRQ 15). Each channel supports two IDE devices, so the system is capable of supporting a total of four IDE devices. Select Primary, Secondary, or Both to activate chipset IDE interface(s) installed on your system board.

IDE 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.

BIOS Setup   33

The choice: *Auto*, *Mode 0*, *Mode 1*, *Mode 2*, *Mode 3*, and *Mode 4*.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/66 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 your hard drive and your system software both support Ultra DMA/66, select Auto to enable BIOS support.

The Choice: *Auto*, *Mode 0*, *Mode 1*, *Mode 2*, *Mode 3*, *Mode 4*.

IDE Burst Mode

Selecting *Enabled* reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to disabled. This field does not appear when the field *Internal PCI/IDE* is disabled.

IDE Data Port Post Write

By selecting *Enabled*, you speed up processing of drive reads and writes, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*.

The options are *Enabled* and *Disabled*.

PS/2 mouse function

If your system has a PS/2 mouse port and when you install a serial pointing device, select *Disabled*.

SIS-7018 AC97 AUDIO

This field is for enabling or disabling onboard Audio Codec.

SIS-7013 S/W Modem

This field is for enabling or disabling onboard Modem Codec.

SIS-900 10/100M ETHERNET

This field is for enabling or disabling onboard Ethernet.

USB Controller

Select *Enabled* to enable the system Universal Serial Bus (USB) controller when you have USB peripherals.

USB Keyboard Support

Select *Enabled* if you use USB Keyboard.

The options are: *Enabled* and *Disabled*.

IDE HDD Block Mode

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

The options are: *Enabled* and *Disabled*.

Onboard FDC Controller

This should be enabled if your system has a floppy disk drive (FDC) installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.
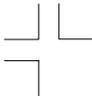
The options are: *Enabled* and *Disabled*.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

Select an infrared port mode.

The options are: *Normal*, *Askir* and *IrDA*.

UR2 Duplex Mode

This item selects the IR function when the choice of the UART mode is ASKIR.
The original options are *Full* and *Half*, but they are not provided here. The default is fixed at *Half*.

Onboard Parallel Port

This item allows you to determine access onboard parallel port controller with which I/O address.

The options are: *378/IRQ7*, *278/IRQ5*, *3BC/IRQ7*, and *Disabled*.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Normal EPP (Extended Parallel Port) ECP (Extended Capabilities Port) ECP+EPP PC AT parallel port Bi-directional port Fast, buffered port Fast, buffered, bi-directional port.

Select Normal unless you are certain your hardware and software both support EPP or ECP mode.

The options are: *SPP*, *ECP/EPP*, *ECP*, and *EPP/SPP*.

ECP Mode Use DMA

This field allows you to select a DMA channel for the port.

The original options are : *1*, *2*, *3*, and *4*, but they are not provided here. The default is fixed at 3.

Init Display First

The selected display device will be initialized before any other device on the system are initialized. Thus the selected device becomes the primary display.

System Share Memory Size

Your selection determines the shared memory size for DRAM(?).
The options are: *2M*, *4M*, *8M, 16M, 32M, 64M, 2+2M, 4+4M, 8+8M, 16+16M,* and *32+32M*.

Frame Buffer Cache Size

This field shows the size of current Frame Buffer Cache and provides no options for selection.emory Clock (MHz)

4.6   Power Management Setup

The Power Management Setup allows you to configure your system to the most effectively energy saving while in operating.

```
CMOS Setup Utility – Copyright (C) 1984-1999 Award Software
                    Power Management Setup
```

ACPI function	Enabled	Item Help
ACPI Suspend Type	S1 (POS)	
Power Management	User Define	
Video Off Option	Susp,Stby -> Off	
Video Off Method	V/H SYNC+Blank	
Switch Function	Break/Wake	
MODEM Use IRQ	3	
Hot Key Function As	Power Off	
** PM Events **		
HDD Ports Activity	Enabled	
COM Ports Activity	Enabled	
LPT Ports Activity	Enabled	
VGA Activity	Enabled	
IRQ [3-7,9-15], NMI	Enabled	
IRQ 8 Break Suspend	Disabled	
Power Button Over Ride	Instant Off	
RING Power Up Control	Disabled	
MACPME Power Up Control	Disabled	
PCIPME Power Up Control	Disabled	
KB Power ON Password	Enter	
Power Up by Alarm	Disabled	
Month Alarm	NA	
Day of Month Alarm	0	
Time (hh:mm:ss) Alarm	0 0 0	

```
↑ ↓ ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit
F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults
```

* The Item Help column contains the description of selected item.

ACPI Function

If you use an ACPI compliant OS like Windows 98 or Windows 2000, enable it.

The options are: *Enabled* and *Disabled*.

ACPI Suspend Type

The options are: *S1 (POS)* and *S3 (STR)*.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes:
*   Min. Saving: Minimum power management.   Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
*   Max. Saving: Maximum power management -- ONLY AVAILABLE FOR SL CPUs.   Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.

