

865GFT
(for 2-User-System)
USER'S MANUAL

M/B For Socket 478 Pentium 4 Processor

NO. G03-865GFT3A

Release date: Jan. 2004

Trademark:

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TABLE OF CONTENT

USER'S NOTICE.....	ii
MANUAL REVISION INFORMATION	ii
COOLING SOLUTIONS	ii
CHAPTER 1 INTRODUCTION OF 865GFT MOTHERBOARD	
1-1 THE WORLD FIRST 2-USER MOTHERBOARD.....	1
1-2 FEATURE OF MOTHERBOARD	2
1-3 SPECIFICATION	3
1-4 PERFORMANCE LIST	4
1-5 LAYOUT DIAGRAM & JUMPER SETTING	5
CHAPTER 2 HARDWARE INSTALLATION	
2-1 HARDWARE INSTALLATION STEPS	7
2-2 CHECKING MOTHERBOARD'S JUMPER SETTING.....	7
2-3 INSTALL CPU.....	8
2-3-1 GLOSSARY	8
2-3-2 ABOUT INTEL PENTIUM 4 478-PIN CPU	9
2-4 INSTALL MEMORY	10
2-5 EXPANSION CARD.....	10
2-5-1 PROCEDURE FOR EXPANSION CARD INSTALLATION	11
2-5-2 ASSIGNING IRQ FOR EXPANSION CARD	11
2-5-3 INTERRUPT REQUEST TABLE FOR THIS MOTHERBOARD	11
2-5-4 AGP SLOT.....	12
2-6 CONNECTORS, HEADERS	12
2-6-1 CONNECTORS.....	12
2-6-2 HEADERS	15
2-7 STARTING UP YOUR COMPUTER.....	19
CHAPTER 3 INTRODUCING BIOS	
3-1 ENTERING SETUP.....	20
3-2 GETTING HELP	20
3-3 THE MAIN MENU.....	21
3-4 STANDARD CMOS FEATURES	22
3-5 ADVANCED BIOS FEATURES	23
3-6 ADVANCED CHIPSET FEATURES	25
3-6-1 DRAM TIMING SETTINGS.....	26
3-7 INTEGRATED PERIPHERALS.....	27
3-7-1 ONBOARD IDE FUNCTION.....	27
3-7-2 ONBOARD DEVICE FUNCTION.....	28
3-7-3 ONBOARD SUPER IO FUNCTION	29
3-8 POWER MANAGEMENT SETUP.....	30
3-8-1 PM TIMER RELOAD EVENTS	31
3-9 PNP/PCI CONFIGURATION SETUP	32
3-9-1 IRQ RESOURCES	33
3-10 PC HEALTH STATUS	33
3-11 MISCELLANEOUS CONTROL	34
3-12 LOAD STANDARD/OPTIMIZED DEFAULTS	35
3-13 SET SUPERVISOR/USER PASSWORD	35
CHAPTER 4 DRIVER & FREE PROGRAM INSTALLATION	
MAGIC INSTALL SUPPORTS WINDOWS 98SE/ME/NT4.0/2000/XP.....	36
4-1 INF INSTALL INTEL 865/875 CHIPSET SYSTEM DRIVER.....	37
4-2 VGA INSTALL INTEL 865G VGA DRIVER	38
4-3 SOUND INSTALL ALC AUDIO CODEC DRIVER.....	38
4-4 LAN INSTALL REALTEK RTL8110S GIGABIT ETHERNET NIC DRIVER	39
4-5 USB2.0 INSTALL INTEL USB2.0 DRIVER.....	40
4-6 PC-HEALTH INSTALL INTEL HARDWARE DOCTOR UTILITY	40
4-7 MBIOS&DX9 INSTALL BIOS LIVE UPDATE UTILITY AND DIRECTX9.....	41
4-8 PC-CILLIN INSTALL PC-CILLIN2002 ANTI-VIRUS PROGRAM	43
4-9 HOW TO UPDATE BIOS.....	44
CHAPTER 5 INSTALLATION OF MagicTwin.....	45
5-1 INSTALLATION OF MagicTwin (A 2-User-System Solution).....	45

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Manual Revision Information

Reversion	Revision History	Date
3.0	Third Edition	Jan. 2004

Item Checklist

- 865GFT Motherboard
- Cable for IDE/Floppy
- Y-Cable for 2-Keyboard (Purple)
- Y-Cable for 2-Mouse (Green)
- CD for motherboard utility
- 865GFT User's Manual

Intel Pentium 4 Processor Family Cooling Solutions

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly crucial when building computer systems. Maintaining the proper thermal environment is key to reliable, long-term system operation. The overall goal in providing the proper thermal environment is keeping the processor below its specified maximum case temperature. Heatsinks induce improved processor heat dissipation through increased surface area and concentrated airflow from attached fans. In addition, interface materials allow effective transfers of heat from the processor to the heatsink. For optimum heat transfer, Intel recommends the use of thermal grease and mounting clips to attach the heatsink to the processor.

When selecting a thermal solution for your system, please refer to the website below for collection of heatsinks evaluated and recommended by Intel for use with Intel processors. Note, those heatsinks are recommended for maintaining the specified Maximum T case requirement. In addition, this collection is not intended to be a comprehensive listing of all heatsinks that support Intel processors.

For vendor list of heatsink and fan, please visit :
<http://developer.intel.com/design/Pentium4/components/index>

Chapter 1

Introduction of 865GFT Motherboard

1-1 The World First 2-User Motherboard

Introduction

The 865GFT MagicTwin is the world's first multi-user enabled motherboard solution available in the market. The special designed 2-user-system motherboard allows two users to share the computing power of a single PC system. With integrated circuitry onboard, the 865GFT MagicTwin[®] motherboard comes with innovative software, the MagicTwin, allowing 2 users to be connected to it and runs up to two (2) stations directly from it. The unique and copyright-protected technology, allows each of the 2 users to feel like having himself his own Windows-XP computer. Each user needs to have himself his own keyboard, mouse, sound device, and monitor. All remaining PC hardware will be shared, even the IP.

Both users can operate on their own station concurrently, similar to the operation on standard PC, the Windows applications to create and edit documents, to do web surfing, to access email, just to name a few. There is no obvious delay because of the Time-slicing/Multiplexing technology built-in. Each user gets an exact and extremely short defined moment to access to the PC system, devices, applications and Windows itself. Resources are only claimed for nanoseconds at a time. Both users get from Windows and the PC, what they really need when they need it! The MagicTwin solution turns the single PC into a cost-effective multi-user system.

The setup is intuitive and easy. In only a few minutes, users can install and start using their new workstation. No network administrator is needed as everything to network the workstations together is done automatically with the MagicTwin software. To configure 2 users system you will need:

- ✓ One Motherboard with onboard circuitry support for MagicTwin
- ✓ One Dual Display VGA card for two Monitors
- ✓ One PS/2 Keyboard Y-cable for two Keyboards connection (cable or wireless)
- ✓ One PS/2 Mouse Y-cable for two Mice connection (cable or wireless)
- ✓ Two Standard Monitors (CRT, LCD)
- ✓ Optional: USB-Multimedia Sound Device or any USB-Speaker
- ✓ Installation CD (driver, installation program, tools and manual)
- ✓ 1.2GHz or higher processor
- ✓ Minimum of 256MB RAM (128MB per workstation/user)

1-2 Feature of motherboard

The 865GFT motherboard is design for use Intel Pentium 4 Processor in 478 Pin Package/ Northwood Processor with the Intel 865G Chipset delivers a high performance and professional desktop platform solution. Which utilize the Socket 478 design (Support Hyper Threading CPU) and the memory size expandable to 2.0GB.

The motherboard use the newest Intel 865G Chipset Supports 800/533/400MHz System Bus in data transfer rate, the 865GFT provided 200/166/133MHz SDRAM clock frequency support DDR400/DDR333/DDR266 SDRAM. This motherboard also provided Dual Channel function to increase memory performance. The motherboard embedded ICH5 chipset offers two parallel ULTRA ATA **100** interface and two Serial ATA interface to provide speedier HDD throughout that boosts overall system performance.

865GFT with integrated 2D/3D Graphics Accelerator which supports 256 bit graphics core, and supports hardware motion compensation assist for software MPEG/DVD decode, makes this board lower cost alternative to a video card. For those wanting even greater graphic performance, an AGP 8X slot is included on the board (**For 0.8V/1.5V AGP card only. No for 3.3V or Universal AGP card**). This AGP slot will support either a 8X/4X VGA card or Intel Digital Video Out ports add support for digital displays and TV-out.

The 865GFT motherboard including PCI Giga LAN Controller chip support 10/100/1000 Mb/sec Base transfer rate.

The motherboard also has an integrated AC97' 6-channel Codec on board support 6-channel 3D surround positioning Audio which is fully compatible with Sound Blaster Pro® that gives you the best sound quality and compatibility. The motherboard provided SPDIF-In/ SPDIF-Out optical function support SPDIF device.

The 865GFT including the 1394 PCI controller provided 100M/200M/400Mb bandwidth support two 1394 device port, which compliant with IEEE 1394A-2000 standard.

With USB control as well as capability of expanding to 8 USB2.0 function ports, the motherboard meet future USB demand also the motherboard have built-in hardware monitor function. This will monitor and protect your computer. The motherboard special design in hardware to protect BIOS from virus crash BIOS data.

The motherboard provide special function in BIOS Setup to setting CPU Host clock step by step increasing let users to approach over clocking. This motherboard provided over current and over voltage protect function for protection AGP Card and DRAM module, when the over current or over voltage occurs it will shut down the power immediately to protect motherboard. Users must turn off the AC power few seconds before turn on system.

The motherboard provided high performance & meet future specification demand. It is really wise choice for your computer.

1-3 Specification

Spec	Description
Design	* ATX form factor 6 layers PCB size: 18.5x25.5cm
Chipset	* Intel 865G Graphics Memory Controller Hub (GMCH) * Intel 82801EB I/O Controller Hub (ICH5) Chipset
CPU Socket (mPGA478B Socket)	* Support Intel Pentium 4 478 Pin package utilizes Flip-Chip Pin Grid Array (FC-PGA2) package processor * Support CPU Frequency 400MHz/533MHz/800MHz * Support 1.5G~3.4G 478 Pin Pentium 4 processor, Support Hyper Threading * Reserves support for future Intel Pentium 4 processors
Memory Socket	* 184-pin DDR SDRAM module socket x2 * Support Dual Channel DDR200/DDR266/DDR333/DDR400 DDR SDRAM * Expandable to 2.0GB
Expansion Slot & Headers	* AGP slot x1 for AGP 0.8V/1.5V standard only, compliant to AGP 2.0/3.0 standard support AGP 4X/8X mode * 32-bit PCI slot x 1
Integrate IDE	* Two PCI IDE controllers support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100 functions that deliver the data transfer rate up to 100 MB/s
Integrate Serial ATA	* Two Serial ATA Host controllers, that deliver the data transfer rate up to 150 MB/s
1394 Port	* VIA VT6307S 1394 Controller chip provided two 1394 device ports support 100/200/400Mb bandwidth * Compliant with IEEE 1394A-2000 standard
LAN On Board	* Realtek RTL8110S PCI Giga LAN Controller chip * Supports 10/100/1000 Mb/sec data transfer rate
Integrate VGA	* Integrated High Performance & High Quality 3D Accelerator * Support Ultra-AGP II with 2GB/s bandwidth * Built-in programmable 24-bit true-color RAMDAC up to 333MHz pixel clock.
Audio	* Realtek ALC 655 6-channel AC97' Codec integrated * <i>SPDIF-In/ SPDIF-Out Optical support</i> * Audio driver and utility included
BIOS	* Award 4MB Flash ROM
Multi I/O	* PS/2 keyboard and PS/2 mouse connectors * Floppy disk drive connector x1 * Parallel port x1, Serial port x2 * USB 2.0 connector x4, USB 2.0 headers x4 * Audio connector Line-in, Line-out, MIC

1-4 Performance List

The following performance data list is the testing result of some popular benchmark testing programs. These data are just referred by users, and there is no responsibility for different testing data values gotten by users (the different Hardware & Software configuration will result in different benchmark testing results.)

