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M909G Series, V5.0
I845/August 2004

Table of Contents

Static Electricity Precautions

Static electricity could damage components on this motherboard. Take the following precautions while unpacking this motherboard and installing it in a system.

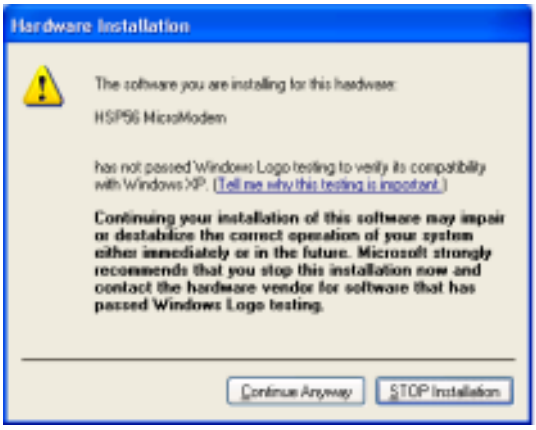
1. Don't take this mainboard and components out of their original static-proof package until you are ready to install them.
2. While installing, please wear a grounded wrist strap if possible. If you don't have a wrist strap, discharge static electricity by touching the bare metal of the system chassis.
3. Carefully hold this motherboard by its edges. Do not touch those components unless it is absolutely necessary. Put this motherboard on the top of static-protection package with component side facing up while installing.

Pre-Installation Inspection

1. Inspect this mainboard whether there are any damages to components and connectors on the board.
2. If you suspect this mainboard has been damaged, do not connect power to the system. Contact your motherboard vendor about those damages.

Notice:

Owing to Microsoft's certifying schedule is various to every supplier, we might have some drivers not certified yet by Microsoft. Therefore, it might happen under Windows XP that a dialogue box (shown as below) pop out warning you this software has not passed Windows Logo testing to verify its compatibility with Windows XP. Please rest assured that our RD department has already tested and verified these drivers. Just click the "Continue Anyway" button and go ahead the installation.



Traduction des Caractéristiques & Liste de contrôle

Liste de contrôle

Le coffret de votre carte mère contient les éléments suivants :

- La carte mère
- Le Manuel utilisateur
- Un câble plat pour lecteur de disquette (optionnel)
- Une câble plat pour lecteur IDE
- CD de support de logiciels

Caractéristiques

Prise en charge du Processeur Socket-478

- Supporte le CPU **Intel Pentium 4 series** avec/sans la **Technologie Hyper-Threading**
- Supporte un Bus Avant allant jusqu'à **533**/400 **MHz**

Chipset

Le chipset **Intel 845GV/GL** contient le Hub de Contrôleur de Mémoire Intel 82845 et le Hub (ICH4) de Contrôleur d'E/S Intel 82801DB I/O conformément à une architecture novatrice et dimensionnable avec une fiabilité et des performances prouvées. Voici une liste de l'organisation des chipset et de leurs caractéristiques respectives :

Northbridge	Fonction
845**GV**	Supporte: CPU FSB: **533**/400MHz **Technologie Hyper-Threading** DDR**333/**266; USB2.0; Ultra ATA **100**/66/33
845**GL**	Supporte:CPU FSB: **533***/400MHz DDR**266**; USB2.0; Ultra ATA **100**/66/33 Ne supporte pas: Technologie Hyper-Threading *: Surfréquençage

Support de Mémoire

- Deux logements DIMM 184 broches pour DDR SDRAM modules mémoire
- Supporte les DDR jusqu'à 333MHz (845GV) ou le bus mémoire DDR266MHz (845GL)
- La mémoire maximum installée est 2Go

AC'97 Codec

- Conforme aux spécifications AC'97 2.3
- Codec Full-duplex avec vitesse d'échantillonnage indépendante et variable
- Mémoire tampon d'Ecouteurs Intégrée, SNR jusqu'à 90db
- 6Ch DAC, supporte 6 canaux de sorties haut-parleurs
- Support de gestion d'alimentation avancée

Logements d'Extension

Le carte mère possède les caractéristiques suivantes :

- Un logement AGPro (reportez-vous à la page 20 pour plus de détails)
- Trois slots PCI 32 bits
- Un slot CNR (Communications and Networking Riser)
- Supporte maîtrise de bus Ultra DMA IDE avec vitesse de transfert de **100**/ 66/33 Mo/sec

Ports E/S Internes

La carte mère possède un jeu complet de ports d'E/S et de connecteurs:

- Deux ports PS/2 pour souris et clavier
- Un port série
- Un port VGA
- Un port parallèle
- Six ports USB (quatre ports fond de panier, prises USB internes offrant deux ports supplémentaires)— USB2.0
- Prises audio pour microphone, ligne d'entrée et ligne de sortie