36   WinFast 5400MAX Mainboard

- Disabled: Disable power saving functions
- User Defined: Allows you to set each mode individually.

Video Off Option

Selects the power-saving modes during which the monitor goes blank:
- Always On: Monitor remains on during power-saving modes.
- Suspend – Off: Monitor blanked when system enters Suspend mode.
- Susp, Stby – Off: Monitor blanked when system enters either Suspend or Standby mode.
- All Modes – Off: Monitor blanked when system enters any power saving mode.

Video Off Method

This determines the manner in which the monitor is blanked:
- V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- Blank Screen: This option only writes blanks to the video buffer.
- DPMS Supported: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards.

Switch Function

You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period. Break/Wake. System enters Suspend mode; press the power button again to return to full power.

The choice: Break/Wake, Disabled.

MODEM Use IRQ

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

The choice: 3, 4, 5, 7, 9, 10, 11, NA.

Hot Key Function As

Select Enabled if your system has a hot key for soft power off.

The choice: Enabled, Disabled.

** PM Events **

You may disable activity monitoring of some common I/O events and interrupt requests so they do not wake up the system. The default wake-up event is keyboard activity. When On (or named, in the case of LPT & COM), any activity from one of the listed system peripheral devices or IRQs wakes up the system.

A power-management (PM) event awakens the system from, or resets activity timers for, Suspend mode. You can disable monitoring of common interrupt requests so they do not generate PM events.

HDD Ports Activity

When set to *On* (default), any event occurring at a HDD (serial) port will awaken a system which has been powered down.

COM Ports Activity

When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a
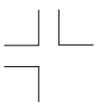
system which has been powered down.

LPT Ports Activity

When set to *On* (default), any event occurring at a LPT (printer) port will awaken a system which has been powered down.

VGA Activity

When set to *On* (default), any event occurring at VGA will awaken a system which has been powered down.

IRQ 8 Break Suspend

You can Enable or Disable monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.

Power Button Over Ride

When you select *Instant off*, pressing the power button will turn off the power. When select *Delay 4 Sec*., pressing the power button for less than 4 seconds forces the system to enter the SUSPEND mode, pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state.

RING Power Up Control

When selected *Enabled*, an input signal on serial Ring Indicator (RI) (in other words, an incoming call on the modem) will power up the system.

MACPME Power Up Control

When selected *Enabled,* an input signal on MAC power management event will power up the system.

PCIPME Power Up Control

When selected *Enabled*, an input signal on PCI power management event will power up the system.

KB Power ON Password

Press "Enter" for setting password for keyboard power on function.

Power Up by Alarm

When you select *Enabled*, fields appear that let you set the alarm that returns the system to Full On state.

Month Alarm

When the filed *Power Up by Alarm* is enabled, you are allowed to select a month (1~12) when you wish the alarm to go off, but if you want the alarm active during all months, select *NA*.
The options are: *1*, *2*, *3*, *4*, *5*, *6*, *7*, *8*, *9*, *10*, *11*, *12*, and *NA*.

Day of Month Alarm

When the field *Power Up by Alarm* is enabled. You can select a date in the month for the alarm to go off.

Time (hh:mm:ss) Alarm

When the field *Power Up by Alarm* is enabled you are allowed to set the time you want the alarm to go off on the days it is activated.

4.7 PnP/PCI Configurations

The PCI Personal Component Interconnect Bus was developed primarily to address two important issues: a) How to allow peripheral devices to take the fullest advantage of the power of CPU technology, and b) Provide a simpler installation process for peripheral devices, such as Network cards, EIDE or SCSI controllers.

PCI accomplishes these goals with its 32-bit Data path Local Bus design, and support for Plug & Play. Unlike older expansion bus architectures, PCI provides peripherals with a direct connection to the CPU and memory. The PCI bus runs at 33Mhz and has a maximum transfer capability of 132MBps. With Plug & Play, the system BIOS automatically determines hardware resources for new peripherals, simplifying installation of multiple interface cards.

This Setup Menu provides configuration options for the PCI Bus and its assigned resources.

```
┌─────────────────────────────────────────────────────────────────────────┐
│             CMOS Setup Utility – Copyright (C) 1984-1999 Award Software   │
│                          PnP/PCI Configurations                          │
├───────────────────────────────────────────────┬─────────────────────────┤
│  Reset Configuration Data        Disabled      │        Item Help        │
│                                                │                         │
│  Resources Controlled By         Auto(ESCD)    │                         │
│  IRQ Resources                   Press Enter   │                         │
│                                                │                         │
│  PCI/VGA Palette Snoop           Disabled      │                         │
│  Assign IRQ For VGA              Enabled       │                         │
│  PCI IRQ Actived By              Level         │                         │
│                                                │                         │
├───────────────────────────────────────────────┴─────────────────────────┤
│     ↑ ↓ ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   │
│         F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults│
└─────────────────────────────────────────────────────────────────────────┘
```

* The Item Help column contains the description of selected item.