Performance Test Report

CPU: Intel Pentium 4 2.53GHz (533MHz FSB)/3GHZ (800MHz FSB) mPGAB package

DRAM: 512MB DDR400 SDRAM x2 (KINGSTON D328DW)

On Board VGA: 1024x768x32bit Color

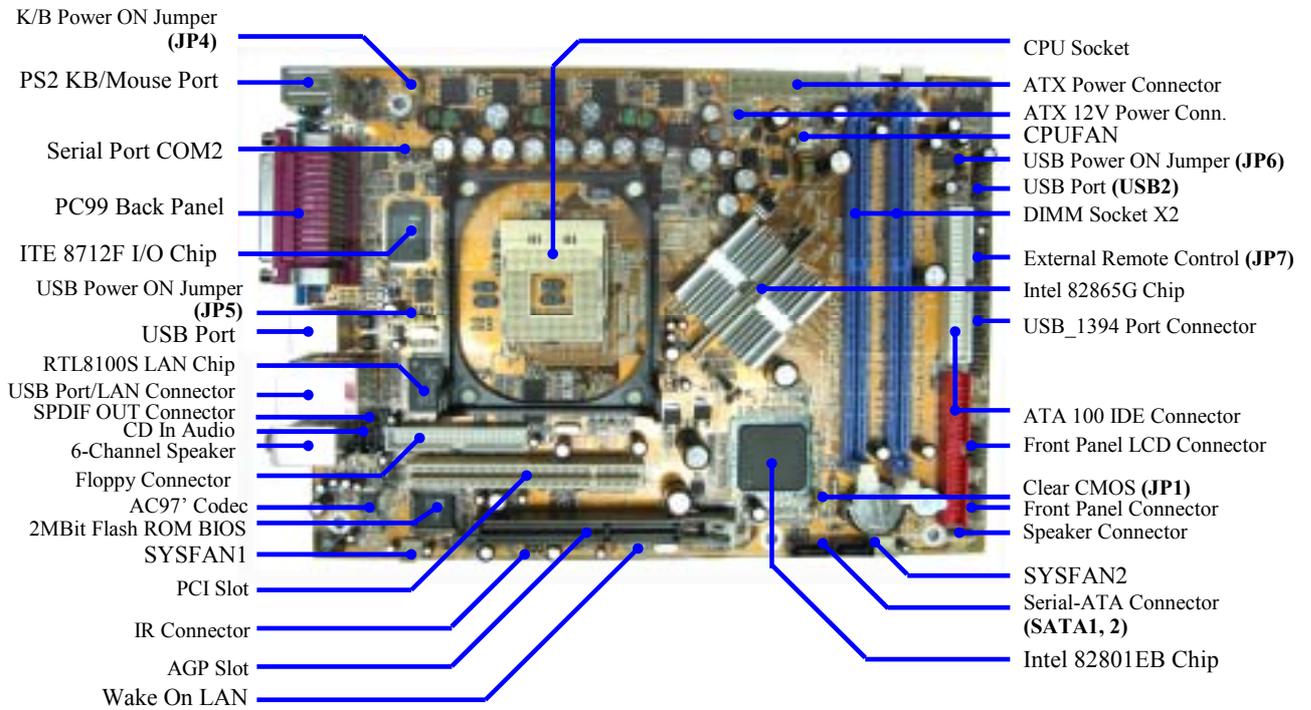
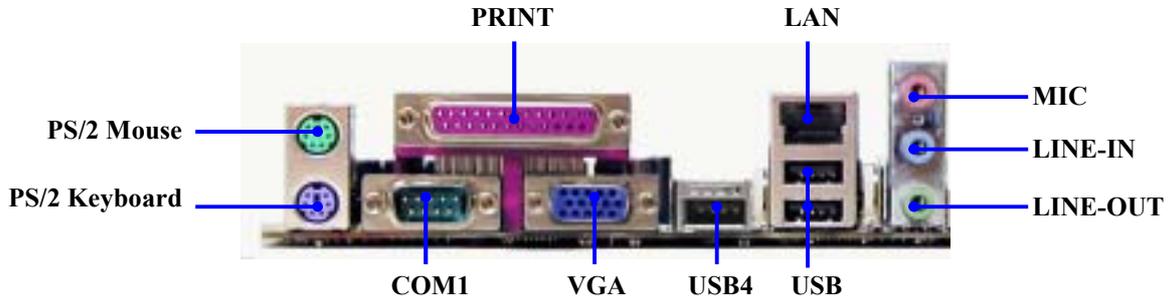
Hard Disk Driver: IBM IC35L040AVVN07-0 (ATA-100 7200RPM)

BIOS: Award Optimal default

OS: Win XP Professional (Service Pack 1)

	2.53GHz 133/133	3GHz 200/200	3GHz 200/200 Dual Channel	3GHz 200/200 Dual Channel Hyper-Threading	
3D Mark 2001SE	2192	2506	2967	2929	
3D Mark 2003	59	70	94	92	
3D Winbench 2000 (32/32BIT)	73.2	78.3	83.3	83.1	
PC Mark 2002					
CPU/Memory/HDD	6146/5410/879	7336/6480/879	7364/7620/879	7380/7632/877	
Content Creation Winstone 2002	41	48.9	51.7	46.4	
Content Creation Winstone 2003	41.9	49.6	51.7	50.1	
Business Winstone 2002	29.4	33.3	33.7	33.1	
Winbench 99 V1.2:					
Business Disk Winmark99	8600	8840	9190	9180	
Hi-end Disk Winmark99	32200	31700	31800	32900	
Business Graphic Winmark	164	205	226	277	
Hi-end Graphic Winmark	591	852	874	898	
SYS Mark 2001/2002 : SISMark 2001/2002 Rating (Internet Content Creation / Office Productivity)					
SISMark 2001	236 (263/212)	278 (314/247)	286 (325/251)	271 (317/231)	
SISMark 2002 in Windows XP	245 (346/173)	283 (411/195)	300 (429/210)	316 (436/229)	
SISOFT Sandra 2003 :					
Dhrystone ALU	MIPS	6778	7712	7743	9183
Whetstone FPU iSSE2	MFLOPS	1407/3114	1711/3944	1708/3942	2601/5416
RAM Int Buffered iSSE2	MB/S	2204	2688	4226	4266
RAM Float Buffered iSSE2	MB/S	2204	2689	4227	4263
Integer SSE2	IT/S	10033	11923	11925	11749
Floating-Point SSE2	IT/S	12768	15177	15178	21590
QUAKE3 DEMO1	FPS	110.9	125.6	134.1	134.5
DEMO2	FPS	110.5	127.3	136.3	135.9
Return to Castle Wolfenstein	FPS	74.4	84.5	88.6	88.9
WCPUID System / CPU Clock	132.98/2526.62	199.66/2995.70	199.71/2995.70	199.71/2995.70	199.71/2995.70

1-5 Layout Diagram & Jumper Setting



Jumpers

Jumper	Name	Description	Page
JP1	CMOS RAM Clear	3-pin Block	P.8
JP4	Keyboard Power On Enable/Disabled	3-pin Block	P.7
JP5, JP6	USB Power On Enabled/Disabled	3-pin Block	P.7

Connectors

Connector	Name	Description	Page
ATXPWR	ATX Power Connector	20-pin Block	P.12
ATX12V	ATX 12V Power Connector	4-pin Block	P.13
KB/MOUSE (PS2 KB/MOUSE)	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.13
USBLAN	USB Port Connector	4-pin Connector	P.13
	LAN Connectors	RJ-45 Connector	P.13
USB4	USB Port Connector	4-pin Connector	P.13
PARALL	Parallel Port Connector	25-pin Female	P.13
CN1	Audio Connector	3 phone jack Connector	P.13
VGA	VGA Display Connector	15-pin Female Connector	P.13
COM1	Serial Port COM1 Connector	9-pin Connector	P.13
FDD	Floppy Driver Connector	34-pin Block	P.14
IDE1/IDE2	Primary/Secondary IDE Connector	40-pin Block	P.14
SATA1,SATA2	Serial ATA Port Connector	7-pin Block	P.15

Headers

Header	Name	Description	Page
COM2	Serial Port COM2 Headers	9-pin Block	P.15
USB2	USB Port Headers	9-pin Block	P.15
JW_1394_USB	1394/USB/ Front Audio Port Headers	2x13-pin Block	P.16
JW_LCD	LCD Display Panel Headers	11-pin Block	P.16
JW_FP	Power Button/Reset_Button/ SPDIF-In (Receiver) Optical Header	7-pin Block	P.16
JP7	External Remote Control Connect Cable Header	2x6-pin Block	P.17
SPEAK	PC Speaker connector	4-pin Block	P.17
WOL	Wake-On-LAN connector	3-pin Block	P.17
SYSFAN1, SYSFAN2, CPUFAN	FAN Speed Headers	3-pin Block	P.17
IR	IR infrared module Headers	5-pin Block	P.18
CDIN	CD Audio-In Headers	4-pin Block	P.18
SPDIF_OUT	SPDIF Out Headers	3-pin Block	P.18

Expansion Sockets

Socket/Slot	Name	Description	Page
ZIF Socket 478	CPU Socket	478-pin mPGAB CPU Socket	P.9
DDR1, DDR2	DDR Module Socket	184-pin DDR SDRAM Module Expansion Socket	P.10
PCI1	PCI Slot	32-bit PCI Local Bus Expansion slots	P.11
AGP	AGP 4X/8X Mode Slot	AGP Expansion Slot	P.12

Chapter 2

Hardware installation

2-1 Hardware installation Steps

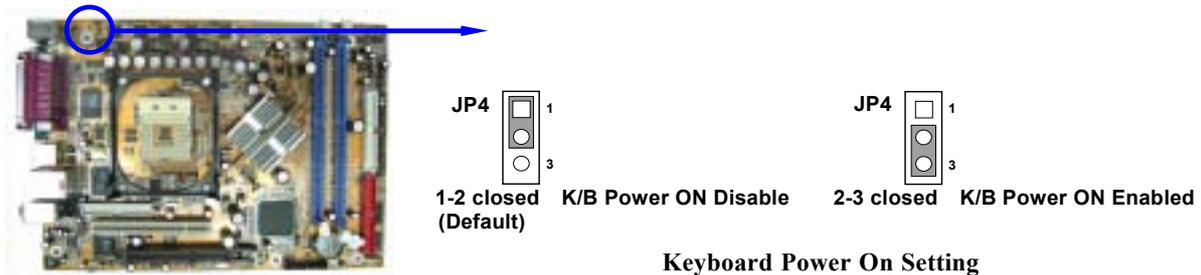
Before using your computer, you had better complete the following steps:

1. Check motherboard jumper setting
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Floppy cables, Front Panel /Back Panel cable
6. Connect ATX Power cable
7. Power-On and Load Standard Default
8. Reboot
9. Install Operating System
10. Install Driver and Utility

2-2 Checking Motherboard's Jumper Setting

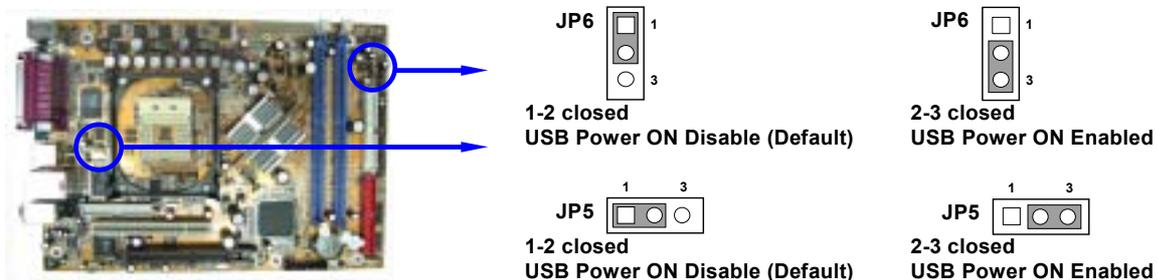
(1) Keyboard Power On function Enabled/Disabled (3-pin): JP4

When setting Enabled you can using keyboard by key in password to power on system.



