

N2AC3-Ultra/N2PAC3-Ultra N2GAC3/N2GPAC3

USER'S MANUAL

AMD Athlon XP/Athlon/Duron Processor M/B

NO. G03-N2PAC31A

Release date: September 2003

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TABLE OF CONTENT

USER'S NOTICE	ii
MANUAL REVISION INFORMATION	ii
COOLING SOLUTIONS	ii
CHAPTER 1 INTRODUCTION	
1-1 FEATURES.....	1
1-2 SPECIFICATION	2
1-3 PERFORMANCE LIST	3
1-4 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	9
2-3-1 GLOSSARY	9
2-3-2 ABOUT AMD ATHLON & DURON 462-PIN CPU.....	9
2-4 INSTALL MEMORY	10
2-5 EXPANSION CARD	11
2-5-1 PROCEDURE FOR EXPANSION CARD INSTALLATION.....	11
2-5-2 ASSIGNING IRQ FOR EXPANSION CARD.....	12
2-5-3 INTERRUPT REQUEST TABLE FOR THIS MOTHERBOARD.....	12
2-5-4 AGP SLOT	13
2-6 CONNECTORS, HEADERS.....	13
2-6-1 CONNECTORS	13
2-6-2 HEADERS.....	15
2-7 STARTING UP YOUR COMPUTER.....	20
CHAPTER 3 INTRODUCING BIOS	
3-1 ENTERING SETUP	21
3-2 GETTING HELP.....	21
3-3 THE MAIN MENU	22
3-4 STANDARD CMOS FEATURES.....	23
3-5 ADVANCED BIOS FEATURES	24
3-6 ADVANCED CHIPSET FEATURES	26
3-7 INTEGRATED PERIPHERALS.....	27
3-7-1 ONCHIP IDE FUNCTION.....	28
3-7-2 ONCHIP DEVICE FUNCTION	29
3-7-3 ONCHIP SUPER IO FUNCTION.....	29
3-8 POWER MANAGEMENT SETUP	30
3-9 PNP/PCI CONFIGURATION SETUP	31
3-9-1 IRQ RESOURCES	32
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 9X/NT/2K/XP	36
4-1 NFORCE INSTALL NVIDIA NFORCE PACK DRIVER	37
4-2 VGA INSTALL NVIDIA VGA DRIVER.....	38
4-3 SOUND INSTALL DOLBY DIGITAL 5.1 RTCE DRIVER	38
4-4 USB 2.0 INSTALL NVIDIA USB 2.0 DRIVER	40
4-5 PC-CILLIN INSTALL PC-CILLIN2002 ANTI-VIRUS PROGRAM.....	40
4-6 PC-HEALTH INSTALL NFORCE2 HARDWARE DOCTOR UTILITY.....	42
4-7 MAGIC BIOS INSTALL BIOS LIVE UPDATE UTILITY.....	43
4-8 AUDIO RACK INSTALL C-MEDIA AUDIO RACK UTILITY	44
4-9 HOW TO UPDATE BIOS	45

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Manual Revision Information

Revision	Revision History	Date
1.0	First Release	September 2003

Item Checklist

- N2AC3-Ultra/N2PAC3-Ultra/N2GAC3/N2GPAC3 Motherboard
- Cable for IDE/Floppy
- CD for Motherboard utilities
- Cable for USB2 Port (Option)
- SPDIF-IN/SPDIF-OUT Adaptor
- VGA Port 2 Bracket (Only for N2GAC3/N2GPAC3)
- N2AC3-Ultra/N2PAC3-Ultra/N2GAC3/N2GPAC3 User's Manual

AMD Athlon™ XP/ Athlon™/ Duron™ 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, AMD 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 AMD for use with AMD 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 AMD processors. For vendor list of heatsink and fan, please visit :

<http://www1.amd.com/products/duron/thermals>

<http://www1.amd.com/products/athlon/thermals>

Chapter 1

Introduction

1-1 Features

The all new N2AC3-Ultra/N2PAC3-Ultra (N2GAC3/N2GPAC3) is the latest desktop motherboard solutions incorporating the support of the new AMD Athlon™ XP processor 3200+ with advanced 400MHz (3000+ AMD Athlon™ XP processor with 333MHz) front side bus technology (FSB) and dual channel DDR400 (DDR333) memory modules. They bring the power and performance of NVIDIA nForce2 technology to the mainstream market with advanced features and functionality.

The motherboard adopts the C-Media CMI9761 6 channel, 96 KHz/24 bits sampling rate, AC'97 2.3 compliant audio codec. Together with the built-in Dolby® Digital Real-Time Content Encoder (RTCE) and the Xear 3D™ 5.1 Virtual SPEAKER SHIFTER sound technology, it delivers excellent audio quality (SNR>95dB), Home Theater acoustics experience, 5.1CH audio, highly immersive 3D gaming environmental (27 types) effects, versatile Equalizer mode selection, Sensaura® CRL3D™ HRTF 3D positional sound, premium-quality DVD-Audio, single digital S/PDIF link, and flexible wire connection to now-a-day's demanding multimedia desktops and media center requirement.

Designed with the latest NVIDIA nForce2 Ultra 400 (nForce2 IGP) platform processor, the N2AC3-Ultra/N2PAC3-Ultra (N2GAC3/N2PGAC3) motherboards support 400MHz (333MHz) system bus with dual channel DDR400 (DDR333) memory interface, a dual 128-bit architecture, delivering unparalleled performance and features to the mainstream. The N2GAC3/N2GAC3P, in addition, comes with integrated GeForce4 MX series Graphics Processing Unit. The AGP 8X graphic interface onboard enables enhanced graphics performance with high bandwidth speed up to 2.12GB/s and is twice as fast as AGP 4X. To complete the integrated digital media gateway functionality, the motherboard also incorporates NVIDIA nForce2 MCP (Media and Communication Processor) with capability exceeding the traditional Southbridge connectivity to provide serial, parallel, Ultra DMA133, and six USB 2.0 ports. The N2PAC3-Ultra (N2GPAC3) is onboard with LAN to support of 10/100Mbit base-band transfer on network. Altogether, the motherboard supports a broad range user experience for today's computer market.

A special onboard CPU overheating protection circuit preventing AMD processor from being burned will automatically shutdown the power when CPU temperature is higher than the preset value, or when the CPU FAN is not working. Also built-in is the hardware monitoring function to monitor and protect your system.

The motherboard is designed to support DDR memory 2.5V voltage and AGP 1.5V voltage. The CPU Vcore voltage, DDR memory voltage, and AGP voltage can be minor-adjusted in BIOS setup. This is intended to provide user with the support of overclocking with more stable system. Also supported are adjustable CPU host clock in BIOS setup and hardware protection for BIOS against virus crash.

1-2 Specifications

Spec	Description
Design	* ATX form factor 4 layers PCB size: 30.5x22.0cm
Chipset	<ul style="list-style-type: none"> * nVIDIA nForce2 Integrated Graphics Processor (IGP) north bridge for N2GAC3/N2GPAC3 * nVIDIA nForce2 Ultra 400 System Platform Processor north bridge for N2AC3-Ultra/N2PAC3-Ultra * nVIDIA nForce2 Media and Communications Processor (MCP) south bridge
CPU Socket	<ul style="list-style-type: none"> * Support AMD Athlon 1.1GHz~1.4GHz processor * Support AMD Duron 900MHz~1.3GHz processor * Support AMD Athlon XP1500+~XP3200+ processor * Support up to 400MHz (Double Data Rate) Front Side Bus frequency processors on N2AC3-Ultra/N2PAC3-Ultra * Support up to 333MHz (Double Data Rate) Front Side Bus frequency processors on N2GAC3/N2GPAC3 * Reserves support for future AMD Athlon XP processors
Memory Socket (Dual Channel)	<ul style="list-style-type: none"> * 184-pin DDR module socket x3 * Support up to DDR400 SDRAM on N2AC3-Ultra/N2PAC3-Ultra * Support up to DDR333 SDRAM on N2GAC3/N2GPAC3 * Support both 128-bit (Dual Channel) and 64-bit DDR SDRAM * Expandable to 3.0GB
Expansion Slot & Headers	<ul style="list-style-type: none"> * AGP slot x1 support AGP 3.0 & 4X/8X mode * 32-bit PCI slot x5 * CNR slot x1 support Communication Network Riser card
Integrate IDE	* Two PCI IDE channels support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s
6 Channel Audio	<ul style="list-style-type: none"> * C-Media CM9761 6-channel, 96 KHz/24 bits, AC97 CODEC * Audio driver and utility support of Dolby Digital 5.1 RTCE and Xear 3D sound technology 5.1 Virtual SPEAKER SHIFTER * Sensaura® CRL3D™ HRTF 3D positional sound and enhancement * Support Creative EAX, Microsoft DirectSound 3D, A3D for realistic PC game playing
BIOS	* Award 2MBit Flash ROM
Onboard LAN (N2PAC3-Ultra and N2GPAC3 Only)	<ul style="list-style-type: none"> * nVIDIA LAN MAC controller chip included * Support 10/100 Mb/sec data transfer rate
Multi I/O	<ul style="list-style-type: none"> * PS/2 keyboard and PS/2 mouse connectors * Floppy disk drive connector x1 * Parallel port x1, Serial port x2 * USB2.0 connector x4, headers x2 (connecting cable option) * Audio connector (Line-in, Line-out, MIC & Game Port headers)

1-3 Performance List

The following performance table indicates the testing results of some popular benchmark testing programs. The data provided is intended just for user reference only. You may obtain different results depending upon the hardware and software configuration used.