Reset Configuration Data

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

Resource Controlled by

Option	Description
Manual	The field defines that the PNP Card's resource is controlled by manual. You can setup whether IRQ-X or DMA-X is assigned to PCI/ISA PnP or Legacy ISA Cards.
Auto	If your ISA card and PCI card are all PNP cards. Set this field to "Auto". The BIOS will assign the interrupt resource automatically.

IRQ Resources

CMOS Setup Utility – Copyright (C) 1984-1999 Award Software IRQ Resources			
IRQ-3	assigned to	PCI/ISA PnP	**Item Help**
IRQ-4	assigned to	PCI/ISA PnP	
IRQ-5	assigned to	PCI/ISA PnP	
IRQ-7	assigned to	PCI/ISA PnP	
IRQ-9	assigned to	PCI/ISA PnP	
IRQ-10	assigned to	PCI/ISA PnP	
IRQ-11	assigned to	PCI/ISA PnP	
IRQ-12	assigned to	PCI/ISA PnP	
IRQ-14	assigned to	PCI/ISA PnP	
IRQ-15	assigned to	PCI/ISA PnP	
↑ ↓ ← →:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:Help F5:Previous Values F6:Basic Defaults F7:Best Defaults			

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Option	Description
Legacy ISA:	Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1)
PCI/ISA PnP:	Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

4.8   PC Health Status

This menu shows the current temperature and voltage and allows you to set up *Shutdown Temperature* for which the options are: *60℃/140℉*, *65℃/149℉*, *70℃/158℉*, and *75℃/167℉*.

CMOS Setup Utility – Copyright (C) 1984-1999 Award Software PC Health Status		
Shutdown Temperature	75°C/167°F	**Item Help**
Vcore	2.22V	
+2.5V	1.82V	
+3.3V	3.32V	
+5V	4.97V	
+12V	12.35V	
+3.3V Standby	3.32V	
+5V Standby	5.02V	
Battery	2.75V	
CPU Temperature	38°C	
System Temperature	(-) 55°C	
CPU Fan Speed	3994 RPM	
System Fan Speed	3226 RPM	
↑ ↓ ← →:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:Help F5:Previous Values F6:Basic Defaults F7:Best Defaults		

4.9   X-BIOS

```
CMOS Setup Utility – Copyright (C) 1984-1999 Award Software
                    PnP/PCI Configurations

 Auto Detect PCI Clk              Disabled           Item Help
 Spread Spectrum                  Disabled
 CPU HOST/SDRAM/PCI Clock'        100/100/33 MHz




   ↑ ↓  ← →:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit
        F1:Help   F5:Previous Values   F6:Basic Defaults   F7:Best Defaults
```

Auto Detect PCI Clk

Select *Enabled* to automatically detect PCI clock frequency.

Spread Spectrum

When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device. You can reduce EMI by setting this item to turn on the clock signal with spread spectrum support.

CPU Host/SDRAM/PCI Clk

This item allows you to select a set of clock frequencies for CPU/SDRAM/PCI.

The options are: *95/95/31MHz*, *95/126.31MHz*, *96/96/32MHz*, *97/97/32MHz*, *97/129/32MHz*, *99/99/33MHz*, *99/132/33*, *100/100/33MHz*, *100/133/33MHz*, *100/150/37MHz*, *105/140/35MHz*, *110/147/36MHz*, *112/112/37MHz*, *115/153/38MHz*, *120/120/30MHz*, *133/100/33MHz*, *133/133/33MHz*, *134/134/33MHz*, *138/138/34MHz*, *140/140/35MHz*, *145/145/36MHz*, *147/147/36MHz*, *150/100/37MHz*, *160/160/27MHz*, and 1*66/110/32MHz*.

4.10   Load Basic Defaults

The BASIC Defaults have been set to provide the minimum requirements for your system to operate. Its performance is lower than the Load BEST Defaults. We suggest you use "Load BEST Default". If your system card has compatibility issues then use the "Load BASIC Defaults".
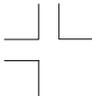
4.11   Load Best Defaults

The "LOAD BEST DEFAULTS" function loads the system manufacture default data.

This is the default setting from Leadtek. This function will be necessary when the system CMOS data is corrupted or you forget your settings.

4.12   Set Password

Passwords can be set to provide protection for the BIOS configuration options, or to

restrict access to the computer itself.

When enabled, all users that wish to use the system or access the BIOS Setup are required to enter the password in order to protect the stored CMOS data from being changed by unauthorized users.

Keep in mind that when set, a password is required only when *booting* the system. It will not provide protection to a system that is already booted.