(2) USB Device Power On function Enabled/Disabled (3-pin): JP5, JP6

When setting Enabled you can using USB Device to power on system.



(3) CMOS RAM Clear (3-pin): JP1

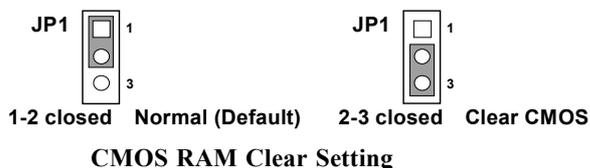
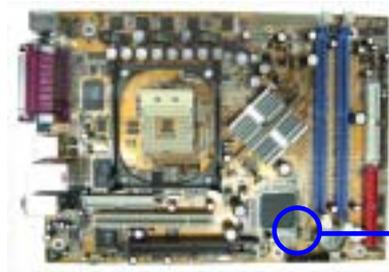
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JP1 to store the CMOS data.

To clear the CMOS, follow the procedure below:

1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JP1 and short pins 2-3 for a few seconds
4. Return JP1 to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

Note: When should clear CMOS

1. *Troubleshooting*
2. *Forget password*
3. *After over clocking system boot fail*



2-3 Install CPU

2-3-1 Glossary

Chipset (or core logic) - two or more integrated circuits which control the interfaces between the system processor, RAM, I/O devices, and adapter cards.

Processor slot/socket - the slot or socket used to mount the system processor on the motherboard.

Slot (AGP, PCI, ISA, RAM) - the slots used to mount adapter cards and system RAM.

AGP - Accelerated Graphics Port - a high speed interface for video cards; runs at 1X (66MHz), 2X (133MHz), or 4X (266MHz).

PCI - Peripheral Component Interconnect - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

ISA - Industry Standard Architecture - a relatively low speed interface primarily used for sound cards and modems; runs at approx. 8MHz.

Serial Port - a low speed interface typically used for mouse and external modems.

Parallel Port - a low speed interface typically used for printers.

PS/2 - a low speed interface used for mouse and keyboards.

USB - Universal Serial Bus - a medium speed interface typically used for mouse, keyboards, scanners, and some digital cameras.

Sound (interface) - the interface between the sound card or integrated sound connectors and speakers, MIC, and MIDI sound devices.

LAN (interface) - Local Area Network - the interface to your local area network.

BIOS (Basic Input/Output System) - the program logic used to boot up a computer and establish the relationship between the various components.

Driver - software, which defines the characteristics of a device for use by another device or other software.

Processor - the "central processing unit" (CPU); the principal integrated circuit used for doing the "computing" in "personal computer"

Front Side Bus Frequency - the working frequency of the motherboard, which is generated by the clock generator for CPU, DRAM and PCI BUS.

CPU L2 Cache - the flash memory inside the CPU, normally Athlon CPU has 256K or above, while Duron will have 64K.

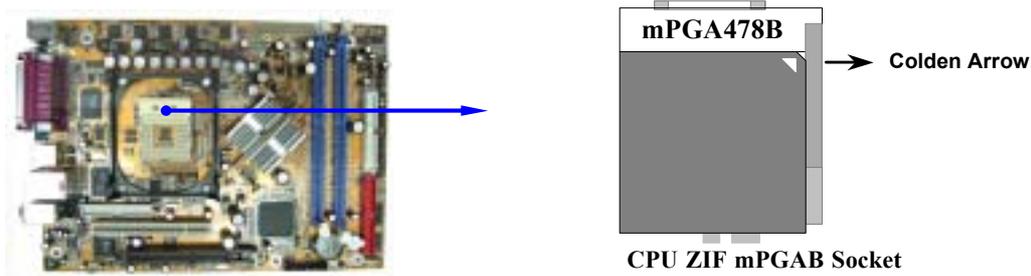
2-3-2 About Intel Pentium 4 478-pin CPU

This motherboard provides a 478-pin surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA478B socket supports Intel Pentium 4 processor in the 478 Pin package utilizes Flip-Chip Pin Grid Array (FC-PGA2) package technology.

The CPU that comes with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase a correct cooling FAN before you turn on your system.

WARNING! Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary.

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the level sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown below. The notched corner should point toward the end of the level. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.



When you put the CPU into the ZIF socket. No force require to insert of the CPU, then press the level to Locate position slightly without any extra force.

2-4 Install Memory

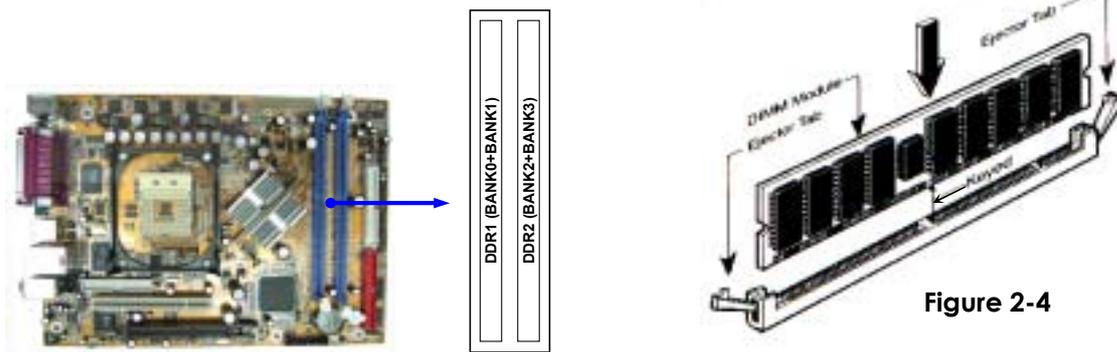
This motherboard provides **two** 184-pin DUAL INLINE MEMORY MODULES (DIMM) sites for memory expansion available from minimum memory size of 64MB to maximum memory size of 2.0GB DDR SDRAM.

WARNING! Due to Intel 865 chipset specification limitation this motherboard can not support 8Mx16/16Mx16/32Mx16 Double Side memory Module.

Valid Memory Configurations

Bank	184-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DDR1)	DDR200/DDR266/DDR333/DDR400 DDR SDRAM Module	X1	64MB~1.0GB
Bank 2, 3 (DDR2)	DDR200/DDR266/DDR333/DDR400 DDR SDRAM Module	X1	64MB~1.0GB
Total	System Memory (Max. 2.0GB)	2	64MB~2.0GB

Generally, installing DDR SDRAM modules to your motherboard is very easy, you can refer to figure 2-4 to see what a 184-Pin DDR200/DDR266/DDR333/DDR400 DDR SDRAM module looks like.



NOTE! When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indentation on both sides.

WARNING! For the DDR SDRAM CLOCK is set at 200MHz, use only DDR400-compliant DDR Modules. When this motherboard operate at 200MHz, most system will not even boot if non-compliant modules are used because of the strict timing issues, if your SDR Modules are not DDR400-compliant, set the DDR SDRAM clock to 166MHz to ensure system stability.

2-5 Expansion Cards

WARNING! Turn off your power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

2-5-1 Procedure For Expansion Card Installation

1. Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.
2. Remove your computer's cover and the bracket plate on the slot you intend to use.
3. Align the card's connectors and press firmly.
4. Secure the card on the slot with the screen you remove above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary.
7. Install the necessary software driver for your expansion card.

2-5-2 Assigning IRQs For Expansion Card

Some expansion cards need an IRQ to operate. Generally, an IRQ must exclusively assign to one use. In a standard design, there are 16 IRQs available but most of them are already in use.

Standard Interrupt Assignments

IRQ	Priority	Standard function
0	N/A	System Timer
1	N/A	Keyboard Controller
2	N/A	Programmable Interrupt
3 *	8	Communications Port (COM2)
4 *	9	Communications Port (COM1)
5 *	6	Sound Card (sometimes LPT2)
6 *	11	Floppy Disk Controller
7 *	7	Printer Port (LPT1)
8	N/A	System CMOS/Real Time Clock
9 *	10	ACPI Mode when enabled
10 *	3	IRQ Holder for PCI Steering
11 *	2	IRQ Holder for PCI Steering
12 *	4	PS/2 Compatible Mouse Port
13	N/A	Numeric Data Processor
14 *	5	Primary IDE Channel
15 *	1	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

2-5-3 Interrupt Request Table For This Motherboard

Interrupt request are shared as shown the table below:

	INT A	INT B	INT C	INT D	INT E	INT F	INT G	INT H
Slot 1		√						
Onboard VGA	√							
Onboard LAN					√			
Onboard USB 1								√
Onboard USB 2				√				
Onboard USB 3			√					
Sound		√						

IMPORTANT! If using PCI cards on shared slots, make sure that the drivers support "Shared IRQ" or that the cards don't need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.

2-5-4 AGP Slot

This motherboard provides an AGP Slot, only support the 0.8V/1.5V 8X/4X AGP VGA card.

Do not use AGP 2X card (3.3V) in this motherboard. It will burn and damage the motherboard due to Intel® 865 chipset can not support AGP 2X (3.3V).

The AGP Slot also supports AGP Digital Display Card for digital display and TV-out.

IMPORTANT! Before you plug-in AGP card, please make sure the following notice is fully understood and practiced. If your AGP card has “AGP 4X notch (show below) please make sure your AGP card is AGP 4X (1.5V) not AGP 2X (3.3V)



Example 1: SiS 305 & ATi Rage 128 Pro AGP card those golden finger is compatible with 2X/4X mode AGP slot, but only can support 2X (3.3V) only. If you install these cards in Intel® 865 based motherboard it will burn and damage the motherboard.

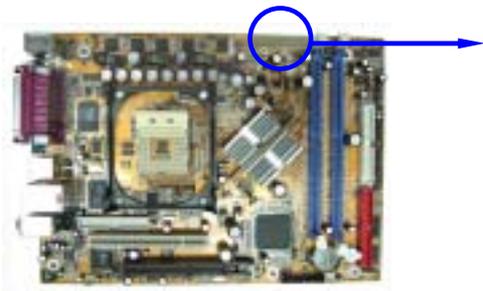
Example 2: We also find Diamond Vipper V770 golden finger is design for 2X/4X mode AGP Slot. It can be adjusted the jumper for AGP 2X (3.3V) or AGP 4X (1.5V). But the factory default setting is 2X (3.3V). If you install this AGP card in motherboard without change the jumper setting to 4X (1.5V), it will burn the motherboard.

2-6 Connectors, Headers

2-6-1 Connectors

(1) Power Connector (20-pin block) : AXPWR

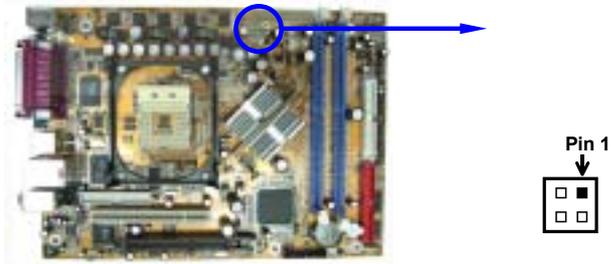
ATX Power Supply connector. This is a new defined 20-pins connector that usually comes with ATX case. The ATX Power Supply allows to use soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.