Performance Test Report (for N2AC3-Ultra)

CPU: AMD Athlon XP 3200+ (FSB 200MHz)
DRAM: 512MB DDR400 x2 pcs (Kingston D328DW)
VGA Expansion Card: ATI 9700 PRO (1024x768x32bit color)
Hard Disk Driver: IBM IC35L040AVVN07-0 (ATA-100 7200RPM)
BIOS: Award Optimal default
OS: Win XP Professional

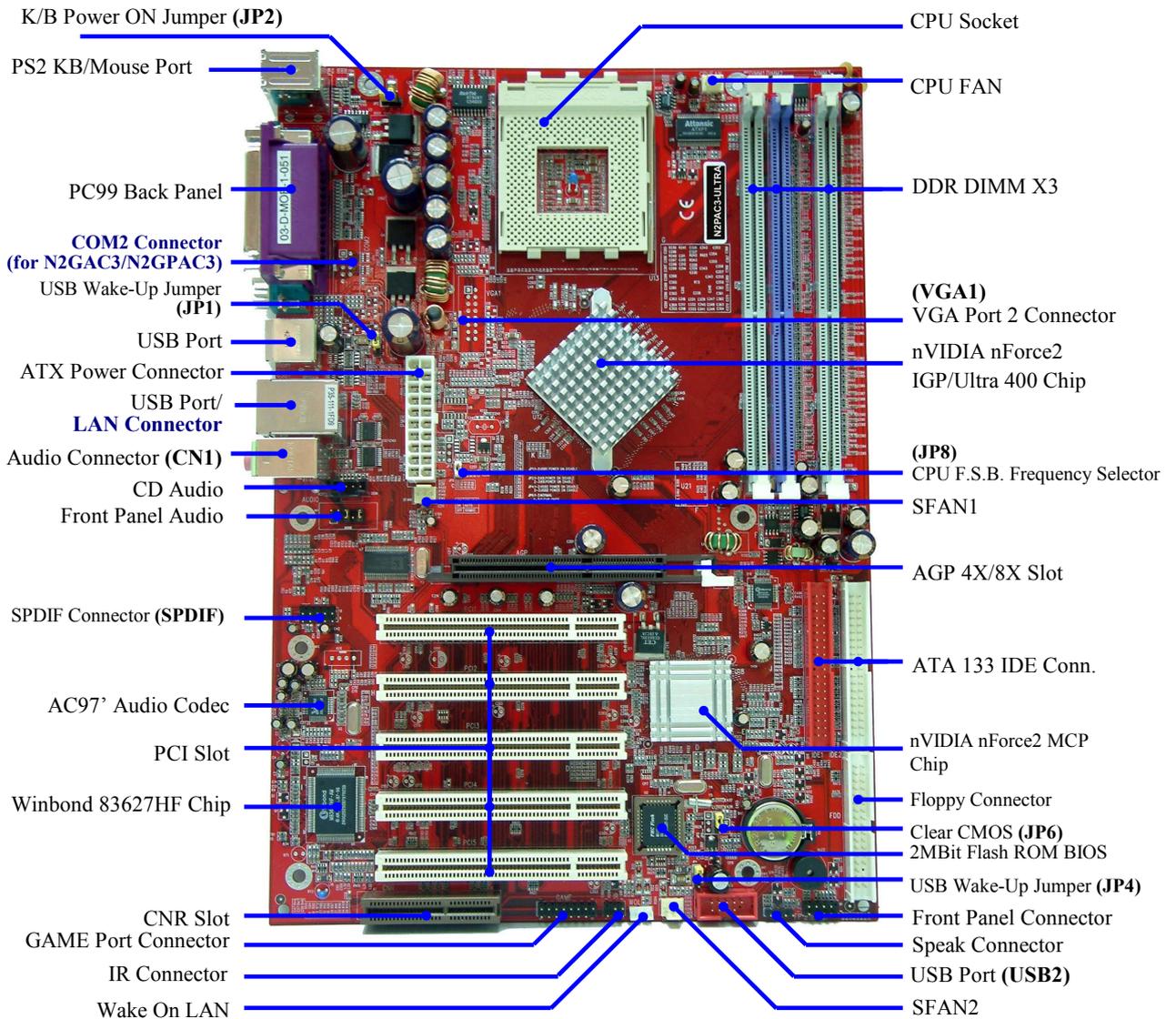
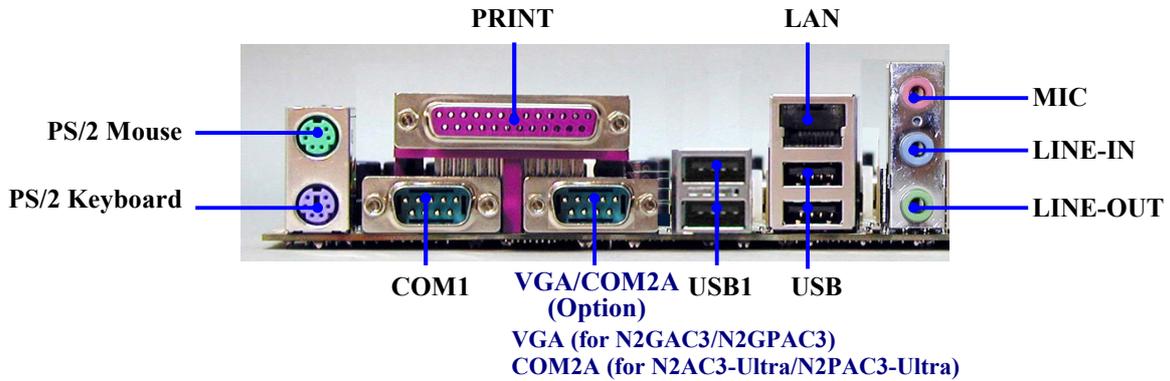
	200/200	200/200 Dual Channel
3D Mark 2001SE	14822	14959
3D Mark 2003	4708	4718
3D Winbench 2000 (32/32bit)	445	450
PC Mark 2002		
CPU/Memory/HDD	6623 / 5706 / 865	6533 / 5885 / 869
Content Creation Winstone 2002	48	48.6
Content Creation Winstone 2003	39.3	39.4
Business Winstone 2002	39.6	39.1
Winbench 99 V1.2 :		
Business Disk Winmark99	9400	9820
Hi-end Disk Winmark99	31900	32800
Business Graphic Winmark	782	785
Hi-end Graphic Winmark	1830	1830
SYS Mark 2001/2002 : SISMark 2001/2002 Rating (Internet Content Creation / Office Productivity)		
SISMark 2001	251 (258 / 245)	255 (258 / 253)
SISMark 2002	252 (330 / 193)	253 (321 / 199)
SISOFT Sandra 2003 :		
Dhrystone ALU MIPS	7893	7861
Whetstone FPU MFLOPS	3185	3160
RAM Int Buffered iSSE2 MB/S	2720	2669
RAM Float Buffered iSSE2 MB/S	2470	2508
Integer SSE2 IT/S	11682	11676
Floating-Point SSE2 IT/S	12482	12466
QUAKE3 DEMO1 FPS	247.8	254.5
DEM02 FPS	246.0	252.0
Return to Castle Wolfenstein FPS	130	137.8
WCPUID System / CPU Clock	200.51 / 2205.60	200.45 / 2204.99

Performance Test Report (for N2GAC3)

CPU: AMD Athlon XP 3000+ (FSB 166MHZ)
DRAM: 512MB DDR400 X1 (Winbond DDR W942508BH-5)
 256MB DDR400 X1 (Winbond DDR W942508BH-5)
VGA Expansion Card: ATI 9700 PRO (1024x768x32bit color)
Hard Disk Driver: IBM IC35L040AVVN07-0 (ATA-100 7200RPM)
BIOS: Award Optimal default
OS: Win XP Professional

	166/166	166/166 Dual Channel	
3D Mark 2001SE	2934	4390	
3D Mark 2003	157	218	
3D Winbench 2000 (32/32bit)	80.6	123	
PC Mark 2002			
CPU/Memory/HDD	6269 / 4276 / 868	6299 / 4663 / 885	
Content Creation Winstone 2002	41.7	43.9	
Content Creation Winstone 2003	37.1	37.8	
Business Winstone 2002	34.2	34.8	
Winbench 99 V1.2 :			
Business Disk Winmark99	9440	9510	
Hi-end Disk Winmark99	31400	32000	
Business Graphic Winmark	625	827	
Hi-end Graphic Winmark	1790	1880	
SYS Mark 2001/2002 : SISMark 2001/2002 Rating (Internet Content Creation / Office Productivity)			
SISMark 2001	240 (239 / 241)	246 (246 / 247)	
SISMark 2002	241 (303 / 191)	248 (321 / 191)	
SISOFT Sandra 2003 :			
Dhrystone ALU	MIPS	7829	7892
Whetstone FPU	MFLOPS	3130	3130
RAM Int Buffered iSSE2	MB/S	2251	2181
RAM Float Buffered iSSE2	MB/S	1943	2112
Integer SSE2	IT/S	11539	11536
Floating-Point SSE2	IT/S	12186	12202
QUAKE3 DEMO1	FPS	130.0	188.9
DEMO2	FPS	130.7	189.9
Return to Castle Wolfenstein	FPS	82.3	115.7
WCPUID System / CPU Clock	167.04 / 2471.57	167.05 / 2171.59	