The password check option is set in **BIOS FEATURES SETUP** by choosing either *System* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when the user enters the BIOS Setup). The password is stored in CMOS RAM, and can be cleared by removing the battery for a while and then re-installing it back.

To set a password:
- You must set the password by choosing *Set Password* and pressing [ENTER]. Setup prompts for a password.
- Enter a 1-8 character password using letters, numbers, or a combination of both. The specific characters are not shown as you enter them. Press [ENTER].
- A confirmation box appears asking you to re-enter the password. Enter the password again. Press [ENTER].

To change a password:
- Select *Set Password* from the main menu and press [ENTER]. Enter the current password and press [Enter]. The screen does not display the characters entered. Enter in the new password, then confirm. You cannot change the current password unless you know it.

To erase a password:
- If you know the current password, but want to disable password checking, follow the procedure for changing the password. When setup prompts for the new password, simply press [ENTER]. You will see a message indicating that the password is disabled.
- If you do not know the current password, the CMOS must be cleared by removing the battery for a while and then re-installing it back. Note that this will clear all the user-defined BIOS.

4.13 Save & Exit Setup

The "SAVE & EXIT SETUP" option will bring you back to boot up procedure with all the changes you just recorded in the CMOS RAM.

4.14 Exit Without Saving

The "EXIT WITHOUT SAVING" option will bring you back to normal boot up procedure without saving any data into CMOS RAM, and will not destroy all the old data in CMOS.

Chapter 5   VGA/Audio Driver Installation

5.1   Windows 95/98

5.1.1   Install Display Driver

Step 6: Insert the "WinFast Mainboard & SCSI Software Pack CD" into the CD-ROM drive.

Step 7: The "Autorun" will be automatically executed and the "WinFast-5400 Setup" window will appear on screen with selectable menus.

Step 8: Select and click on "Install VGA Driver (For Windows 9X users)" menu, then follow the on-screen instruction choosing "Typical" setup type to install the driver automatically.

Step 9: Restart Windows.

5.1.2   Display Modes

When drivers were installed properly, click the mouse right button on Win95/98 desktop wallpaper area and select "Properties" menu. A window with a title name "Display Properties" will appear on the screen. Click the "Setting" tab and then click the "Advanced…" button. The "WinFast 5400MAX Properties" sheet will be shown on the screen. From the "Display Modes" tab, you may select desired resolution by changing "Desktop area", desired color by changing "Color" value, desired font size by changing "Font size", and desired refresh rate by changing "Refresh rate".

Different brands of monitors support different types of refresh rates. Before you change the current refresh rate to new one, a message will be shown on the screen. Click the "OK" button, and you will see two configurations:

If the monitor supports the adjusted refresh rate, a message will be shown on the screen. Click "Yes" within 15 seconds to keep the new setting.


If the monitor does not support the adjusted refresh rate, the screen will go blank and Windows will restore your original refresh rate after 10 seconds.
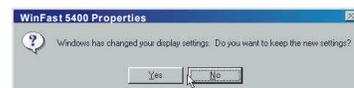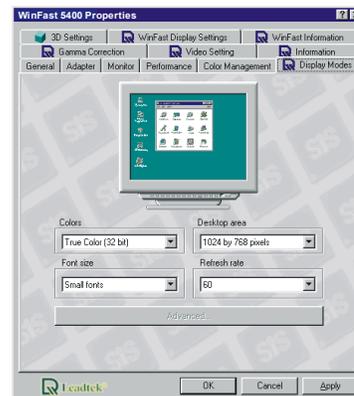
5.1.3 Advanced Setting for Display Modes

Once you installed the **WinFast ADIMM-DCT** optional add-on cards, the "Advanced.." tab will be enabled in the "Display Modes" window as shown right.

By clicking the "Advanced.." tab, another window will appear as shown below.
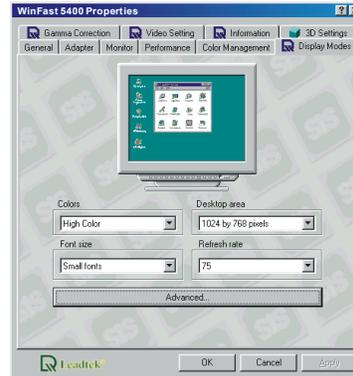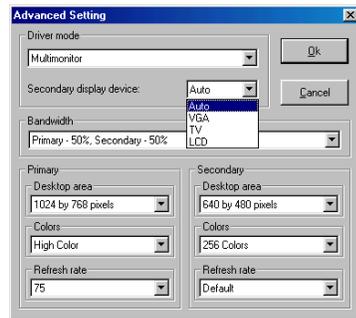
Select "Multimonitor" in the "Driver mode" tab. The "Secondary display device" will then be available to choose among **Auto**, **VGA**, **TV**, and **LCD** devices.