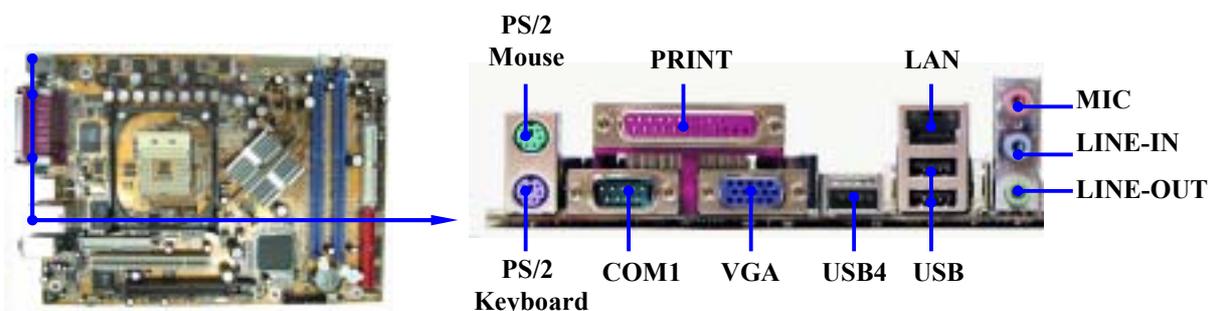
	□ □ □ □ □ □ □ □ □ □	
Pin 1 →	■ □ □ □ □ □ □ □ □ □	
PIN	ROW2	ROW1
1	3.3V	3.3V
2	-12V	3.3V
3	GND	GND
4	Soft Power On	5V
5	GND	GND
6	GND	5V
7	GND	GND
8	-5V	Power OK
9	+5V	+5V (for Soft Logic)
10	+5V	+12V

(2) ATX 12V Power Connector (4-pin block) : ATX12V

This is a new defined 4-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully support Pentium 4 processor must including this connector for support extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.

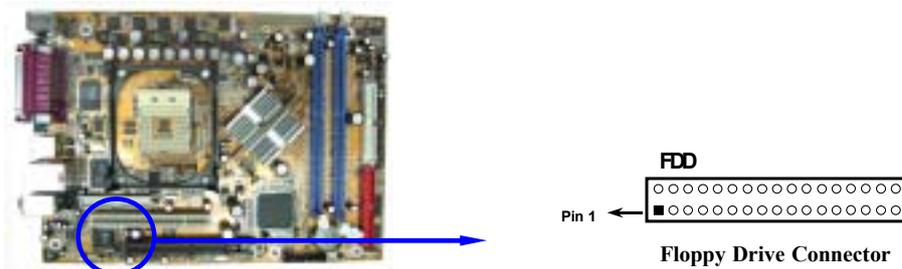


- (3) **PS/2 Mouse & PS/2 Keyboard Connector: KB/MOUSE**
The connectors for PS/2 keyboard and PS/2 Mouse.
- (4) **USB Port connector: USB, USB4**
The connectors are 4-pin connector that connect USB devices to the system board.
- (5) **LAN Port connector: LAN**
This connector is standard RJ45 connector for Network connector.
- (6) **Parallel Port Connector (25-pin female): PARALL**
Parallel Port connector is a 25-pin D-Subminiature Receptacle connector. The On-board Parallel Port can be disabled through the BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.
- (7) **Audio Connector : CN1**
This Connector are 3 phone Jack for LINE-OUT, LINE-IN, MIC .
Line-out (Green): Audio output to speaker for **Front Speaker output in 6-Channel**
Line-in (Blue): Audio input to sound chip or **REAR Speaker output in 6-Channel**
MIC (Pink): Microphone Connector or **Center/Base Speaker output in 6-Channel**
- (8) **VGA Connector (15-pin D-Sub) Connector: VGA**
VGA is the 15-pin D-Subminiature female connector for display monitor.
- (9) **Serial Port1 COM1: COM1**
COM1 is the 9-pin D-Subminiature mail connector. The On-board serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.



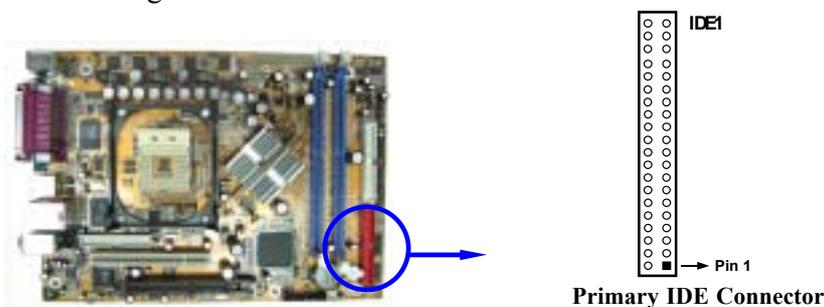
(11) Floppy drive Connector (34-pin block): FDD

This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.



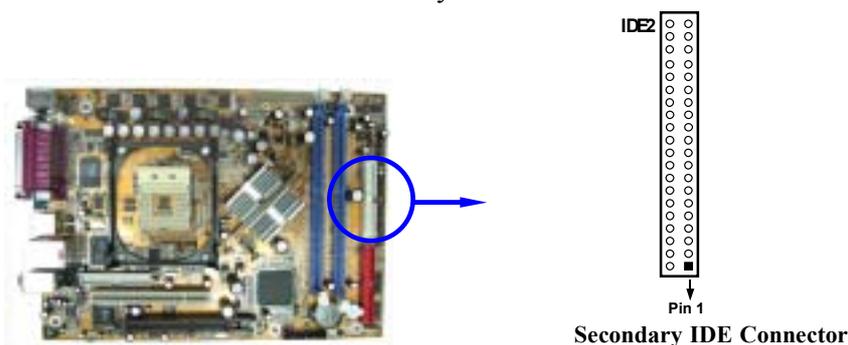
(12) Primary IDE Connector (40-pin block): IDE1

This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.



(13) Secondary IDE Connector (40-pin block): IDE2

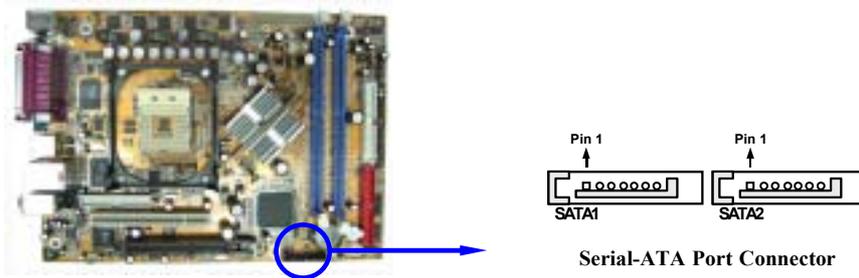
This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.



- Two hard disks can be connected to each connector. The first HDD is referred to as the “Master” and the second HDD is referred to as the “Slave”.
- For performance issues, we strongly suggest you don’t install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

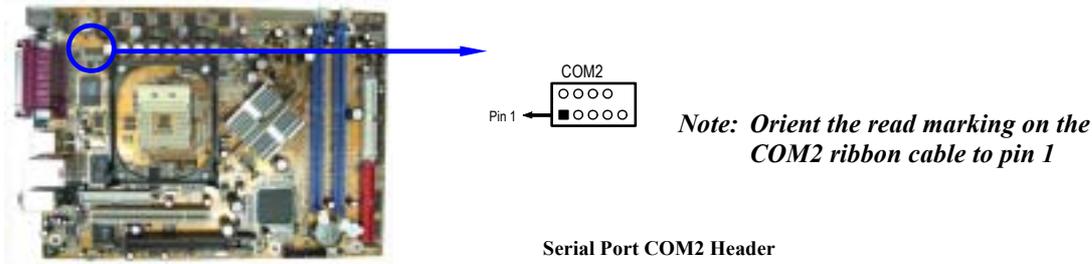
(13) Serial-ATA Port connector: SATA1/SATA2

This connector support the provided Serial ATA IDE hard disk cable to connecting the motherboard and serial ATA hard disk.



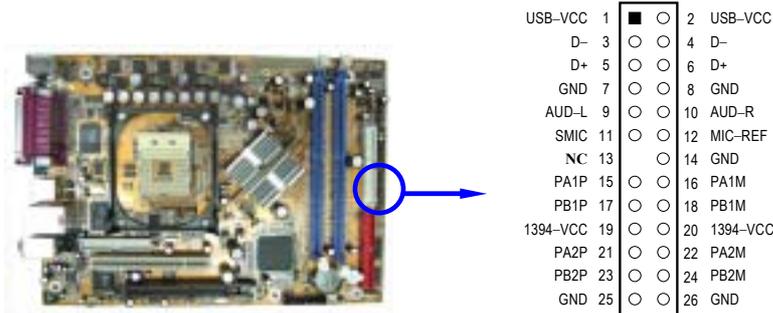
2-6-2 Headers

(1) Serial Port COM2 Header (9-pin) : COM2



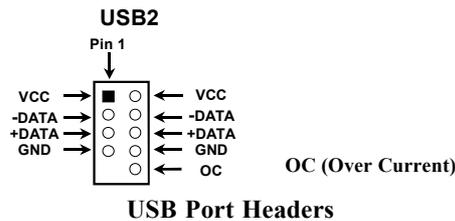
(2) 1394/USB/Front Audio Header for Front Panel (2x13pin) : JW_1394_USB

This header connect to Front Panel Speaker, MIC connector, 1394-A/1394-B and USB port with cable.



(3) USB Port Headers (9-pin) : USB2

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.



**(5) Power Button/ Reset Button/ SPDIF-In (Receiver) Optical Header (7-pin) : JW_FP
 SPDIF-In**

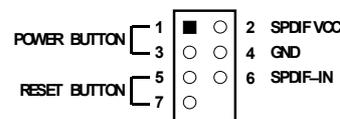
The SPDIF-In Optical Receiver Connector, by this connector you can in-put digital signal from other device such like CD-ROM, CD player to get high quality audio.

Power switch: POWER BUTTON

This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system

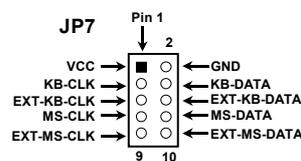
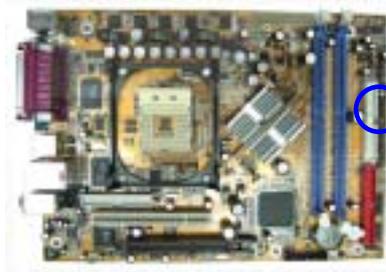
Reset switch lead: RESET BUTTON

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.



(6) External Remote Control Connect Cable Header: JP7

JP7 is for connect External Remote Control, when plug out the connect cable you have to insert the jumpers in 3-5, 7-9, 4-6, 8-10 otherwise the On board Keyboard and Mouse will not work.



(7) Speaker connector: SPEAK

This 4-pin connector connects to the case-mounted speaker. See the figure below.

(8) LCD Display Panel/ LED Header (2x6pin) : JW_LCD

Power LED: PWR-LED

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

IDE Activity LED: HDD_LED, DVD_LED

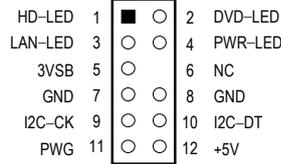
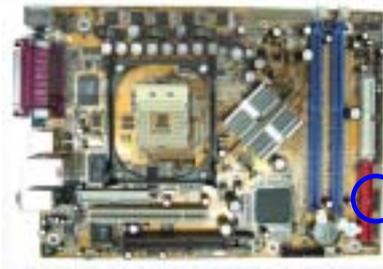
This connector connects to the hard disk/ CD ROM activity indicator light on the case.

LAN Activity LED: LAN_LED

This connector connects to the LAN activity indicator light on the case

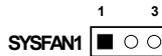
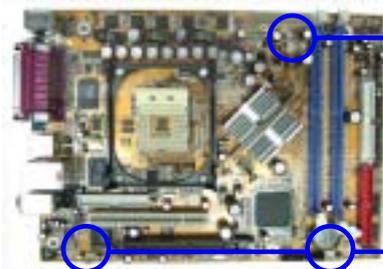
LCD Display Panel Header :

This connector connects to the LCD Display Panel on the case to show Timer and the PC Health situation such like FAN Speed/ CPU and System Temperature.



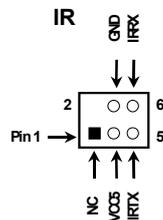
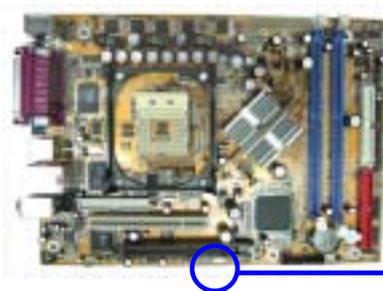
(9) FAN Speed Headers (3-pin) : SYSFAN1, SYSFAN2, CPUFAN

These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.