1-4 Layout Diagram & Jumper Setting



Jumpers

Jumper	Name	Description	Page
JP2	Keyboard Power On Enabled/Disabled	3-pin Block	P.7
JP1, JP4	USB Wake-Up Enabled/Disabled	3-pin Block	P.7
JP8	CPU Front Side Bus Frequency Selector	2-pin Block	P.7
JP6	CMOS RAM Clear Jumper	3-pin Block	P.8

Connectors

Connector	Name	Description	Page
PWR	ATX Power Connector	20-pin Block	P.13
KYB	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.13
USB1	USB Port Connector	2 x 4-pin Connector	P.13
UL1	USB/LAN Port Connector	2 x 4-pin/RJ45 Connector	P.13
LPT	Parallel Port Connector	25-pin Female	P.14
CN1 (Line-OUT/Line-IN/MIC)	Audio Connector	3 phone jack Connector	P.14
VGA (N2GAC3/N2GPAC3 Only)	VGA Port Connector	D-Sub 15-pin Connector	P.14
COM1/COM2A (COM2A on N2AC3-Ultra/ N2PAC3-Ultra)	Serial Port COM1/2 Connector	9-pin Connector	P.14
FDD	Floppy Driver Connector	34-pin Block	P.14
IDE1/IDE2	Primary/Secondary IDE Connector	40-pin Block	P.14

Headers

Header	Name	Description	Page
COM2 (N2GAC3/N2GPAC3)	Serial Port COM2 Header	9-pin Block	P.15
VGA1 (N2GAC3/N2GPAC3)	VGA Port2 Header	15-pin Block	P.15
AUDIO	Line-Out/Line-In/MIC Header	9-pin Block	P.16
GAME	Game Port Header	15-pin Block	P.16
USB2	USB Port Headers	9-pin Block	P.16
HD LED	IDE activity LED	2-pin Block	P.17
RESET	Reset switch lead	2-pin Block	P.17
SPEAK	Speaker connector	4-pin Block	P.17
PWR LED	Power LED	2-pin Block	P.17
PWR BTN	Power switch	2-pin Block	P.17
WOL	Wake On-LAN Headers	3-pin Block	P.17
SFAN1, SFAN2, CPUFAN	FAN Headers	3-pin Block	P.18
IR	IR infrared module Headers	5-pin Block	P.18
CDIN	CD Audio-In Headers	4-pin Block	P.19
SPDIF	SPDIF In/Out Headers	9-pin Block	P.19

Expansion Slot and Socket

Socket/Slot	Name	Description	Page
ZIF Socket 462	CPU Socket	462-pin PPGA CPU Socket	P.9
DIMM1, DIMM2, DIMM3	DDR SDRAM Module Socket	184-pin DDR SDRAM Module Expansion Socket	P.10
PCI1, PCI2, PCI3, PCI4, PCI5	PCI Slot	32-bit PCI Local Bus Expansion slots	P.11
CNR	CNR Slot	Communication Network Riser Slot	
AGP	AGP 4X/8X Mode Slot	AGP Expansion Slot	P.13

 Only for N2GAC3/N2GPAC3

Chapter 2

Hardware installation

2-1 Hardware Installation Steps

When installing the system, make sure to follow steps described in below:

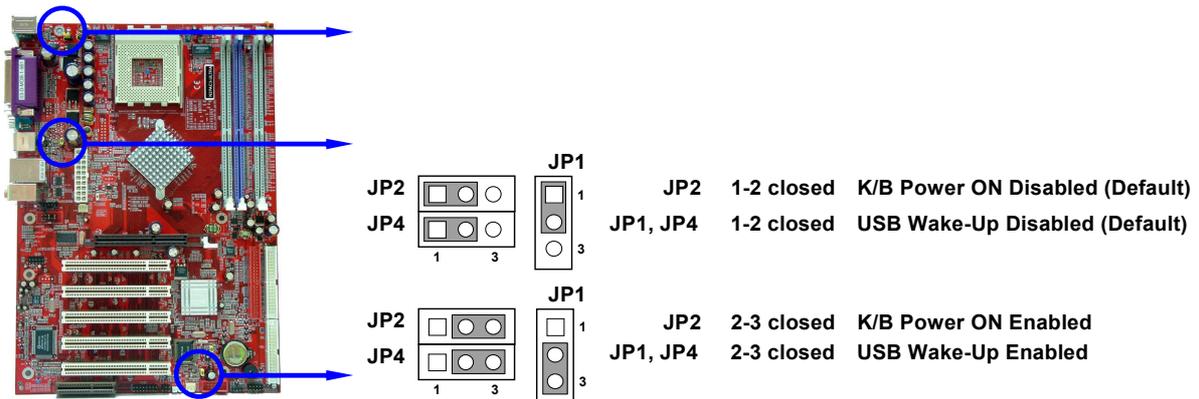
1. Check motherboard setting
2. Install CPU
3. Install memory
4. Install expansion cards
5. Connect ribbon cables, panel wires, and power supply
6. Set up BIOS
7. Install software driver & utility

2-2 Checking Motherboard's Jumper Setting

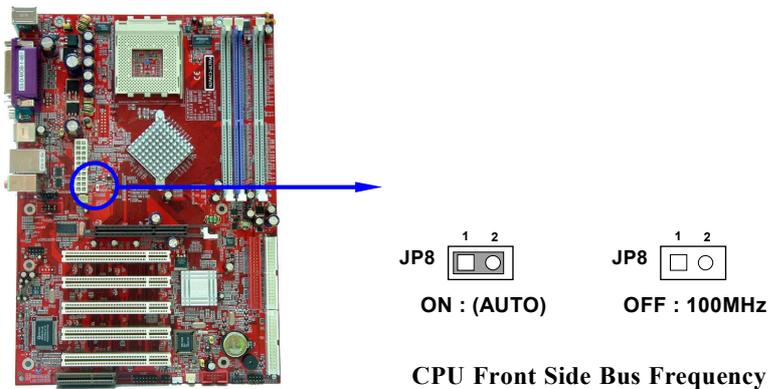
(1) Keyboard Power On function Enabled/Disabled: JP2

USB Wake-Up function Enabled/Disabled :JP1, JP4

When set as Enabled you can use keyboard to power on the system by password key-in, and use USB device to wake up system.



(2) CPU Front Side Bus Frequency Setting (2-pin) : JP8



Note: CPU Front Side Bus Frequency also can be changed in BIOS SETUP. Please refer to [page 34](#) “Host Clock at Next Boot is” selection in Miscellaneous Control Menu.

Note: When the overclocking causes boot failure on the system, you will need to hold the “INS” key and the power on button at the same time till the screen resumes to the standard default. Otherwise the CMOS will still keep the faulty data and motherboard will not function.

(3) CMOS RAM Clear (3-pin) : JP6

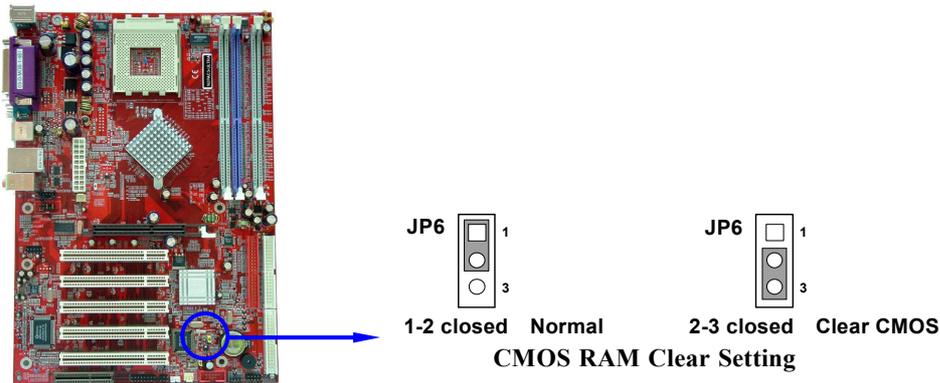
A battery must be used to retain the motherboard configuration in CMOS RAM. Shorting 1-2 pins of JP6 to store the CMOS data.

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 JP6 and short pins 2-3 for a few seconds
4. Return JP6 to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

Note: When should CMOS be cleared

1. Troubleshooting
2. Forget password
3. Boot failure after overclocking



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, game controllers, 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 AMD Athlon XP, Athlon & Duron 462-pin CPU

This motherboard supports Socket-A (Socket-462) AMD Athlon/Duron processors.

This motherboard Provides a ZIF Socket-A. The CPU to be used 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.

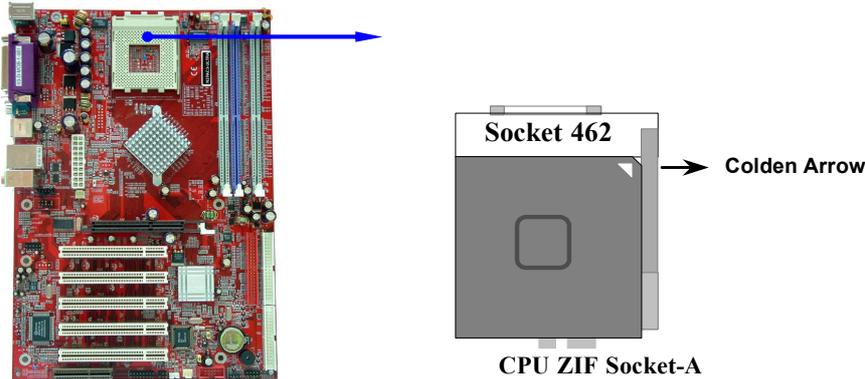
WARNING!	Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary.
-----------------	--

WARNING!	Due to this motherboard provides new function of protecting CPU ; you must connect the CPU FAN connector on CPUFAN location in order to obtain this feature. Without connection on CPUFAN (or you have connect CPU FAN on SFAN1), the system will shut down immediately to protect both your CPU and motherboard.
-----------------	---

Over heat Protect: Only for Athlon XP serial CPU, when the CPU is overheated, system will auto shut down power supply. The power button will be locked up, and you can hear a

continuing beep sound. You must turn off and turn on the AC power to reset the system. Otherwise, the power button will not function. The other way is to keep pressing the button for a few seconds till the beep sound stop. Then, release the power button and press the power button again to turn on the power supply.