5.1.4 Gamma Correction

Use the "Change Bitmap" to select your favorite bitmap images. Use the "Gamma Correction" to tune your color style. Use the "Brightness" to turn brighter or darker. Use the "Reset All" to return to the original program default setting. Use the "TINT" slider to adjust the tint.

44   WinFast 5400MAX Mainboard
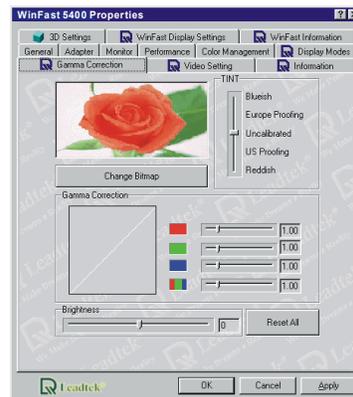
5.1.5 Video Setting

This application can only be used if a VCD/DVD playback is in operation. Select "Overlay" value and adjust the "Contrast" and "Brightness" by moving the scroll bar to its desirable position to get the most suitable viewing pleasure.

5.1.6 3D Settings

The "3D Settings" utility provides the tool to adjust brightness, speed and some advanced settings of 3D graphics. You can feel how those adjustments affect the display quality and performance directly through the demo window.

Color

Brightness: The brightness of 3D graphics can be adjusted by dragging the bar in the range from index 0 (darkest) to 255 (brightest). The corresponding value will be shown at the right side box.

Default: Clicking on the "Default" button will resume the brightness index to 0.

Full Screen: Clicking on the "Full Screen" button will run the demo in full screen mode. You can find out the brightness value is tuned appropriately or not very easily.

D3D

D3D Performance: The 3D performance can be adjusted by dragging the bar in the range from "Low" to "High". Enhancing the performance will sacrifice the display quality. Therefore, the higher the performance is, the lower the quality is. You have to take a balance between performance and quality. Meanwhile, the performance will be presented in the right side box in the unit of frame per second. The frame rate will dynamically change according to the display conditions.

Reset: Clicking on the "Reset" button will resume performance to medium.

Default: Clicking on the "Default" button will resume performance to medium.

Full Screen: Clicking on the "Full Screen"

VGA/Audio Driver Installation   45

button will run the demo in full screen mode. You can find out the performance value is tuned appropriately or not very easily.

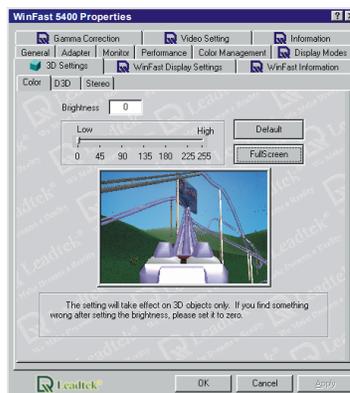**Advanced:** Clicking on the "Advanced" button will pop up the D3D Advanced Settings window.

Stereo

Enable stereo: The first check box is used to switch between "enable" and "disable" 3D stereo function. Only after "enable" is selected, all other settings in this page can be accessed.

Stereo scale: Due to the fact that the distance between the right eye and the left eye is different from person to person. It is not possible to create the same stereo effect for everyone by a fixed scale. For making compensation for this, "Stereo scale" can be adjusted from index 0 to 50. You can select appropriate values for your situation.

Stereo offset: Stereo offset is used to adjust the position of a 3D image in the Z direction. It is scaled from 0 to 255. Selecting 0 will make image appeared like attaching on the screen; and selecting 255 will make image looked like far away from the observer.

Define hotkeys: There are two sets of hot key in 5400MAX utility – Hotkey1 and Hotkey2. Each one can be started up by simultaneously pressing <Alt>, <Ctrl>, and a key that is defined by users.
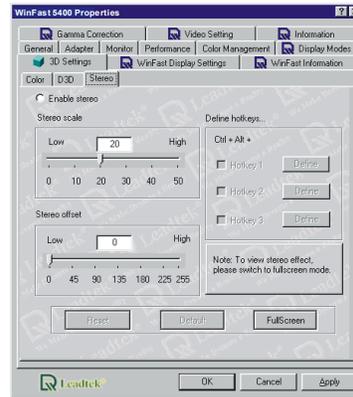
5.1.7   Information

The product information of 5400MAX is recorded in this tab. You can identify the product name, chip type, software version, DRAM size, file version…etc directly and easily. It also helps Leadtek's customer service team to identify your configuration in order to provide prompt and effective technical support.
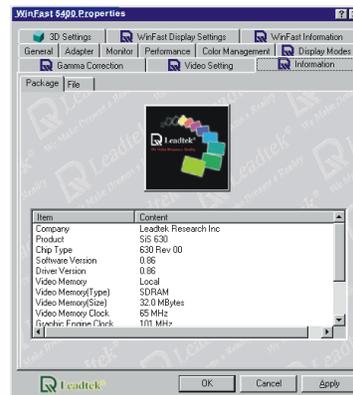
5.2   Windows NT 4.0

5.2.1   Install Windows NT 4.0 with the SiS540 onboard

Install Windows NT 4.0 in the usual way. When the installation is completed, Windows NT 4.0 will be booted on the VGA mode as it did not recognize the SiS540 during installation.