(10) IR infrared module Headers (5-pin) : IR

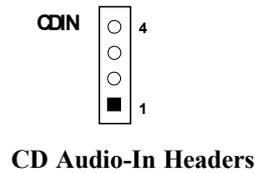
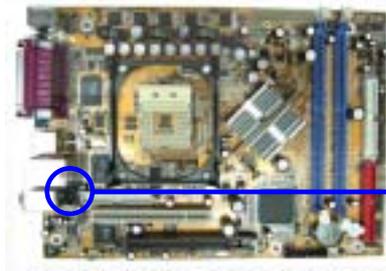
This connector supports the optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.



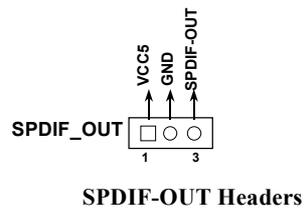
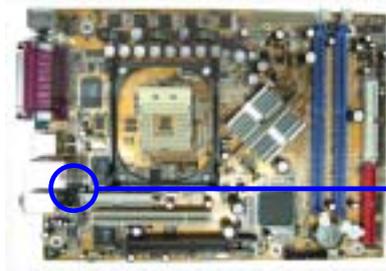
IR infrared module Headers

(11) CD Audio-In Headers (4-pin) : CDIN

CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.



(12) SPDIF-Out Headers (3-pin) : SPDIF_OUT



2-7 Starting Up Your Computer

1. After all connection are made, close your computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to proper position, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
 - a. Your monitor.
 - b. Other external peripheral (Printer, Scanner, External Modem etc...)
 - c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.

-
-
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it has a power standby feature. The system will then run power-on test. While the test are running, the BIOS will alarm beeps or additional message will appear on the screen.

If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Beep	Meaning
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM install or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

6. During power-on, press <Delete> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows 9X, click “**Start**” button, click “**Shut down**” and then click “**Shut down the computer?**” The power supply should turn off after windows shut down.

Chapter 3

Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/- keys when you want to modify the BIOS parameters for the active option.

3-1 Entering Setup

Power on the computer and by pressing immediately allows you to enter Setup.

If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press <F1> to continue, <Ctrl-Alt-Esc> or to enter Setup

3-2 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen. The Main Menu allows you to select from fourteen setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3-4 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

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Standard CMOS Features

Date (mm:dd:yy)	Mon, Nov, 11 2003	Item Help
Time (hh:mm:ss)	11 : 02 : 35	
> IDE Primary Master	Press Enter None	Menu Level >
> IDE Primary Slave	Press Enter None	
> IDE Secondary Master	Press Enter None	Change the day, month, year and century
> 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	56320K	
Total Memory	57344K	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Date

The date format is <day><month><date><year>.

Day Day of the week, from Sun to Sat, determined by BIOS. Read-only.

Month The month from Jan. through Dec.

Date The date from 1 to 31 can be keyed by numeric function keys.

Year The year depends on the year of the BIOS.

Time

The time format is <hour><minute><second>.

Primary Master/Primary Slave

Secondary Master/Secondary Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None, Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually.

If you select Manual, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is SCSI, the selection shall be "None".

If the controller of HDD interface is CD-ROM, the selection shall be "None"

- Access Mode** The settings are Auto Normal, Large, and LBA.
- Cylinder** number of cylinders
- Head** number of heads
- Precomp** write precomp
- Landing Zone** landing zone
- Sector** number of sectors

3-5 Advanced BIOS Features

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Advanced BIOS Features

Anti-Virus Protection	Disabled	Item Help
CPU L1 & L2 Cache	Enabled	
Hyper Threading Technology	Disabled	Menu Level >
Quick Power On Self Test	Enabled	
HDD Boot Sprite	Disabled	
First Boot Device	Floppy	
Second Boot Device	HDD 0	
Third Boot Device	CDROM	
Boot other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control For OS	1.4	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Windows	Yes	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Anti-Virus Protection

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Disabled (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Enabled Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU Internal Cache

The default value is Enabled.

Enabled (default) Enable cache

Disabled Disable cache

Note: The internal cache is built in the processor.

External Cache

Choose Enabled or Disabled. This option enables the Level 2 cache memory.

CPU L2 Cache ECC Checking

Choose Enabled or Disabled. This option enables the Level 2 cache memory ECC (error check correction).

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

Enabled (default) Enable quick POST

Disabled Normal POST

First/Second/Third/Fourth Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS/ZIP, HDD-0/HDD-1/HDD-3, SCSI, CDROM, LAD and Disabled.

Swap Floppy Drive

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

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.

Boot Up NumLock Status

The default value is On.

On (default) Keypad is numeric keys.

Off Keypad is arrow keys.

Gate A20 Option

Normal The A20 signal is controlled by keyboard controller or chipset hardware.

Fast (default) The A20 signal is controlled by port 92 or chipset specific method.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a keystroke when you hold the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, and 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke. The settings are 250, 500, 750, and 1000.

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

- System** The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
- Setup (default)** The system will boot, but access to Setup will be denied if the correct password is not entered prompt.

OS Select For DRAM > 64MB

Allows OS2[®] to be used with >64MB or DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2.

3-6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

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Advanced Chipset Features

> DRAM Timing Settings	Press Enter	Item Help
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Enabled	
Memory Hole At 15M-16M	Disabled	Menu Level >
Delay Transaction	Enabled	
AGP Transfer Mode	Auto	
AGP Aperture Size	128MB	
On-Chip VGA	Enabled	
On-Chip Frame Buffer Size	16MB	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

DRAM Timing Settings

Please refer to section 3-6-1

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 settings are: Enabled and Disabled.

Video RAM Cacheable

Select Enabled allows caching of the video BIOS, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings 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 settings are: Enabled and Disabled.

Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The settings are: Enabled and Disabled.

AGP Transfer Mode

In this item you can select AGP transfer mode Auto/4X/1X the Default setting is Auto.

3-6-1 DRAM Timing Settings

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

DRAM Timing Settings

Auto Configuration	By SPD	Item Help
SDRAM CAS Latency Time	2	Menu Level >>
SDRAM Cycle Time	8	
SDRAM RAS-to-CAS Delay	4	
SDRAM RAS Precharge Time	4	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: 2T and 2.5T.

Note: Change these settings only if you are familiar with the chipset.

SDRAM RAS-to-CAS Delay

This field let's you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 2T, 3T and 4T.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain date. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 2T, 3T and 4T.

3-7 Integrated Peripherals

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Integrated Peripherals

> Onboard IDE Function	Press Enter	Item Help
> Onboard Device Function	Press Enter	Menu Level >
> Onboard Super IO Function	Press Enter	
Init Display First	PCI Slot	
Power On Function	Hot Key	
KB Power On Password	Enter	
Hot Key Power On	Magic Power On	
Power Loss Function	Always Off	

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

Onboard IDE Function

Please refer to section 3-7-1

Onboard Device Function

Please refer to section 3-7-2

Onboard Super IO Function

Please refer to section 3-7-3

Init Display First

This item allows you to decide to activate whether PCI Slot or AGP VGA first. The settings are: PCI Slot, AGP Slot.

3-7-1 Onboard IDE Function

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

Onboard IDE Function

OnChip Primary PCI IDE	Enabled	Item Help
OnChip Secondary PCI IDE	Enabled	
IDE Primary Master PIO	Auto	Menu Level >>
IDE Primary Slave PIO	Auto	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
IDE DMA Transfer Access	Enabled	
IDE 32-bit Transfer Mode	Enabled	
IDE HDD Block Mode	Enabled	
Delay For HDD (Secs)	0	

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

OnChip IDE Primary/Secondary

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately. The settings are: Enabled and Disabled.

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. The settings are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 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/33 and Ultra DMA/66, select Auto to enable BIOS support. The settings are: Auto, 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 settings are: Enabled, Disabled.

3-7-2 Onboard Device Function

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

Onboard Device Function

Onboard LAN Device	Enabled	Item Help	
Onboard LAN Boot ROM	Disabled		
AC97 Audio Codec		Menu Level >>	
AC97 Audio	Auto		
USB Controller	Enabled		
USB Keyboard Legacy Support	Disabled		
On-Chip Serial ATA Setting			
On-Chip Serial ATA	Disabled		
Serial ATA Port1 Mode	Primary Master		
Serial ATA Port2 Mode	Primary Master		
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults			

AC97 Audio/AC97 Modem

This item is setting on board AC97 Audio/AC97 Modem enabled/disabled. The settings are: Enabled, Disabled, Auto.

Game Port Address/Midi Port Address

This will determine which Address the Game Port/Midi Port will use.

USB Controller

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB peripherals. The settings are: Enabled, Disabled.

USB Keyboard Legacy Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The settings are: Enabled, Disabled.

On-Chip Serial ATA

The settings are: Disabled, Auto, Combined Mode, Enhanced Mode, SATA Only.

Default setting is Auto. *Due to the Intel ICH5 Specification limited only provided two controllers. When plug the Serial ATA hard drive in SATA1 or SATA2 only can support either IDE1 or IDE2 can works in Windows 9X/ME/2000. But in the Windows XP the OS can support 6 IDE devices both IDE1, IDE2 and SATA1/SATA2 can works.*

3-7-3 Onboard Super IO Function

Onboard Super IO Function

Onboard FDC Controller	Enabled	Item Help
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	Menu Level >>
UART Mode Select	Normal	
UR2 Duplex Mode	Half	
Onboard Parallel Port	378/IRQ7	
Parallel Mode	SPP	
ECP Mode Use DMA	3	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Onboard FDD Controller

Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: Enabled and Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and the second serial ports. The settings are: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This item allows you to determine which InfraRed(IR) function of the onboard I/O chip, this functions uses.

Onboard Parallel Port

There is a built-in parallel port on the on-board Super I/O chipset that Provides Standard, ECP, and EPP features. It has the following option:

Disabled

- (3BCH/IRQ7)/ Line Printer port 0
- (278H/IRQ5)/ Line Printer port 2
- (378H/IRQ7) Line Printer port 1

Parallel Port Mode

- SPP : Standard Parallel Port
- EPP : Enhanced Parallel Port
- ECP : Extended Capability Port

SPP/EPP/ECP/ECP+EPP

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP modes simultaneously, choose "EPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP+EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA" at this time, the user can choose between DMA channels 3 to 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will

be displayed on the screen: "EPP Mode Select." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

3-8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy saving while operating in a manner consistent with your own style of computer use.

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

Power Management Setup

ACPI Function	Enabled	Item Help	
ACPI Suspend Type	S1(POS)		
Power Management	User Define	Menu Level >	
Video off Method	V/H SYNC+Blank		
Video Off In Suspend	Yes		
Suspend Type	Stop Grant		
MODEM Use IRQ	3		
Suspend Mode	Disabled		
HDD Power Down	Disabled		
Soft-off by PWR-BTNN	Instant-off		
Wake-Up by PCI card	Disabled		
Power On by Ring	Disabled		
x USB KB Wake-Up From S3	Disabled		
Resume by Alarm	Disabled		
x Date (of Month)	0		
x Time (hh:mm:ss)	0 : 0 :0		
CPU Thermal Management Timer	32 Min		
> PM Timer Reload Events	Press Enter		
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults			

ACPI Function

This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The settings are Enabled and Disabled.

Video Off in Suspend

This determines the manner in which the monitor is blanked. The choice are Yes → Video will off , and No→ Video always On.

Video Off Method

This determines the manner in which the monitor is blanked.

- DPMS (default)** Initial display power management signaling.
- Blank Screen** This option only writes blanks to the video buffer.
- 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.

Modem Use IRQ

This determines the IRQ in which the MODEM can use.
The settings are: 3, 4, 5, 7, 9, 10, 11, NA.

Power Button Function

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state. The settings are: Delay 4 Sec, Instant-Off.

Wake-Up by PCI card /Power On by Ring

During Disabled, the system will ignore any incoming call from the PCI card/modem. During Enabled, the system will boot up if there's an incoming call from the PCI card /modem.