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



When you insert the CPU onto the ZIF socket, no force is required. After inserting, press the lever slightly without any extra force to lock CPU in position.

2-4 Install Memory

This motherboard provides three 184-pin DUAL INLINE MEMORY MODULES (DIMM) sockets for memory expansion from a minimum memory size of 64MB to maximum memory size of 3.0GB DDR SDRAM. For 128-bit (Dual Channel) data transfer DIMM1 & DIMM3, DIMM2 & DIMM3, or DIMM1 & DIMM2 & DIMM3 must be inserted with DDR SDRAM modules at the same time. Any other combinations support only 64-bit data transfer.

Valid Memory Configurations

Bank	184-Pin DIMM	PCS	Total Memory
Bank 0, 1 (DIMM1)	DDR 266/333/400 DDR SDRAM	X1	64MB~1.0GB
Bank 2, 3 (DIMM2)	DDR 266/333/400 DDR SDRAM	X1	64MB~1.0GB
Bank 4, 5 (DIMM3)	DDR 266/333/400 DDR SDRAM	X1	64MB~1.0GB
Total	System Memory (Max. 3.0GB)	3	64MB~3.0GB

NOTE! Make sure the total installed memory size does not exceed 3.0GB, Otherwise, the system may hang during startup.

Generally, installing DDR SDRAM modules to the motherboard is very straightforward. Please refer to figure 2-4 for the detail of 184-Pin DDR266/333/400 DDR SDRAM module and the socket.

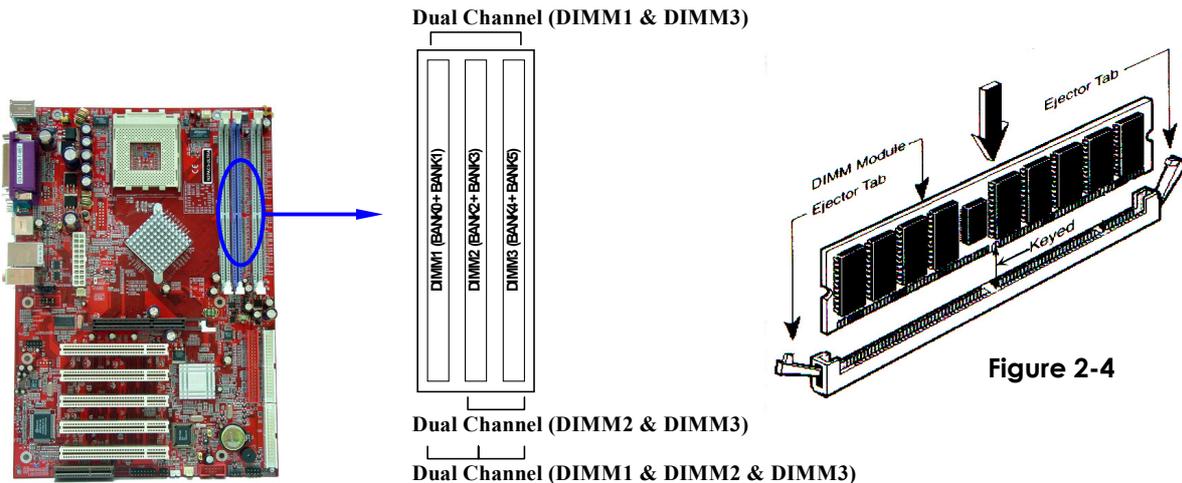


Figure 2-4

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 setting of 166MHz, use only DDR333 compliant DDR Modules. When this motherboard operate at 133Mhz, most system will not even boot if non-compliant modules are used because of the strict timing issues, if your DDR Modules are not DDR266-compliant, set the DDR SDRAM clock to 100MHz to ensure system stability.

2-5 Expansion Cards

WARNING! Turn off your power when adding or removing expansion cards or other system components. Failing 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 on the expansion, card such as jumpers, before installing.
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 be exclusively assigned. 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

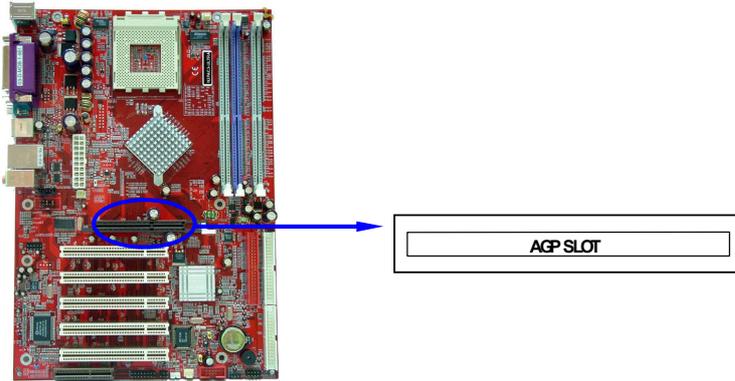
Interrupt request are shared as shown the table below:

	INT A	INT B	INT C	INT D
PCI slot 1	Shared	—	—	—
PCI slot 2	—	Shared	—	—
PCI slot 3	—	—	Shared	—
PCI slot 4	—	—	—	Shared
PCI slot 5	Shared	—	—	—
AGP slot	Shared	—	—	—
AC97/MC97	—	—	Shared	—
Onboard USB	—	—	—	Shared
Onboard USB 1	—	—	—	Shared
Onboard USB 2	—	—	—	Shared

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, supporting the 4X/8X AGP VGA card.

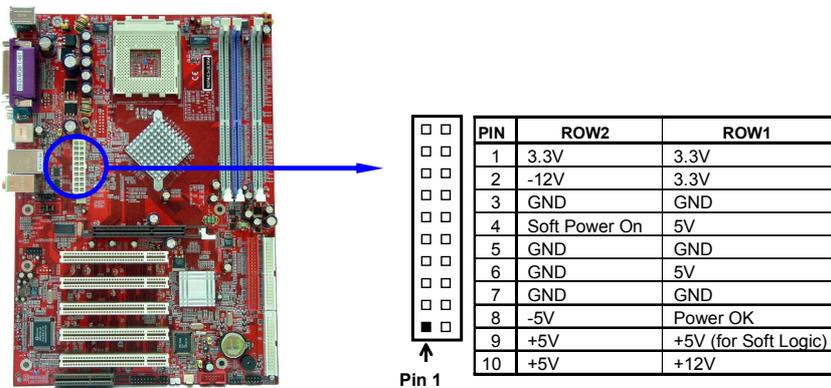


2-6 Connectors, Headers

2-6-1 Connectors

(1) **Power Connector (20-pin block) : PWR**

ATX power supply connector. This is a newly defined 20-pins connector that usually comes with ATX case. The ATX power supply allows the use of soft power on momentary switch that connects 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 is switched 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.



(2) **PS/2 Mouse & PS/2 Keyboard Connector: KYB**

The connectors for PS/2 keyboard and PS/2 mouse.

(3) **USB Port connector: USB/USB1**

The connectors are 4-pin connector that connect USB devices to the system board.

(4) **LAN Port connector: LAN (for N2PAC3-Ultra/N2GPAC3 only)**

This is a standard RJ45 connector for network connection

(5) **Parallel Port Connector (25-pin female): LPT**

Parallel port connector is a 25-pin D-Subminiature receptacle connector. The onboard parallel port can be disabled through the BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.

(6) Audio Connector : LINE-OUT/LINE-IN/MIC

Audio port uses a connector with 3 phone Jack for LINE-OUT, LINE-IN, and MIC

LINE_O : Audio output to speaker(Front Speaker on 6-channel)

LINE_I : Audio input to sound chip(Rear Speaker on 6-channel)

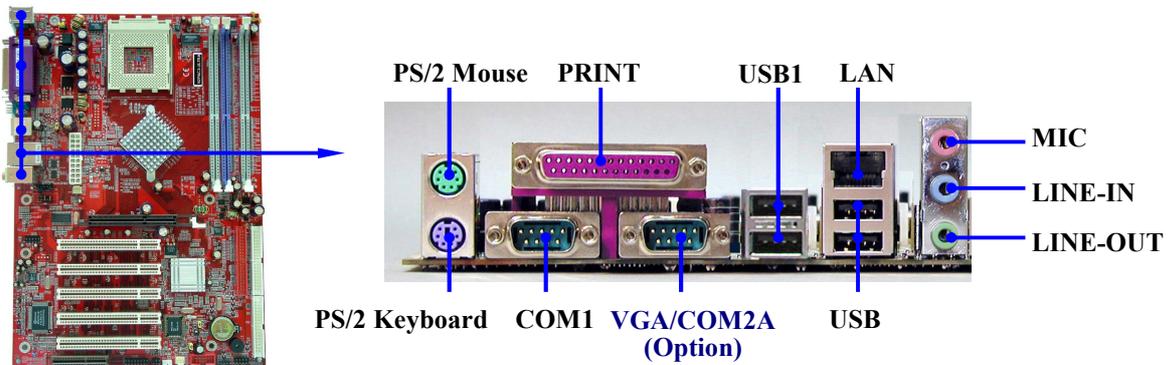
MIC : Microphone Connector (Center-Base Speaker on 6-channel)

(7) VGA Connector (15-pin D-Sub) Connector: VGA (for N2GAC3/N2GPAC3 only)

This is a 15-pin D-Subminiature female connector for display monitor.