Note: Before installing the Windows NT 4.0 driver, make sure the Windows NT 4.0 version number is Windows NT 4.00.1381 or later. If your system is an older version, it is recommended that you upgrade the version to the latest one.

5.2.2   Install Display Driver

Step 1:   Reboot the system and select "Windows NT 4.0 (VGA)" from the Boot Menu List.

Step 2:   Insert the "WinFast Mainboard & SCSI Software Pack CD" into the CD-ROM drive. From your Windows NT 4.0 desktop wallpaper area, click right mouse button and select the "Properties" option. (or double click "Display" icon in control panel)

Step 3:   From the "Display Properties" window, select the "Display Type" button where a window of "Display Type" appears on your screen.

Step 4:   Select the "Change" button in the "Adapter Type" section, a window with a title name of "Change Display" will appear on your screen.

Step 5:   Select the "Have Disk" button where the "Install From Disk" window will then appear on your screen.

Step 6:   Specify the path X:\5400\vga\WINNT40 (X is the CD-ROM drive) and select the "OK" button in the "Install From Disk" window; a window with a title name of "Third Party Drivers" will then appear on your screen, select "Yes".

Step 7:   Click "OK" button after the installation completed. Select the "Close" button in the "Display Type" window. Select the "Close" button in the "Display Properties" window.

Step 8:   Click "Yes" button to restart the Windows NT 4.0.

Step 9:   When the system is rebooted, select "Windows NT 4.0" from the Boot Menu List. After logon Windows NT, the "Invalid Display Setting" applet will appear on your screen.

Note: This window only appears when you are using a display driver for the first time.

Step 10:   Choose the Resolution, Color Palette, Refresh Rate and Font Size you desire. You can use the "TEST" button to verify whether the monitor can support the specified function or not.

Step 11:   Press the "OK" button to change display mode to the specified resolution, color palette, refresh rate and font size.
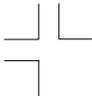
5.3   Install Audio Driver for Windows 95/98

Step 1:   Insert the "WinFast Mainboard & SCSI Software Pack CD" into the CD-ROM drive.

Step 2:   The "Autorun" will be automatically executed and "WinFast-5400 Setup" window will appear on screen with selectable menus.

Step 3:   Select and click "Install Audio Driver (For Windows 9X users)". You will see a popup menu showing "For Windows 95/98". Click on it.

Step 4:   Select "Upgrade" and desired language. Windows will automatically copy files from CD to your hard drive. These are necessary files for installation of audio drivers to your system. After finishing copying files, click "Yes" to restart your computer.

Step 5:   A dialog of "Found New Hardware (PCI Audio Drive)" will be shown on the screen. Keep clicking the "Next" buttons that follows, the Windows will automatically install the audio drivers onto your system.

5.4   Install LAN Driver

Step 1:   Insert the "WinFast Mainboard & SCSI Software Pack CD" into the CD-ROM drive.

Step 2:   The "Autorun" will be automatically executed and "WinFast-5400 Setup" window will appear on screen with selectable menus.

Step 3:   Select and click on "Install LAN Driver". You will see a pop-up menu with a selection of operating system types. Select the desired operating system and click.

Step 4:   A Read Me file that contains detailed instructions for installing Ethernet driver will appear on the screen. Follow these instructions and complete the installation.

Appendix A.   BIOS Flash Utility

If you get a new floppy disk or CD_ROM from your local dealer which contains a new version of the BIOS binary file, or you obtain the new BIOS binary file directly from our Web Site (www.leadtek.com.tw), please follow the steps below to update the BIOS.

Note: *Please contact your dealer first to see if you need to update your BIOS. If you update BIOS without contacting your dealer, you might encounter problems and unable to start the computer.*

Step 1:   Reboot into DOS or "Command Prompt Only" of Windows95/98
Step 2:   Insert the accompany CD into CD-ROM (or floppy disk to Drive A)
Step 3:   Copy "AWDFLASH.EXE" to a new directory from X:\FLASH sub-directory. (X: means CD-ROM drive letter)
Step 4:   Copy the new BIOS binary file to the above said new directory.
Step 5:   Change to the new directory and type the following command: AWDFLASH [Filename] ([Filename] means the file name of BIOS binary file)

A message will display on your screen. Follow the instruction to update BIOS.

Note: *Do not take any action before finishing the updating, otherwise you may encounter severe problems and need to have it sent for repair.*

You can also use "AWDFLASH /?" command for help messages.