Wake-Up on RTC Alarm

This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

Date(of month) Alarm

You can choose which month the system will boot up. Set to 0, to boot every day.

Time(hh:mm:ss) Alarm

You can choose what hour, minute and second the system will boot up.

Note: If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work

PM Timer Reload Events

Please refer to section 3-8-1

3-8-1 PM Timer Reload Events

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

PM Timer Reload Events

Primary IDE 0	Disabled	Item Help
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	Menu Level >>
Secondary IDE 1	Disabled	
FDD, COM, LPT Port	Disabled	
PCI PIRQ [A-D] #	Disabled	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

3-9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

PnP/PCI Configurations

Reset Configuration Data	Disabled	Item Help
--------------------------	----------	-----------

Resources Controlled By	Manual	Menu Level >
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Reset Configuration Data

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 can not boot. The settings are: Enabled and Disabled.

Resource Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95/98. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “>”). The settings are: Auto(ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt. Please refer to section 3-9-1

PCI/VGA Palette Snoop

Leave this field at *Disabled*. The settings are Enabled, Disabled.

3-9-1 IRQ Resources

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

IRQ Resources

IRQ-3	assigned to	PCI Device	Item Help
IRQ-4	assigned to	PCI Device	

IRQ-5	assigned to	PCI Device	Menu Level >>
IRQ-7	assigned to	PCI Device	
IRQ-9	assigned to	PCI Device	
IRQ-10	assigned to	PCI Device	
IRQ-11	assigned to	PCI Device	
IRQ-12	assigned to	PCI Device	
IRQ-14	assigned to	PCI Device	
IRQ-15	assigned to	PCI Device	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults			

3-10 PC Health Status

This section shows the Status of you CPU, Fan, Warning for overall system status. This is only available if there is Hardware Monitor onboard.

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software

PC Health Status

Shutdown Temperature	Disabled	Item Help
Show PC Health in Post	Enabled	
CPUFAN Smart Mode	Enabled	Menu Level >
CPUFAN Temp1 Value	40°C	
CPUFAN Speed below Temp1	50%	
CPUFAN Temp2 Value	45°C	
CPUFAN Speed below Temp2	80%	
SYSFAN Smart Mode	Enabled	
SYSFAN Temp1 Value	40°C	
SYSFAN Speed below Temp1	50%	
SYSFAN Temp2 Value	45°C	
SYSFAN Speed below Temp2	80%	
Current CPU Temperature	38°C	
Current System Temperature	25°C	
Current CPUFAN Speed	5000 rpm	
Current SYSFAN Speed	5000 rpm	
Vcore	1.51V	
Vcc3.3	3.31V	
+5V	4.98V	
Vdd 1.5	1.53V	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Show PC Health in Post

During Enabled, it displays information list below. The choice is either Enabled or Disabled

CPUFAN/SYSFAN Smart Mode

Enabled this item can let users setting CPUFAN/SYSFAN Speed when the CPU/System temperature below the temperature value of BIOS Setting.

CPUFAN/SYSFAN Temp1/Temp2 Value

This item allow users setting the temperature value of CPU/SYSTEM for FAN speed controller change the FAN speed the setting are 30°C~100°C.

CPUFAN/SYSFAN Speed below Temp1/Temp2

This item allow the FAN work in 50%, 60%, 70%, 80%, 90%, 100% of full speed when the

CPU/SYSTEM temperature below Temp1/Temp2.

Current CPU Temperature/Current System Temp/Current CPUFAN, SYSFAN Speed/Vcore/Vdd/3.3V

This will show the CPU/FAN/System voltage chart and FAN Speed.

3-11 Miscellaneous Control

This section is for setting CPU Frequency/Voltage Control.

CMOS Setup Utility - Copyright(C) 1984-2003 Award Software
Miscellaneous Control

CPU Clock Ratio	8 X	Item Help
Auto Detect PCI Clk	Enabled	
Spread Spectrum	Disabled	
** Current Host Clock is		Menu Level >
HOST Clock at Next Boot is	100	
** Current DRAM Clock is		
DRAM Clock at Next Boot is	By SPD	
CPU Vcore Select	Default	
VDIMM Select	2.60V(Default)	
VCC1.5 Select	1.55V(Default)	
Flash Part Write Protect	Enabled	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Auto Detect PCI Clk

This item allows you to enable/disable auto detect PCI Clock.

The settings are: Enabled, Disabled.

Spread Spectrum

This item allows you to set the CPU Host/PCI clock and Spread Spectrum.

The settings are: Enabled, Disabled.

Host/PCI Clock at Next Boot

This item allows you to select CPU frequency step by step increasing.

The choice are: 400MHz CPU----100MHz~350MHz, 533MHz CPU---133MHz~350MHz

800MHz CPU---200MHz~350MHz

DRAM Clock at Next Boot is

This item allows you select the DRAM Clock for DDR266/DDR333/DDR400. The setting are:

DDR266 for P4/400MHz CPU, DDR266/DDR333 for P4/533MHz CPU, DDR266/DDR333/DDR400 for P4/800MHz CPU

Flash Part Write Protect

This item allows you protect your BIOS chip from Virus destroy data. When Flash BIOS you have Disabled this item.

3-12 Load Standard/Optimized Defaults

Load Standard Defaults

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

Load Standard Defaults (Y/N)? N

Pressing <Y> loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

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

Load Optimized Defaults (Y/N)? N

Pressing <Y> loads the default values that are factory settings for optimal performance system operations.

3-13 Set Supervisor/User Password

You can set either supervisor or user password, or both of them. The differences are:

Supervisor password: Can enter and change the options of the setup menus.

User password: Can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.

Chapter 4

DRIVER & FREE PROGRAM INSTALLATION

Check your package and there is A MAGIC INSTALL CD included. This CD consists of all DRIVERS you need and some free application programs and utility programs. In addition, this

CD also include an auto detect software which can tell you which hardware is installed, and which DRIVERS needed so that your system can function properly. We call this auto detect software MAGIC INSTALL.

MAGIC INSTALL Supports WINDOWS 98SE/ME/NT4.0/2000/XP

Insert CD into your CD-ROM drive and the MAGIC INSTALL Menu should appear as below. If the menu does not appear, double-click MY COMPUTER / double-click CD-ROM drive or click START / click RUN / type X:\SETUP.EXE (assuming X is your CD-ROM drive).



From MAGIC INSTALL MENU you may make 11 selections:

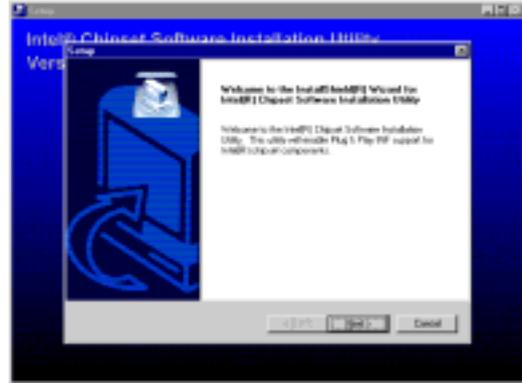
1. INF install Intel 865/875 chipset system driver
2. VGA install Intel 865G VGA driver
3. SOUND install ALC AC97' Codec Audio driver
4. LAN install Realtek 8169/8110S Gigabit Ethernet driver
5. USB2.0 install USB 2.0 driver
6. PC-CILLIN install PC-CILLIN2002 anti-virus program
7. PC-HEALTH install PC-HEALTH monitor Utility
8. MBIOS&DX9 install BIOS Live Update Utility and Microsoft DirectX 9 driver
9. Magic Twin install Magic Twin Utility
10. BROWSE CD to browse the contents of the CD
11. EXIT to exit from MAGIC INSTALL menu

4-1 INF install Intel 865/875 chipset system driver

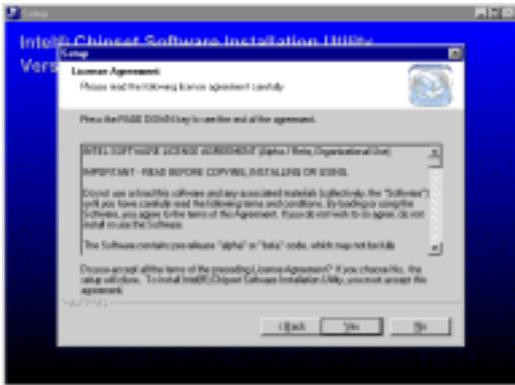
After you have completed the installation of your operation system (WINDOWS 98SE). You will find an UNKNOWN DEVICE in the device manager (START/SETTING/CONTROL PANEL/SYSTEM/DEVICE MANAGER). You have to install INF driver as shown below:



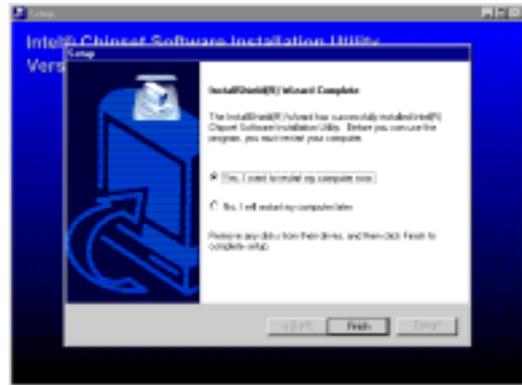
1. Click INF in the MAGIC INSTALL MENU



2. Click NEXT when Chipset Software Install Utility appears



3. This license agreement appear , click Yes , the readme information appear , click Next



4. Select if you want computer re-started click Finish

**NOTE: MAGIC INSTALL will auto detect file path X:\INTEL865\INF\SETUP.EXE
This driver supports WINDOWS 98SE/ME/2000/XP
(NT4.0 do not require)**

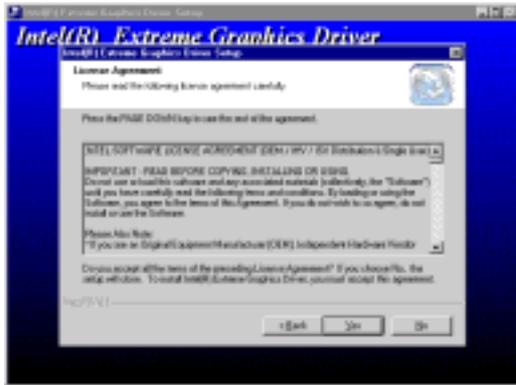
4-2 VGA install Intel 865G VGA Driver



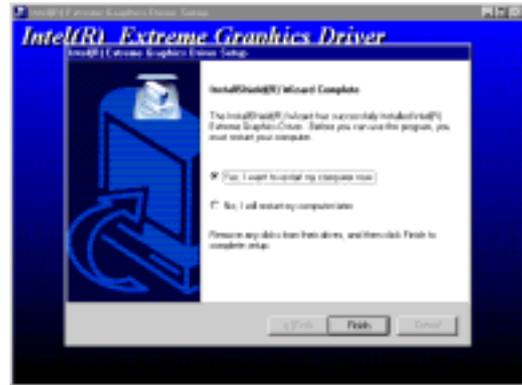
1. Click VGA when MAGIC INSTALL MENU appears