LAN Fast Ethernet (optionnel)

- **Supporte le fonctionnement en 10/100Mb/s**
- Fast Ethernet MAC Intégré
- Contrôleur Fast Ethernet à simple puce de bus local PCI
    - Compatible à PCI Revision 2.2
    - Supporte la gestion d'alimentation ACPI, PCI
- Conforme au standard PC99/PC2001
- Supporte un temporisateur général 32 bits avec l'horloge PCI externe comme source d'horloge, pour générer l'interruption de temporisation
- Supporte le Contrôle de Flux Full Duplex (IEEE 802.3x)

USB 2.0

- Inclus trois contrôleurs d'hôte UHCI prenant en charge six ports externes
- Nouveau: Inclus un Contrôleur d'Hôte USB 2.0 haute vitesse EHCI prenant en charge les six ports
- Nouveau: Prend en charge un port de débogage à haute vitesse USB 2.0
- Prend en charge l'éveil à partir des états de veille S1-S5
- Prend en charge le logiciel de clavier/souris patrimonial

Funktionen & Checkliste

Checkliste

Die Verpackung Ihres Motherboards enthält folgende Teile:

- Motherboard
- Handbuch
- Bandkabel für Floppylaufwerke (optional)
- Bandkabel für IDE-Laufwerke
- Software -CD

Ausstattung

Unterstütz Socket-478-Prozessoren

- Unterstützung für **Intel Pentium 4**-CPUs mit/ohne "**Hyper-Threading**"-**Technologie**
- Unterstützung von bis zu **533**/400 **MHz** Front-Side Bus

Chipsatz

Der **Intel 845GV/GL-**Chipsatz verfügt über den Intel 82845 Memory Control Hub und den Intel 82801DB I/O Controller Hub (ICH4). Die Chipsatzarchitektur ist in einem innovativen und skalierbaren Design gehalten und verspricht sowohl Zuverlässigkeit als auch Leistungsstärke. Unten stehend finden Sie eine Liste mit den Chipsatzteilen und deren jeweiligen Funktionen:

Northbridge	Funktion
845**GV**	Unterstützung für :CPU FSB: **533**/400MHz **"Hyper-Threading" -Technologie** DDR**333**/266; USB2.0; Ultra ATA **100**/66/33
845**GL**	Unterstützung für :CPU FSB: **533***/400MHz DDR**266**; USB2.0; Ultra ATA **100**/66/33 Keine Unterstützung für : "Hyper-Threading" -Technologie *: Over-Clocking

Speicherunterstützung

- Zwei 184-pin DIMM Steckplätze für DDR SDRAM Speichermodule
- Unterstützung für DDR bis zu **333**MHz (**845GV**) oder DDR266MHz (**845GL**) Speicherbus
- Maximal auf 2GB Speicher erweiterbar

AC'97 Codec

- Entspricht AC'97 2.3
- Vollduplex-Codec mit unabhängiger und variabler Abtastrate
- Integrierter Kopfhörer-Buffer, SNR bis zu 90db
- 6Ch DAC, unterstützt 6-Kanal-Lautsprecherausgang
- Unterstützung für Advanced Power Management

Erweiterungssteckplätze

Das Motherboard verfügt über die folgenden Erweiterungsoptionen:

- Ein AGPro-Slot (siehe Seite 20 für mehr Details)
- Drei 32-Bit PCI-Steckplätze
- Ein CNR-Steckplatz (Communications and Networking Riser)
- Unterstützung für IDE Ultra DMA-Busmastering mit Transferraten von **100**/66/33 MB/Sek

Onboard I/O-Steckplätze

Das Motherboard verfügt über einen kompletten Satz von I/O-Steckplätze und Anschlüssen:

- Zwei PS/2-Steckplätze für Maus und Tastatur yboard
- Ein serieller Steckplatz
- Ein VGA-Steckplatz
- Ein paralleler Steckplatz
- Sechs USB Ports (vier Ports an der Rückseite, onboard USB-Köpfe, welche zwei weitere Ports bieten)-USB2.0
- Audioanschlüsse für Mikrofon, line-in und line-out

Fast Ethernet LAN (optional)

- **Unterstützt Betrieb mit 10/100 Mb/Sek.**
- Integriertes Fast Ethernet MAC
- PCI Local Bus Single-Chip Fast Ethernet-Controller
    - Kompatibel mit PCI Revision 2.2
    - Unterstützung für ACPI, PCI Power Management
- Kompatibilität mit den standard PC99/PC2001
- Unterstützung für einen 32-Bit General-Purpose Timer, dem der externe PCI-Takt als Taktquelle zur Erzeugung des Timer-Interrupt dient
- Unterstützung für Vollduplex-Flusskontrolle (IEEE 802.3x)