Note: *It is recommended that the application being run under DOS prompt. Please do the following steps while in Windows 95/98 environment: Start your system when "Starting Windows 95 (or 98)..." message appears. Press F8 immediately to enter the "Startup Menu". Select the "Command Prompt Only" option.*

Appendix B.   Troubleshooting Procedures

Use the following procedures and flowchart to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the Technical Support Procedures and/or Returning Merchandise for Service section(s) in this chapter.

Before Power On

Step 1:   Make sure there is no short circuit between the mainboard and chassis.
Step 2:   Disconnect all the ribbon/wire cables from the mainboard.
Step 3:   Remove all the add-on cards except the video graphics card (Make sure the video/graphics card is inserted properly).
Step 4:   Install a CPU, the chassis speaker and the power LED to the mainboard (Check all the jumper settings as well).
Step 5:   Install a memory module into one bank.
Step 6:   Check the power supply voltage monitor 115V/230V switch.

No Power

Step 1:   Make sure the default jumper is on and the CPU is correctly set up.
Step 2:   Turn power switch on and off to test system.
Step 3:   If still not power, turn it off and change the setting on JP20 to short 1-2 pins.
Step 4:   If it does not help by moving the jumper setting, clear the CMOS data.

Step 5: Check the power supply voltage monitor, specifically, the power supply 115V/230V switch.

No Video

Use the following steps for troubleshooting your system configuration.

Step 1: If the power is on but you have no video, remove all the add-on cards and cables.
Step 2: Check for shorted connections, especially under the mainboard.
Step 3: Check the jumpers' settings, clock speed, and voltage settings.
Step 4: Use the speaker to determine if any beep codes exist.
Step 5: If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For port 80h codes.

Memory Errors

If you encounter a memory error, follow the procedures below.

Step 1: Check to determine if the DIMM modules are improperly installed.
Step 2: Determine if different speeds of DIMMs have been installed and verify that the BIOS setup is configured for the fastest speed of RAM used. It is recommended to use the same RAM speed for DIMMs in the system.
Step 3: Check for bad DIMM modules or chips.

Losing the System Setup Configuration

Step 1: Check the jumper JP12 setting. Ensure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to Chapter 2 of this manual for details.
Step 2: If you still cannot resolve the problem, contact your vendor for repairs.

Appendix C.   Calling for Technical Support

In the event of not finding the solution for your problem, please contact our technical support staff, or E-mail to <service@leadtek.com.tw>.

Product name:
It will be easier for our staff to answer your question if you know the name of the product. The name of the product is displayed during system booting.

Software driver version:
We are updating the version of utilities and drivers from time to time, so it will be a great help for us to understand where the problem lies in. The version number is printed on the diskette label.

Motherboard manufacturer, BIOS version and chipset:
It is important to know who manufactured your motherboard, which system BIOS are you using, and what types of chipset are being used on your motherboard.

Computer type and speed:
We need to know the type of processor you are using and its speed.
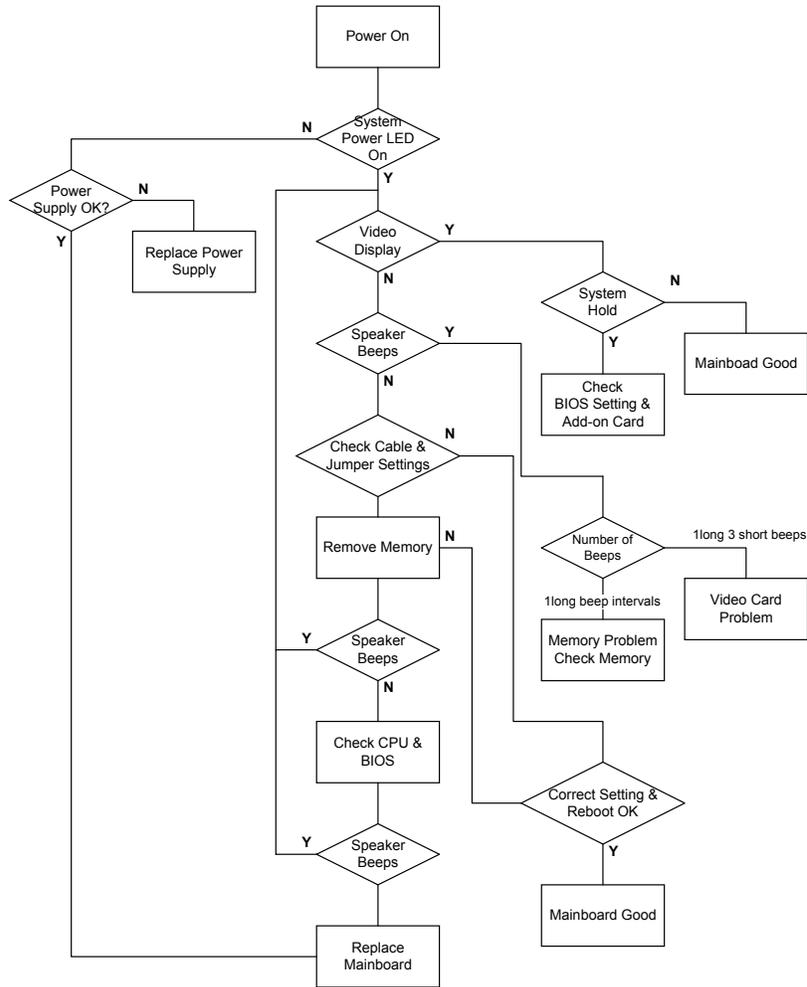
Monitor manufacturer and model:
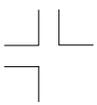Please advises the type and supporting mode of the monitor you are using.