2. Click NEXT When Intel (R) Extreme Graphics Driver Software Setup appear

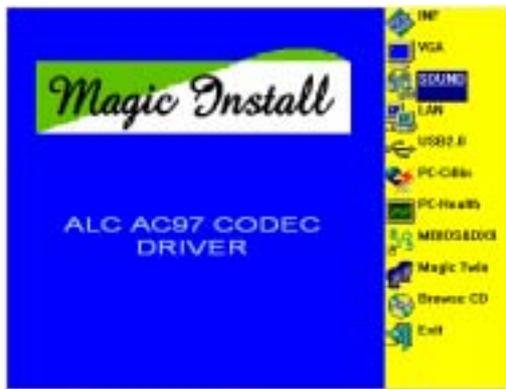


3. Click YES, This is Announce CopyRight

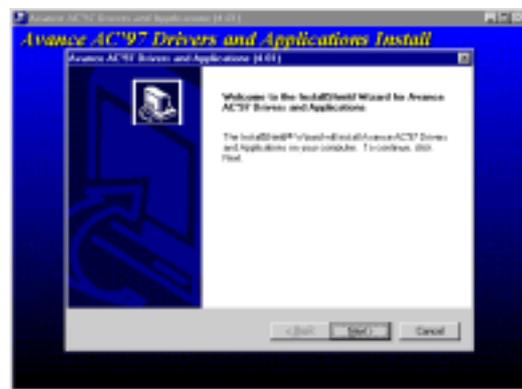


4. If You Want Re-start Computer , Click FINISH

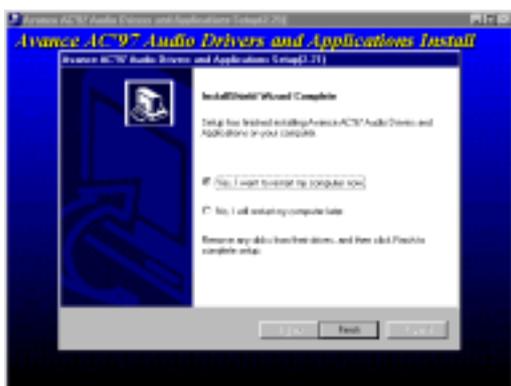
4-3 SOUND install ALC AC97 Codec Audio Driver



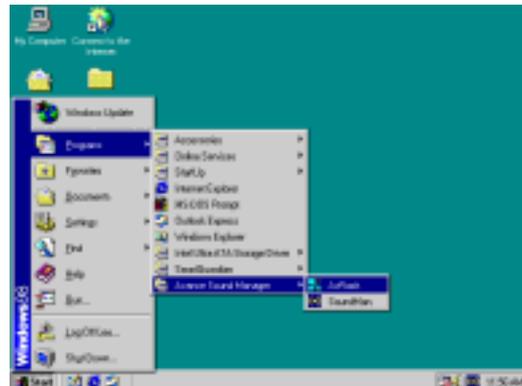
1. Click SOUND when MAGIC INSTALL MENU appears



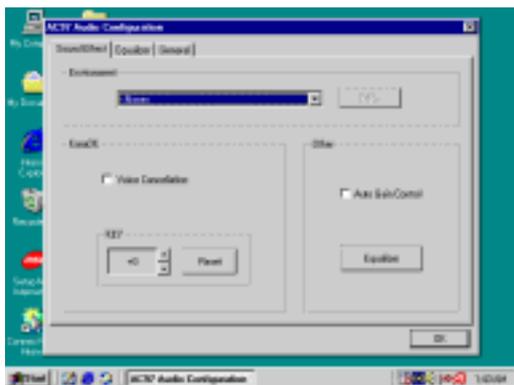
2. Then auto detect operation system language edition, click OK, start to install DRIVER



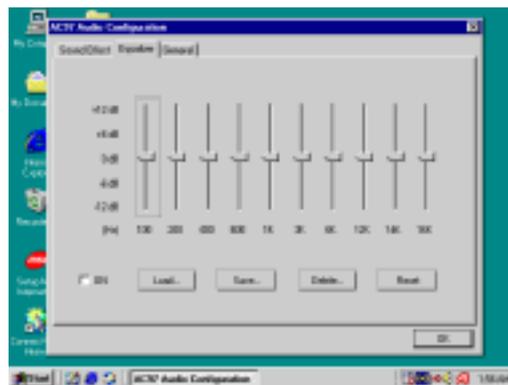
3. Click Finish and Restart Windows



4. Click Start→Program→Avance Sound Manager→AvRack. Then AVRACK Windows appears



5. Sound Effect select and KaraOK Mode Function



6. Manual Sound Effect Setting

Note: The path of the file

For WIN98/NT4.0/WIN2K/XP is X:\CODEC\ALC\SETUP.EXE

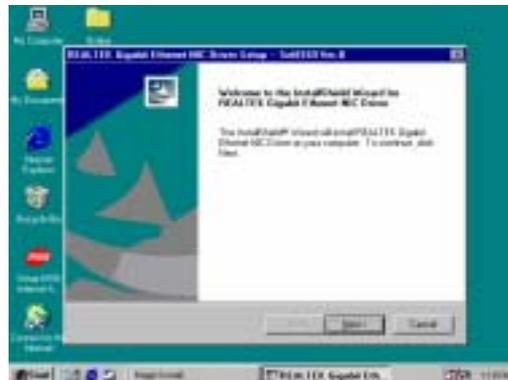
Note: In Win2K/WinME users have to click Control Panel\System\Device Manager\DVD\CD-ROM drives to Enabled digital CD Audio for the CD-ROM Device when use the SPDIF-Out digital signal.

4-4 LAN install Realtek RTL8110S Gigabit Ethernet NIC Driver

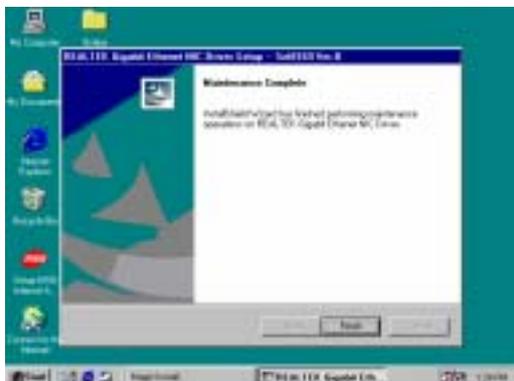
WINDOWS 98SE/98ME/2000/XP Setup



1. Click LAN when Magic Install Menu appear



2. Install Realtek RTL8110S Gigabit Ethernet Driver



3. Click finish, and select restart computer

4-5 USB2.0 install Intel USB2.0 Driver

Windows 98SE/ME USB 2.0 Driver installation



1. Click USB2.0 when Magic Install Menu appear



2. This license agreement appear, click Yes, then finish install driver , click Close and restart your computer

Windows 2000/XP USB 2.0 Driver installation

Windows 2000

Mothed1 Start Windows 2000 OS and Internet Connect, Select "Windows Update",
Select Driver Update, Install Windows2000 USB2.0 Driver

Mothed2 Install Windows 2000 Service Pack 4 or later

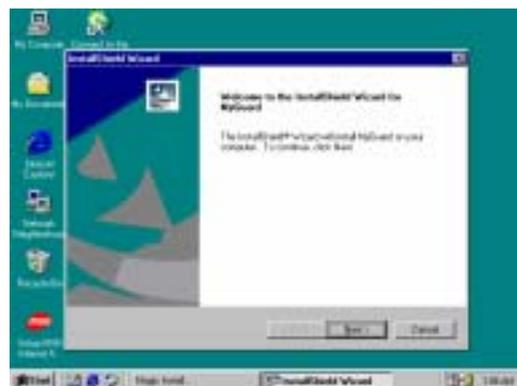
Windows XP

Install Windows XP Service Pack 1 or later

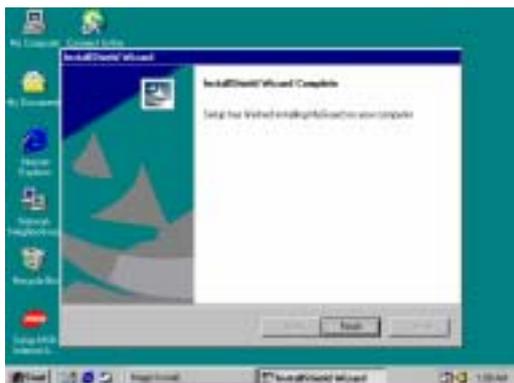
4-6 PC-HEALTH install Intel Hardware Doctor Utility



1. Click PC-HEALTH when MAGIC INSTALL MENU appears



2. Click Next when Install shield wizard Window appears, Choose destination location and click Next, when the start copy file windows appear, click next



3. Select Finish after setup complete



4. Execute MY GUARD utility, On-time Monitoring your system health

**NOTE: MAGIC INSTALL will auto detect file path X:\INTEL865\HEALTH\SETUP.EXE
This driver supports WINDOWS 95/98/98SE/NT4.0/2000**

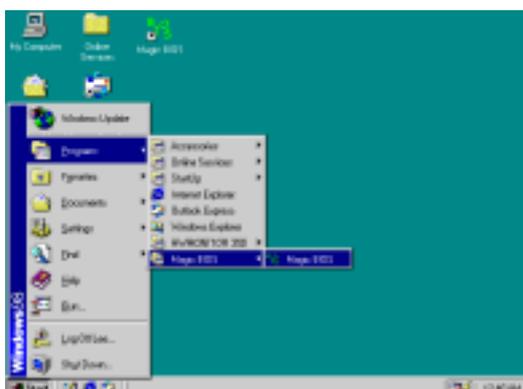
4-7 MBIOS&DX9 Install BIOS Live Update Utility and DIRECTX9



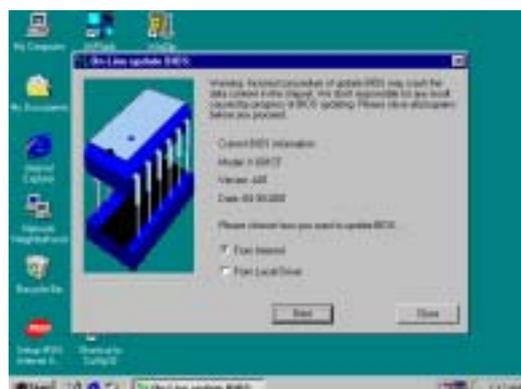
1. Click Magic BIOS when Magic Install MENU appears



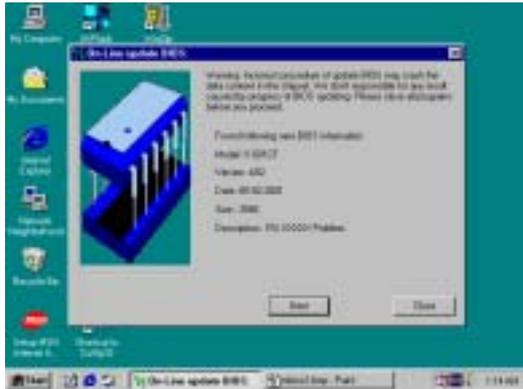
2. Click Next to install the Magic BIOS in Destination Folder



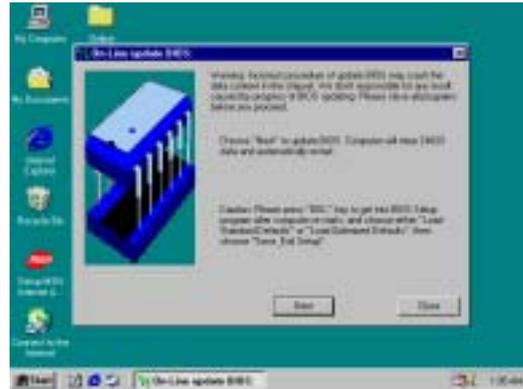
3. After finish Setup you will have a Magic BIOS icon in your screen



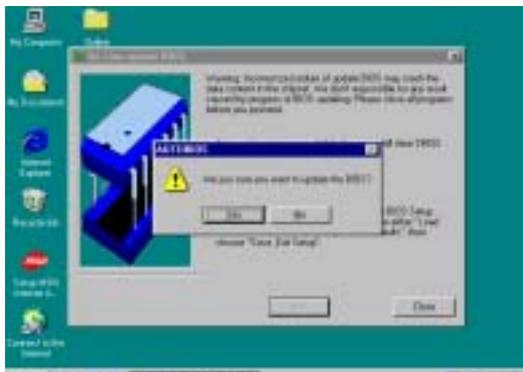
4. Double click the Magic BIOS icon you will have this picture, choose from internet you can upgrade BIOS On-line



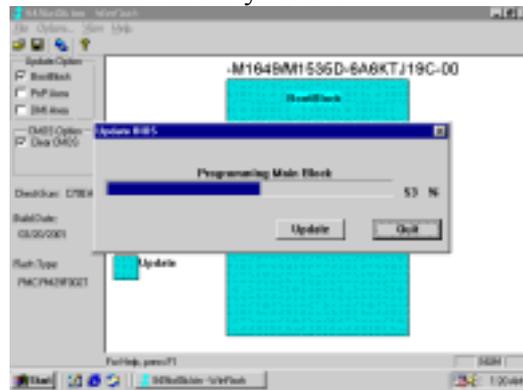
5. When On-line update BIOS the program will auto-check your BIOS version