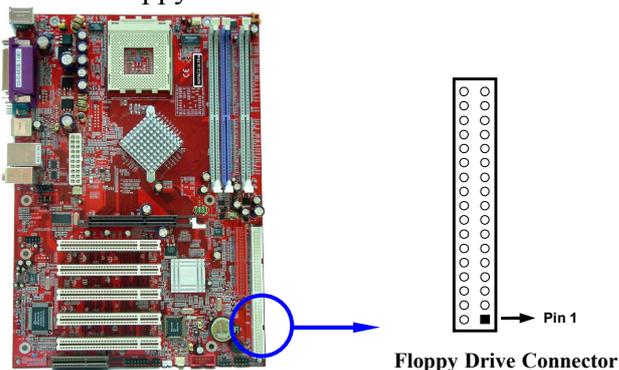
(8) Serial Port COM1,COM2A : COM1, COM2A (COM2A for N2AC3-Ultra/N2PAC3-Ultra)

COM1 and COM2A are the 9-pin D-Subminiature mail connectors. The onboard serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.



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

This connector is for floppy drive ribbon cable. Connect the cable end with twisted stripe to floppy drive and the other end to the motherboard.

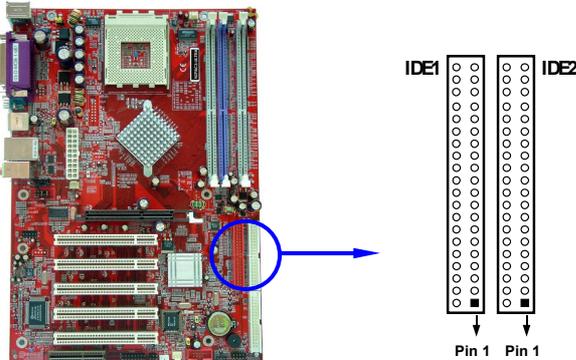


(10) Primary IDE Connector (40-pin block): IDE1

This connector is for IDE hard disk ribbon cable connection. Connect the single plug end to motherboard and 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.

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

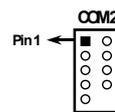
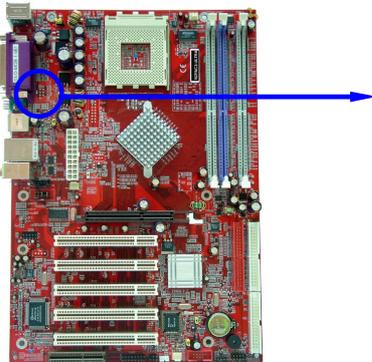
This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.



- Two hard disks can be connected to the cable. The first HDD is referred to as the “Master” and the second HDD is referred to as the “Slave”.
- For best performance, we strongly suggest CD-ROM or DVD-ROM drive not be installed on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

2-6-2 Headers

- (1) Serial Port2 COM2 Header (9-pin) : COM2 (only for N2GAC3/N2GPAC3)



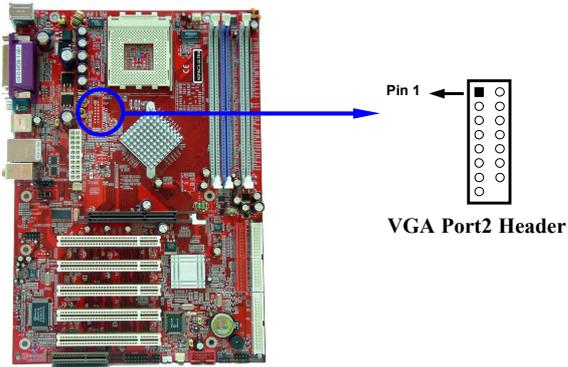
Serial Port2 COM2 Header

Note: Orient the read marking on the COM2 ribbon cable to pin 1

- (2) VGA Port2 Header (15-pin) : VGA1 (only for N2GAC3/N2GPAC3)

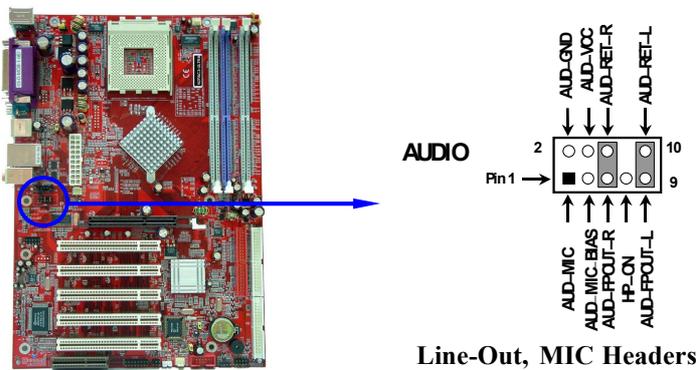
This header is for the secondary CRT display. With optional bracket you can have a secondary CRT display connected to the motherboard for dual display operation.

Note: The VGA Port2 bracket works with the onboard graphic core. When a VGA card is plugged in AGP slot, the VGA Port2 bracket will not function.



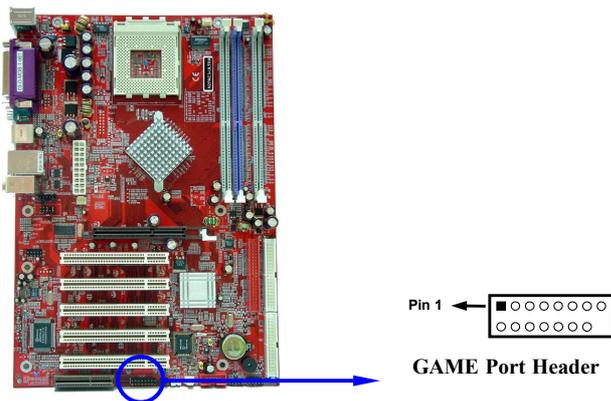
(3) Line-Out, MIC Header (9-pin): AUDIO

This header connect to Front Panel Line-out, MIC connector with cable.



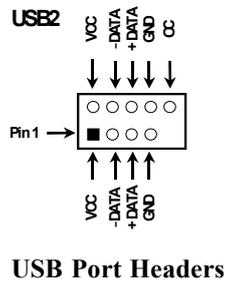
(4) GAME Port Header (15-pin) : GAME

This 15-pin header can through a cable with a 15-pin D-Subminiature Receptacle Connector for joystick/MIDI Device.(Cable option)



(5) USB Port Header (9-pin) : USB2

The header is used for connecting additional USB devices. With an option USB cable, your can be provided with two additional USB plugs affixed to the back panel bracket.



(6) IDE Activity LED: HD LED

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

(7) Reset switch lead: RESET

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.

(8) Speaker connector: SPEAK

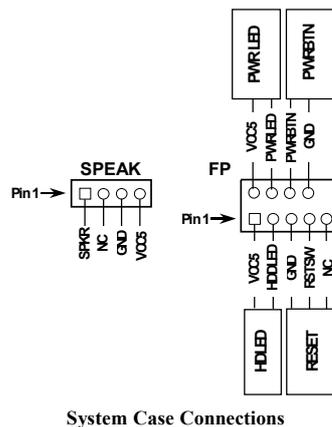
This 4-pin connector connects to the case-mounted speaker. See the figure below.

(9) Power LED: PWR LED

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

(10) Power switch: PWR BTN

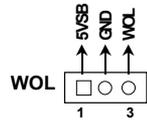
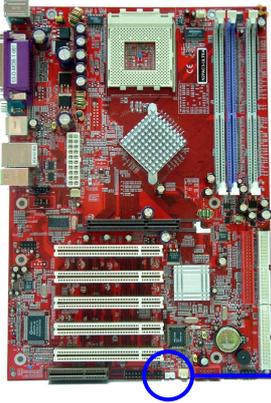
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.



(11) Wake On-LAN Headers (3-pin) : WOL

This connector connects to a LAN card with a WAKE ON-LAN output. When connected, a wake up signal is received through the LAN card will power up the system.

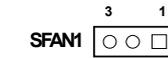
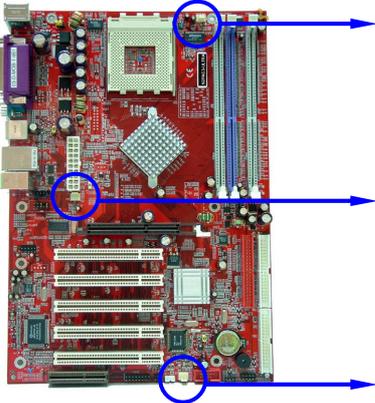
NOTE: This feature requires that Wake On LAN or Ring In Wake up be enabled.