Detailed description of your problem:
Please describe in detail all the problems you encountered, including the kind of software and hardware you are using, and the contents of your system files.

Appendix D.   Troubleshooting Flowchart

```
                        ┌──────────────┐
                        │   Power On   │
                        └──────┬───────┘
                               │
              N          ╱ System  ╲
      ┌──────────────────  Power LED
      │                  ╲   On    ╱
      │                        │ Y
 ╱ Power ╲      N        ╱ Video  ╲         Y
  Supply OK? ──────┐      Display  ──────────┐
 ╲        ╱        │     ╲        ╱          │
      │ Y      ┌───┴────┐     │ N       ╱ System ╲    N
      │        │Replace │          ╱    Hold    ╲────────┐
      │        │Power   │     ╱Speaker╲  ╲        ╱       │
      │        │Supply  │      Beeps  ──┐     │ Y    ┌────┴─────┐
      │        └────────┘     ╲      ╱  │ Y   ┌──────┴───┐ │Mainboad  │
      │                   │ N      │    │Check     │ │  Good    │
      │              ╱ Check Cable╲ │    │BIOS Setting│ └──────────┘
      │               & Jumper      │    │& Add-on Card│
      │              ╲ Settings ╱──┐│    └────────────┘
      │                   │      N ││
      │              ┌────┴────┐    │╲Number of╲ 1long 3 short beeps
      │              │ Remove  │ N  ││  Beeps   ──────────┐
      │              │ Memory  │────┘╲        ╱           │
      │              └────┬────┘      │          ┌────────┴─┐
      │            Y      │    1long beep intervals│Video Card│
      │         ╱ Speaker ╲           │          │ Problem  │
      │ ┌────────  Beeps           ┌──┴───────┐  └──────────┘
      │ │       ╲      ╱           │Memory Problem│
      │ │          │ N             │Check Memory  │
      │ │     ┌────┴────┐          └──────────┘
      │ │     │Check CPU│
      │ │     │& BIOS   │       ╱Correct Setting╲
      │ │     └────┬────┘        & Reboot OK
      │ │   Y      │            ╲             ╱
      │ │ ╱ Speaker ╲                 │ Y
      │ └─  Beeps                ┌─────┴────┐
      │    ╲      ╱              │ Mainboard│
      │         │               │   Good   │
      │    ┌────┴─────┐          └──────────┘
      └────┤ Replace  │
           │Mainboard │
           └──────────┘
```

Appendix E.   FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

• This device may not cause harmful interference.

• This device must accept any interference received, including interference that may cause undesired operation.

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

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

• Shielded interface cables must be used in order to comply with emission limits. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Appendix F.   Limited Warranty

Leadtek warrants to the original purchaser of this product that it shall be free of defects resulting from workmanship or components for a period of one (1) year from the date of sale. Defects covered by this Limited Warranty shall be corrected either by repair or, at Leadtek's discretion by replacement. In the event of replacement, the replacement unit will be warranted for the remainder of the original one (1) year period or thirty (30) days, whichever is longer. THERE ARE NO OTHER ORAL OR WRITTEN WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

This Limited Warranty is nontransferable and does not apply if the product has been damaged by negligence, accident, abuse, misuse, modification, misapplication, shipment to the Manufacturer or service by someone other than the Leadtek Transportation charges to Leadtek are not covered by this Limited Warranty. To be eligible for warranty service, a defective product must be sent to and received by Leadtek within fifteen (15) months of the date of sale and be accompanied with proof of purchase. Leadtek does not warrant that this product will meet your requirements; it is your sole responsibility to determine the suitability of this product for your purposes. Leadtek does not warrant the compatibility of this product with your computer or related peripherals, software. LEADTEK'S SOLE OBLIGATION AND LIABILITY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF A DEFECTIVE PRODUCT. THE MANUFACTURER SHALL NOT, IN ANY EVENT, BE LIABLE TO THE PURCHASER OR ANY THIRD PARTY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIABILITY IN TORT RELATING TO THIS PRODUCT OR RESULTING FROM ITS USE OR POSSESSION.

This limited warranty is governed by the laws of Taiwan.