6. Click Next if you need update BIOS, after upgrade BIOS, the system will clear CMOS and automatically restart



7. Click Yes if you want to update the BIOS otherwise choose No to exit



8. When System programming BIOS don't turn off power, after finish update BIOS, the system will clear CMOS and automatically Restart



9. When choose From Local Driver to update BIOS, you must have the correct BIOS file in your Local Driver

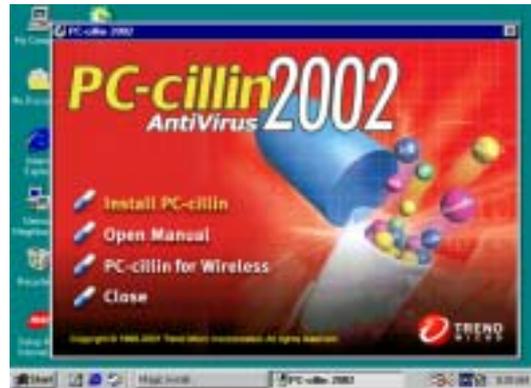


10. Choose the correct BIOS file to update BIOS

4-8 PC-CILLIN Install PC-CILLIN 2002 Anti-virus program



1. Click PC-CILLIN when MAGIC INSTALL MENU appear



2. (1) Click "Install PC-CILLIN" when PC-CILLIN 2002 main menu appears, and Click NEXT when "Install Shield Wizard For PC-CILLIN 2002"
(2) Click Open Manual. you can learn PC-CILLIN 2002 how to use



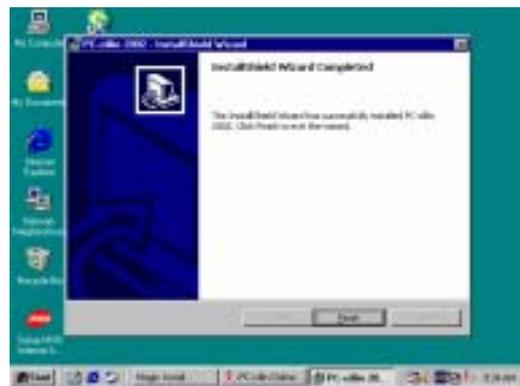
3. This is license agreement, select "I Accept the terms" and Click NEXT



4. Click NEXT and Enter your Customer Information, Click NEXT or choose Change to change the path for the file to be stored



5. Click INSTALL, Start to install the software



6. Setup Complete and click FINISH



7. After PC-CILLIN 2002 complete, Please register your information and get LICENSE KEY from TREND MICRO web site, enter your license key and click FINISH

8. finish register process, we recommend select update item to download newest engine code and virus code

Note : Please install ACROBAT READER, Before you read PC-CILLIN 2002 User Manual, the path at X:\acrobat\ar500eng.exe

4-9 HOW TO UPDATE BIOS

Before update BIOS users have to “Disable”, “Flash Part Write Protect” item which in “Miscellaneous Control” of BIOS SETUP. Otherwise the system the will not allow you to upgrade BIOS by Award Flash Utility.

Method 1. Use “Magic BIOS” update BIOS in Windows 98 (refer [page 41](#))

Method 2. In DOS Mode

STEP 1. Prepare a boot disc. (you may make one by click START click RUN type SYS A: click OK)

STEP 2. Copy utility program to your boot disc. You may copy from DRIVER CD X:\FLASH\AWDFLASH.EXE or download from our web site.

STEP 3. Copy latest BIOS for 865GFT from our web site to your boot disc.

STEP 4. Insert your boot disc into A:, start the computer, type “Awdflash A:\865GFTAxxx.BIN /SN/PY/CC/R”
865GFTAxxx.BIN is the file name of latest BIOS it can be 865GFTA03.BIN or 865GFTB02.BIN

SN means don't save existing BIOS data
PY means renew existing BIOS data
CC means clear existing CMOS data
R means restart computer

STEP 5. Push ENTER and the BIOS will be updated, computer will be restarted automatically.

CHAPTER 5

5-1 INSTALLATION OF MagicTwin (a 2-User-System solution)

Introduction

MagicTwin is a 2-User-System solution built on this special designed motherboard with dual video connectors (such as a dual port AGP VGA card), two PS/2 keyboards and two PS/2 mice connected from motherboard using packaged Y-cables and one piece of software (Driver and Tools). It allows you to add ONE additional station simultaneously running under Windows XP Home or XP-Professional (Service Pack 1). Please refer the detail on the packaged MagicTwin XP 2-User Software Installation Guide.

Necessary Components to Configure 2-User-System:

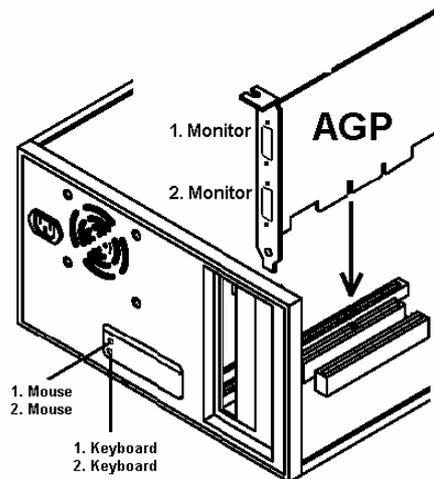
- one special designed Motherboard (incl. all cablings)
- one Dual Display VGA card for two monitors (purchase separately)
- two Y-cables for two PS/2 Keyboards and two PS/2 Mice
- MAGIC INSTALL CD (incl. all DRIVERS you need and some TOOLS to enable the 2-User function of the motherboard). In addition this CD includes an auto detect software, which detects, installs and assigns the related 2nd video display and the 2nd PS/2 keyboard and PS/2 mouse.
- two monitors
- two speaker systems (optional)

Recommendations

- CPU: >1.2 GHz
- minimum 256 MB RAM for two Stations, running simultaneously
- two Standard PS/2 Keyboards, -Mice and two Monitors (Sound: optional)
- Hard disk and CD-ROM drive

Installation of MagicTwin

- We recommend to install Windows XP and all related drivers from the scratch
- Switch off your PC and open the computer case
- Remove the AGP-slot bracket and insert the dual headed AGP Video Card purchase separately from your dealer into the AGP-slot



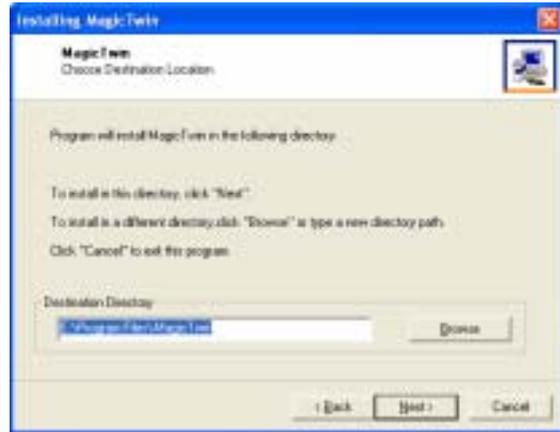
- As well attach the delivered Y- cables to the “green” port (former PS/2 Mouse port) and into the “violet” port (former PS/2 Keyboard port) at the rear side of the motherboard.
- Connect the 1st. and 2nd. Mouse to the octopus cable, which is also linked to the “green” PS/2 connector and the 1st. and 2nd Keyboard to the other octopus cable, which is also connected to the “violet” port. The additional monitor MUST be attached otherwise windows will not detect and enable the 2nd monitor. Make sure the additional keyboards and mice work; they should affect the host console.
- Start your PC. Windows will automatically detect the new AGP Video device as a standard VGA-card. Please install all drivers first before your install “MagicTwin” of the MAGIC INSTALL CD. Insert the CD, wait for the automatic start and run the Installation of all other drivers first, and then lastly the MagicTwin from the Magic Install CD. If the CD does not run automatically, please click to Start-> Run-> CD-Drive-> SETUP.EXE.



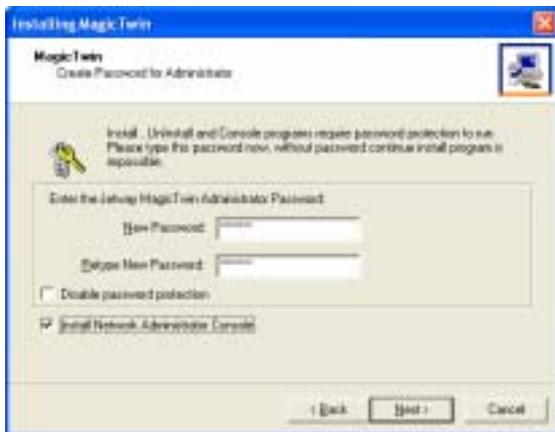
Click “MagicTwin” when the MAGIC INSTALL MENU appears. The Installation-routine will start...



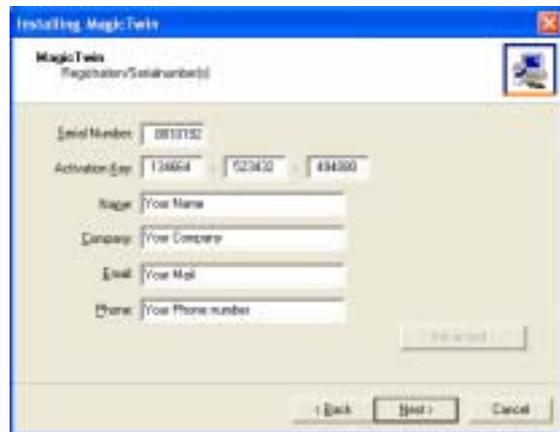
Welcome- Mask, click “Next”



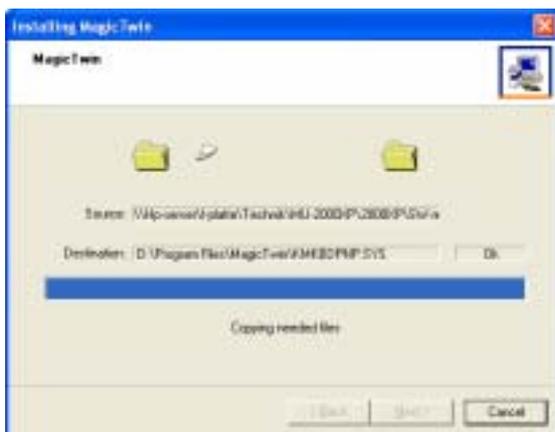
Option: Change destination path or click “Next”



Password and Network Console, click “Next”



Type in the Serial and your Address, click “Next”



Installation in process, please wait...



Afterwards “Reboot your PC”.

- Windows is restarting and loading the new installed drivers. The MagicTwin will be activated and assign automatically the 2nd Station to the 2nd monitor, -PS/2-keyboard and PS/2 mouse.
- Please login in to Windows and add one or more additional users under the control panel.
- For detailed

NVIDIA AGP-card

The NVIDIA AGP dual-headed adapters are supported under MagicTwin. It does not work with ATI graphic card at the moment. One display can be used by the host and the second by the MagicTwin station. This will be done automatically after installation of MagicTwin. Please refer to the MagicTwin XP 2-User Software Installation Guide for detail.

Language Support

The MagicTwin Console text and online help have not been updated for all supported languages. The same applies to the installation process text, menu items and desktop shortcuts. Therefore some text may be incorrect with respect to some languages.

Microsoft License Agreement

MagicTwin is (technically) able to run with only a single Windows-XP Installation and license. Each software application including Windows has its own EULA (End User License Agreement) that you must check for the specifics of multi-user application. 's software license does not supersede any other manufacturer's license. Since most license agreements are vague about this specific situation of multi-user or leave it open, and their partners cannot give any general recommendation other than to check the EULA of the software that is being used on each of the workstations.

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