Wake-On-LAN Headers

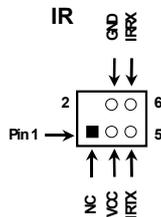
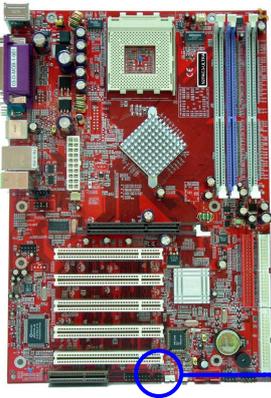
(12) FAN Speed Headers (3-pin) : SFAN1, SFAN2, CPUFAN

These connectors support a $\leq 350\text{mA}$ (4.2 Watts) current to cooling fans. Depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Make sure the polarity of connector before you connect the fan's plug to the board.



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

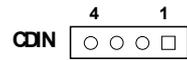
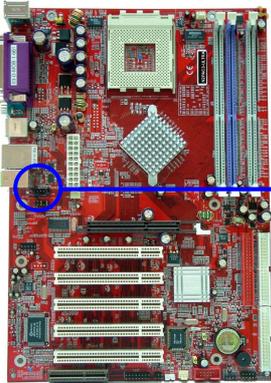
This connector supports the optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.



IR infrared module Headers

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

CDIN is the connector for CD-Audio Input signal. It connects to CD-ROM CD-Audio output connector.

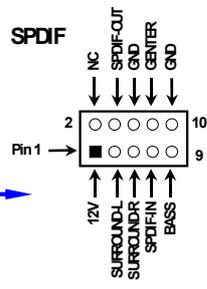
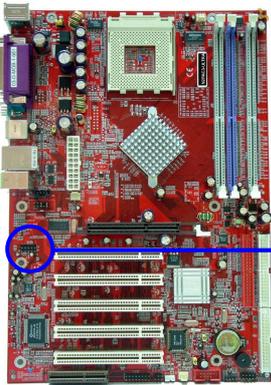


CD Audio-In Headers

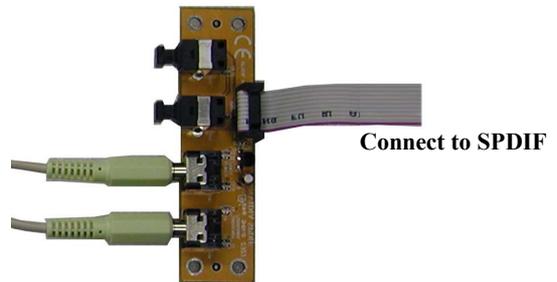
(15) SPDIF-Bracket Connector : SPDIF

The connector allows you to connect a SPDIF-Bracket for Sony & Philips Digital Interface (SPDIF). The SPDIF-Bracket offers 2 SPDIF jacks for digital audio transmission and receiver (for optional optical fiber) and 2 analog Line-Out jacks for 4-channel audio output.

To attach the fiber-optic cable to optical SPDIF jack, you have to remove the plug from the jack first.



SPDIF-Bracket Connector



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 the power supply input voltage is set to proper position. The in-put voltage is either 220V~240V or 110V~120V depending on your country's power voltage.
3. Plug 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 supply, 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 system front panel will light. The LED on the monitor may light up or switch between orange and green (if it complies with green standards or has a power standby feature) after the system is on. The system will then run power-on self test and the BIOS will beep with additional message on the screen.

If you do not see any thing on the screen 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 dealer or shop 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 on screen instructions to set up BIOS.
7. **Power off your computer:** You must first exit or shut down your operating system before switching off the system. For ATX power supply, you can press ATX power switch 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 stored in a flash memory on the motherboard. The program serves as a bridge between motherboard and operating system. When you switch on the system, the BIOS program gains immediate control. The BIOS first executes an auto-diagnostic test called POST (power on self test) on all the necessary hardware. It detects the entire hardware devices and configures the parameters of the hardware for synchronization. Only when these tasks are completed it gives up control of the computer to operating system (OS). Since the BIOS is the only communication channel for hardware and software, it is the key to ensure system stability and optimal system performance.

You will see various options in the BIOS Setup main menu as shown in Figure 3-1. These options will be explained step by step in the following pages. Before going further, let us first take a short look at the descriptions 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> to save these parameters and to exit the BIOS Setup menu when you have completed the setup of BIOS parameters.
- Press Page Up/Page Down or +/- keys when you want to modify the BIOS parameters for an active option.

3-1 Entering Setup

Power on the computer and press immediately allows you to enter BIOS Setup.

If the POST message disappears before you press 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. There are fourteen setup functions and two exit choices allowing you to select under the Main Menu. 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

Standard CMOS Features	Miscellaneous Control
Advanced BIOS Features	Load optimized Defaults
Advanced Chipset Features	Load Standard Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type...	

Figure 3-1

Standard CMOS Features

Use this Menu for basic system configurations.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This entry shows your PC health status.

Miscellaneous Control

Use this menu to specify your settings for Miscellaneous control.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performances system operations.

Load Standard Defaults

Use this menu to load the BIOS default values for the minimal/stable performance system operation.

Set Supervisor/User Password

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, Sep, 01 2003	Item Help
Time (hh:mm:ss)	16 : 45 : 35	
> IDE Primary Master	Press Enter None	Menu Level >
> IDE Primary Slave	Press Enter None	
> IDE Secondary Master	Press Enter None	
> IDE Secondary Slave	Press Enter None	Change the day, month, year and century
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.

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 Cache	Enabled	
CPU L2 Cache	Enabled	Menu Level >
Quick Power On Self Test	Enabled	
SATA & SCSI Boot Order	ATA, SCSI	
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	Normal	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
HDD S.M.A.R.T. Capability	Disabled	
Video BIOS Shadow	Enabled	
↑↓← 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 prompt a warning message on screen and give beep sound.

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

Enabled Activates automatically a warning message to appear whenever there are attempts to access the boot sector of hard disk partition table at the system boots up.

CPU L1 Cache

The default value is Enabled.

Enabled (default) Enable cache

Disabled Disable cache

Note: The internal cache is built in the processor.

CPU L2 Cache

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

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 setting options 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 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 the access to Setup will be denied if the correct password is not entered at the prompt.
- Setup (default)** The system will boot, but the access to Setup will be denied if the correct password is not entered at the 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 OS2 if using more than 64MB and running OS2[®].

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.

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

		Item Help
System Performance	Standard	
X CPU Interface	Optimal	
X T(RAS)	6	
X T(RCD)	3	
X T(RP)	3	
X CAS Latency	2.5	
Frame Buffer Size	32M → (Only for N2GAC3/N2GPAC3)	
AGP Aperture Size	64M	
AGP 8X Support	Enabled	
AGP Fast Write Capability	Enabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

CAS Latency

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.

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.

Frame Buffer Size

You can choose the On board VGA memory size share from system memory. The settings are: 8M, 16M, 32M, 64M, Disabled.

3-7 Integrated Peripherals

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Integrated Peripherals

> Onboard IDE Function	Press Enter	Item Help
> Onboard Device Function	Press Enter	
> Onboard Super IO Function	Press Enter	Menu Level >
Init Display First	PCI Slot	
Power On Function	Button Only	
X KB Power On Password	Enter	
X Hot Key Power On	Ctrl+F1	
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 provides selection option of activating whether PCI Slot or AGP VGA first. The settings are: PCI Slot, AGP Slot.

Power Loss Function

This item allows the system to power ON/OFF automatically when power recovery again after previous power loss. You can choose Auto to recover to pre-state, or always ON/OFF after power recovery.

3-7-1 Onboard IDE Function

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OnChip IDE Function

OnChip IDE Channel0	Enabled	Item Help	
OnChip IDE Channel1	Enabled		
Primary Master PIO	Auto	Menu Level >>	
Primary Slave PIO	Auto		
Secondary Master PIO	Auto		
Secondary Slave PIO	Auto		
Primary Master UDMA	Auto		
Primary Slave UDMA	Auto		
Secondary Master UDMA	Auto		
Secondary Slave UDMA	Auto		
IDE 32-bit Transfer Mode	Enabled		
IDE HDD Block Mode	Enabled		
IDE Prefetch 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 Channal0/Channel1

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.

Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set PIO mode (0-4) for each of the four IDE devices. Modes 0 through 4 provide consecutively 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.

Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive has the support and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If both your hard drive and system software 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

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OnChip Device Function

AC97 Sound Device	Auto	Item Help
Game Port Address	201	Menu Level >>
Midi Port Address	Disabled	
X Midi Port IRQ	10	
nVIDIA LAN Function	Auto	
USB Host Controller	Enabled	
USB 2.0 Support	Enabled	
USB Keyboard Legacy Support	Disabled	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults		

Game Port Address/Midi Port Address

This will determine which Address the Game Port/Midi Port will be used.

USB Host 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 Support

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

3-7-3 Onboard Super IO Function

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

Onboard Super IO Function

Onboard FDD Controller	<u>Enabled</u>	Item Help
Onboard Serial Port 1	3F8/IRQ4	Menu Level >>
Onboard Serial Port 2	2F8/IRQ3	
UART2 Mode	Normal	
X RxD, TxD Active	Hi, Lo	
X IR Transmission Delay	Enabled	
X IR Duplex Mode	Half	
X IR Pins	IRRX/IRTX	
Onboard Parallel Port	378/IRQ7	
Parallel Mode	SPP	
X EPP Mode Select	EPP1.9	
X 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.

UART2 Mode

This item allows you to determine which Infrared (IR) function of the onboard I/O chip to be used.

Onboard Parallel Port

There is a built-in parallel port on the on-board Super I/O chipset providing 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, 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 requires the use of DMA channel. So, after selecting ECP mode, the message: "ECP Mode Use DMA" will be displayed at this time. The user can choose among DMA channels 3 to 1. The onboard parallel port is EPP compliant. So, after you choose the onboard parallel port with the EPP function, the message: "EPP Mode Select" will be displayed on the screen. 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 the system to most effective energy saving status in a manner consistent with your own style of computer use.

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Power Management Setup

ACPI Function	Enabled	Item Help
ACPI Suspend Type	S1 (POS)	
Video off Method	V/H SYNC+Blank	
Power Button Function	Instant-Off	Menu Level >
Wake-Up on PCI PME	Disabled	
Wake-Up on Ring/LAN	Disabled	
USB Resume from S3/S4	Disabled	
Wake Up on RTC Alarm	Disabled	
X Time(dd:hh:mm) of Alarm	0: 0: 0	
↑↓←→ 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 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.

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 On Ring/PME/LAN

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

Wake Up on RTC Alarm

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

Time(dd:hh:mm) of Alarm

You can choose which day of month, what hour, minute the system will boot up.

Note: If you have changed the setting, you must reboot system to make this function work.

3-9 PnP/PCI Configuration Setup

This section describes how to configure the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds similar to the speeds CPU uses when communicating with its own special components. The setup involves extensive technical knowledge. 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	
Assign IRQ For USB	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, this field is set Disabled. If you have installed a new add-on and the system reconfiguration has caused a serious conflict resulting in the operating system boot failure, select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup. The settings are: Enabled and Disabled.

Resource Controlled By

The Award Plug and Play BIOS has the capability to configure all of the boot and Plug and Play compatible devices automatically. 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

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IRQ Resources

IRQ3	assigned to	PCI Device	Item Help
IRQ4	assigned to	PCI Device	
IRQ5	assigned to	PCI Device	
IRQ7	assigned to	PCI Device	
IRQ9	assigned to	PCI Device	Menu Level >>
IRQ10	assigned to	PCI Device	
IRQ11	assigned to	PCI Device	
IRQ12	assigned to	PCI Device	
IRQ14	assigned to	PCI Device	
IRQ15	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.

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PC Health Status

Shutdown Temperature	Disabled	Item Help	
Show PC Health in Post	Enabled		
Current System Temperature	25°C	Menu Level >	
Current CPU Temperature	38°C		
Current CPUFAN Speed	5000 rpm		
Current SYSFAN1 Speed	5000 rpm		
Current SYSFAN2 Speed	5000 rpm		
Vcore	1.78V		
Vcc3.3	3.31V		
+ 5V	4.98V		
+12V	12.22V		
-12V	-12.36V		
VBAT (V)	3.21V		
5VSB (V)	5.02V		
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults			

Shutdown Temperature

This item can let you set the Shutdown temperature. When CPU temperature is over this setting, the system will automatically shutdown to protect CPU.

Show PC Health in Post

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

Current CPU Temperature/Current System Temp/Current FAN1, FAN2 Speed/Vcore/Vdd/3.3V/+5V/+12V/-12V/VBAT(V)/5VSB(V)

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

Detect CPUFAN in Post

when Enabled, system will send warning message if CPU Fan is not functioning.

3-11 Miscellaneous Control

This section provides options for setting CPU Frequency/Voltage Control.

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

** Current Host Clock is		
Host Clock at Next Boot is	100MHz	Item Help
** Current DRAM Clock is		
DRAM Clock at next Boot is	133MHz	Menu Level >
CPU Vcore Select	Default	
CPU Ratio Select	Default	
Core_VDD Select	1.7V(Default)	
VDD_AUXC Select	1.6V(Default)	
VAGP Output	1.5V(Default)	
VRAM Output	2.6V(Default)	
VAUX Output	Default	
VTT Voltage	1.25V	
VAGP LUV Protect	Enabled	
VRAM LUV Protect	Enabled	
Dual3.3V LUV Protect	Disabled	
Flash Parts 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		

Host Clock at next Boot is

This item allows you to select CPU frequency at preset values

The choice are: 100MHz, 133MHz, 166MHz, 200MHz, 236MHz, 240MHz, 242MHz, 244MHz, 245MHz, 250MHz

DRAM Clock at next Boot is

This field supports the capability of setting the memory modules clocks that you can use.

The choice is either 100MHz, 110MHz, 125MHz, 133MHz, 138MHz, 166MHz, 200MHz, 208MHz, 221MHz, 249MHz

CPU Vcore Select

This item allows you to select Vcore of the CPU. The choice are: +1.100V~+1.850V.

CPU Ratio Select

This item allows you to select Ratio of the CPU. The choice are:X5~X24

VDD AUXC Select

This item allows you to select Chip Voltage. The choice are 1.6V(Default), 1.7V

VAGP Output

This item allows you to select 1.5V of the AGP 4X VGA card. The choice are: 1.5V, 1.6V,1.7V

VRAM Output

This item allows you to select 2.5V of the DDR Module. The choice are: 2.5V~ 3.0V.

VAUX Output

This item allows you to select AUX voltage. The choice are: Default, 2%, 4%, 8%,12%, 16%.

VTT Voltage

This item allows you to select VTT voltage. The choice are: 1.25V, VDIMM/2.

VAGP/VRAM LUV Protect

This item allows you to enable the protective function on motherboard when over current presents. The choice are: Enabled(Default), Disabled

Flash Part Write Protect

This item allows you to protect BIOS against the data crash of virus. The choice are: Enabled, Disabled. Before flash BIOS you have to change the setting to Disabled, otherwise you can not flash BIOS.

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: be able to enter and change the options of the setup menus.

User password: be able to enter, but not 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 can 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 find the included MAGIC INSTALL CD. This CD consists of all drivers you need and some free bundled application and utility programs. Also included is an auto detection software which can tell you what hardware is installed and which driver is needed for proper system operation.

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 shown 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. nFORCE install NVIDIA nForce chipset system driver
2. SOUND install C-Media AC'97 Audio Codec driver
3. USB2.0 install USB 2.0 driver
4. DirectX9 install Microsoft DirectX 9 driver
5. PC-CILLIN install PC-CILLIN2002 anti-virus program
6. PC-HEALTH install PC-HEALTH monitor Utility
7. MAGIC BIOS install BIOS Live Update Utility
8. VGA install NVIDIA VGA driver (**Only for N2GAC3/N2GPAC3**)
9. Audio Rack install Audio Patch File (Only for WIN98SE OS)
10. BROWSE CD to browse the contents of the CD
11. EXIT to exit from MAGIC INSTALL menu

4-1 nFORCE Install NVIDIA nFORCE Pack Driver

* The path of the file is X:\DRIVER\SETUP.EXE

IDE : NVIDIA ATAPI VENDOR SUPPORT DRIVER IS USED TO FIXED COMPATIBILITY ISSUE FOR IDE DEVICES

AGP : NVIDIA AGP DRIVER IS TO BE INSTALLED, IF YOU ARE USING AN AGP VGA CARD, NVIDIA GART WILL PROVIDE SERVICE ROUTINES TO YOUR VGA DRIVER AND INTERFACE DIRECTLY TO HARDWARE, PROVIDING FAST GRAPHIC ACCESS

MEMCTL : NVIDIA Memory Controller driver

SMBUS : NVIDIA SMBUS Controller driver

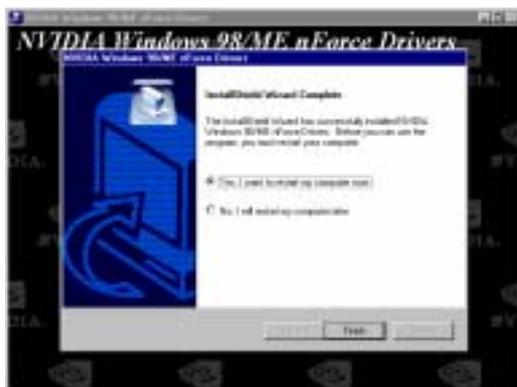
ETHERNET : NVIDIA nFORCE MCP networking



1. Click nFORCE when MAGIC INSTALL MENU appears



2. Click NEXT when NVIDIA Windows98/ME/2000/XP nForce Drivers Wizard appears

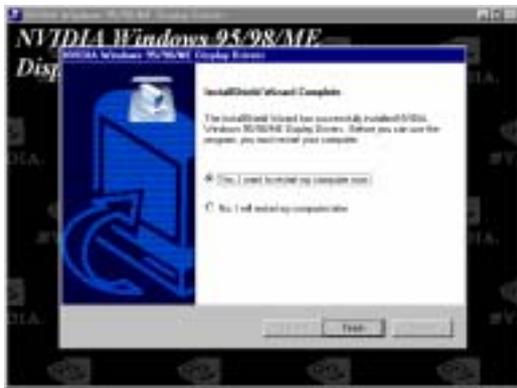


3. Click Finish to restart computer

4-2 VGA Install NVIDIA VGA Driver (Only for N2GAC3/N2GPAC3)



1. Click VGA when MAGIC INSTALL MENU appears
2. Click NEXT When NVIDIA Win95/98/ME/2000/XP Display Driver Windows appears



3. If You Want to Re-start Computer, Click FINISH

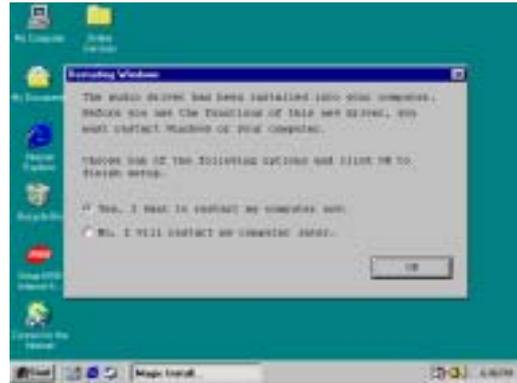
4-3 Sound Install Dolby Digital 5.1 RTCE Driver



1. Click SOUND when MAGIC INSTALL MENU appears
2. When the driver installation appear, click NEXT, then start to install driver and click NEXT



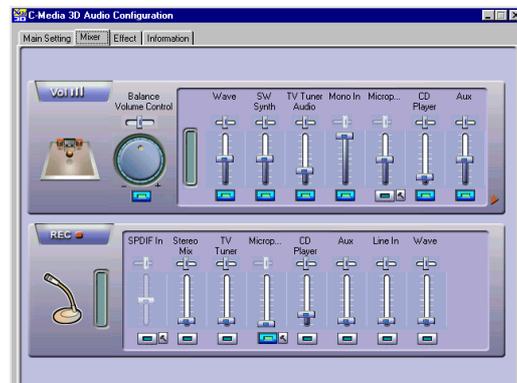
3. When choose destination location windows appear, please click NEXT, when select program select folder windows appear, please click NEXT, when start copy file windows appear, please click NEXT



4. Select OK and Restart Windows



5. This is 2/4/6 channel speaker setting and jack sensing configuration setting



6. This is mixer setting



7. This is sound effect setting

Note: The path of the file

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

4-4 USB2.0 Install NVIDIA USB 2.0 Driver

Windows 98SE/ME/2000 USB 2.0 Driver Installation



1. Click USB2.0 when MAGIC INSTALL MENU appears
2. Click CLOSE and Restart Computer

Windows XP USB 2.0 Driver Installation

1. Install Windows XP Service Pack 1 or later
2. Select My Computer, Press Right Button, Select Properties, Go to Hardware \ Device Manager, Remove Other Device \ Universal Serial Bus (USB) Controller
Restart Your Computer, It Will Find “NVIDIA USB2.0 Enhanced Host Controller” And “USB2.0 Root Hub Device”

4-5 PC-CILLIN Install PC-CILLIN 2002 Anti-virus Program



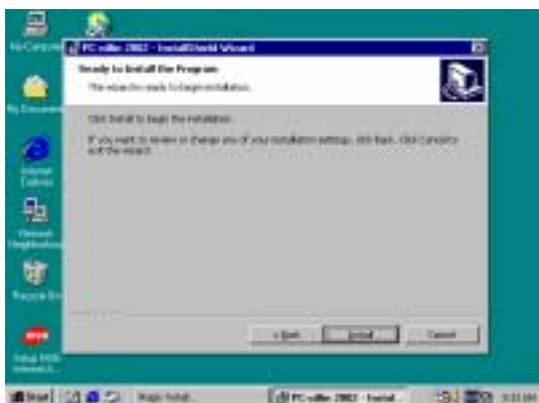
1. Click PC-CILLIN when MAGIC INSTALL MENU appears
2. (1) Click "Install PC-CILLIN" when PC-CILLIN 2002 main menu appears, and Click NEXT when "Install Shield Wizard For PC-CILLIN 2002" appears
(2) Click Open Manual to learn how to use PC-CILLIN 2002



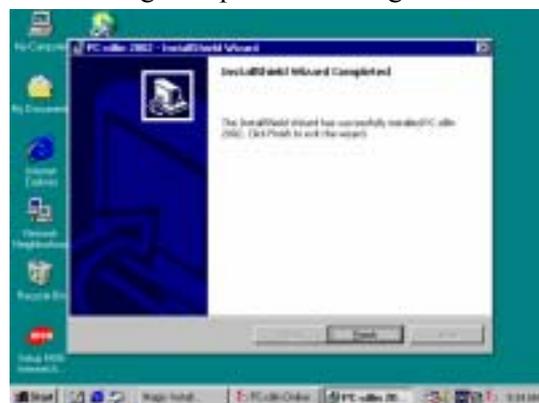
3. This is license agreement. Select "I Accept the terms" and Click NEXT



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



5. Click INSTALL to begin software installation



6. Setup Complete and click FINISH



7. After completing PC-CILLIN 2002 installation, please register your information and get LICENSE KEY from TREND MICRO web site. Enter your license key and click FINISH



8. After finishing register process, we recommend you 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

4-6 PC-HEALTH Install NFORCE2 Hardware Doctor Utility

The path of the file is X:\83627HD\SETUP.EXE (support WINDOWS 98SE/ME/2000/XP)



1. Click PC-Health when Magic Install Menu appears



2. Click Next when Winbond Hardware Doctor Setup Window appears



3. Click Next to continue installation



4. Select Program Group name or enter a new group name. Click Next, and click Finish after setup is completed

4-6-1 How To Utilize PC-HEALTH



1. Click Program → Winbond Hardware Doctor → Hardware Doctor the Winbond Hardware Doctor will appears
You can remove the Utility in Control Panel → Add/Remove Program icon

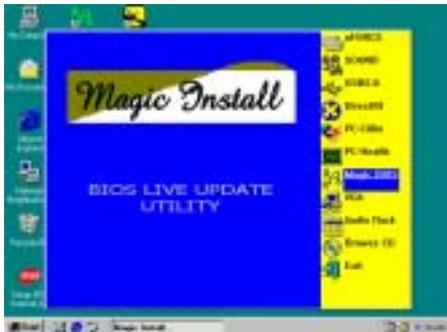


2. After executing Winbond Hardware Doctor it supports system voltage, Fan speed and CPU/SYSTEM Temperature. Because this is a On-time Monitoring program therefore the value will change after it detected, if the value is over default setting the system will have warning picture and beeps. This is a System Voltage status



3. This is a CPU/System Fan Speed and Temperature status information

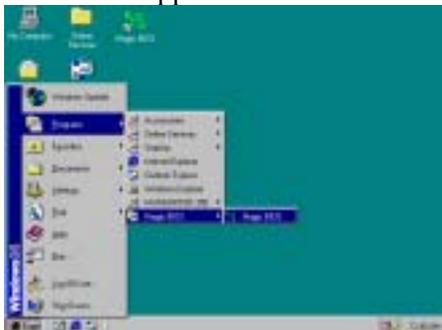
4-7 MAGIC BIOS Install BIOS Live Update Utility



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



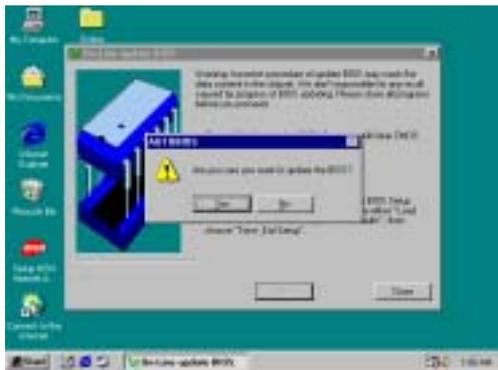
4. The above picture will appear after double click the Magic BIOS icon. You can upgrade BIOS On-line by choosing internet



5. When updating BIOS on-line, the program will auto-check your BIOS version



6. Click Next if you need update BIOS. After BIOS is updated, the system will clear CMOS and automatically restart



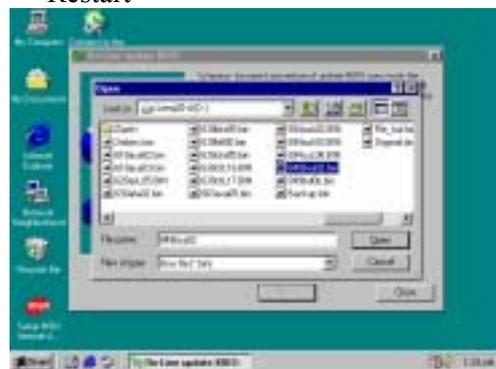
7. Click Yes if you want to update the BIOS otherwise choose No to exit



8. When System programming BIOS does not turn off power after finishing 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 AUDIO RACK Install C-Media Audio Rack Utility



1. Click AUDIO RACK when MAGIC INSTALL MENU appears



2. When the utility installation appear, click NEXT



3. When choose destination location windows appear, please click NEXT, when select program select folder windows appear, please click NEXT, when start copy file windows appear, please click NEXT



4. Click FINISH then click OK complete install audio rack utility



5. C-MEDIA media rack table

4-9 HOW TO UPDATE BIOS

Before update BIOS please choose Disabled in “Flash Part Write Protect” item on “Miscellaneous Control” in BIOS Setup, please refer to page 34 for detail.

Method 1. Use “Magic BIOS” update BIOS in Windows 98 (refer to page 43)

Method 2. In DOS Mode

STEP 1. Prepare a boot diskette. (you may make one by clicking START, clicking RUN, typing SYS A:, and clicking 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 N2AC3-Ultra/N2PAC3-Ultra/N2GAC3/N2GPAC3 from our web site to your boot diskette.

STEP 4. Insert your boot diskette into A:,
Start the computer and type “Awdflash A:\N2GAxxx.BIN /SN/PY/CC/R”
N2GAxxx.BIN is the file name of latest BIOS it can be N2GAA3.BIN or N2GAB2.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.