USB 2.0

- Mit drei UHCI Host-Controller, welche sechs externe Ports unterstützen
- Neu: Mit einem EHCI High-Speed (Hochgeschwindigkeits)-USB 2.0 Host-Controller welcher alle sechs Ports unterstützt
- Neu: Unterstützt einen USB 2.0 High-Speed Debug-Port
- Aufweckungsunterstützung des Stillstadiums S1-S5
- Unterstützung von Tastatur/Maus-Software

Traduzione Funzioni e Lista

Lista

L'imballo della scheda madre é composto da:

- La scheda madre
- Il manuale
- Una piattina per il collegamento dei drive (opzionale)
- Una piattina IDE
- Il CD con il Software di supporto

Caratteristiche

Dotata di Socket-478 per Processori

- Supporta CPU **Intel Pentium serie 4** con/senza **Tecnologia Hyper-Threading**
- Supporta fino a **533**/400 **MHz** Front Side Bus

Chipset

l chipset **Intel 845GV/GL** incorpora il Hub di controllo memIoria Intel 82845 a il Hub (ICH4) di controllo I/O Intel 82801DB in conformità ad un'architettura innovativa e scalabile dalle prestazioni e affidabilità dimostrate. Segue una lista con i chipset e le rispettive funzioni:

Northbridge	Funzione
845**GV**	Supporta: CPU FSB: **533**/400MHz **Tecnologia Hyper-Threading** DDR**333**/266;USB2.0; Ultra ATA **100**/66/33
845**GL**	Supporta: CPU FSB: **533***/400MHz DDR**266** ; USB2.0; Ultra ATA **100**/66/33 Non supporta: Tecnologia Hyper-Threading *: Overclocking

Memoria Supporta

- Due slot DIMM a 184 pin per moduli di memoria DDR SDRAM
- Supporta DDR fino a **333**MHz (**845GV**) o bus di memoria DDR266MHz (**845GL)**
- Quantità massima di memoria installabile, 2GB

AC'97 Codec

- Conforme con le specifiche AC`97 2.3
- Codec full-duplex con frequenza di campionamento indipendente e variabile
- Memoria tampone integrata per auricolare, SNR fino a 90db
- 6 CanDAC, supporto di 6 uscite per le casse
- Supporto per gestione energetica avanzata.

Opzioni di espansione

La scheda madre dotata delle seguenti opzioni di espansione:

- Uno slot AGPro (fare riferimento alla pagina 20 per ulteriori dettagli)
- Tre slot a 32-bit PCI
- Uno slot CNR (Communications and Networking Riser)
- Supporta gestione di canali IDE Ultra DMA con percentuali di campionamento di **100**/66/33/MB/sec.

Onboard I/O Porta

La scheda madre è dotata da una serie completa di porte e connettori I/O:

- Due porte PS/2 per tastiera e mouse
- Una porta seriale
- Una porta VGA
- Una porta parallela
- Sei porte USB (quattro porte sul pannello posteriore; installati due headers USB che consentono di avere due porte supplementari)-USB2.0
- Jack audio per microfono, ingresso linea e uscita linea

Fast Ethernet LAN (supplementare)

- **Supporto delle operazioni 10/100Mbps**
- Fast Ethernet MAC integrato
- Controller Fast Ethernet PCI con chip singolo
  - Conforme a PCI Revisione 2.2
  - Supporta risparmio energetico ACPI, PCI
- Conforme allo standard PC99/PC2001
- Supporta un timer per uso universale a 32-bit con clock PCI esterno come sorgente clock per generare gli interrupt da timer.
- Supporta controllo di flusso Full Duplex (IEEE 802.3x)

USB 2.0

- Include tre host controller UHCI che supportano sei porte esterne
- Nuovo: include un host controller USB 2.0 EHCI ad alta velocità in grado di supportare tutte e sei le porte
- Nuovo: supporta una porta di debug USB 2.0 ad alta velocità
- Supporta wake-up dallo stato di risveglio (sleeping) S1-S5
- Supporta software legacy per tastiera/mouse

Traducción de Características & Lista

LISTA DE VERIFICACIÓN

El paquete de su placa principal contiene los sigtes. ítems:

- La placa principal
- El Manual del Usuario
- Un cable cinta para el lector de disquete (optativo)
- Un cable cinta para el lector IDE
- CD de Software de soporte

Características

Soporte de Procesador Socket-478

- Soporta CPU de **Intel Pentium 4** con/sin la **Tecnología Hyper -Threading**
- Soporta hasta Bus de Lado Frontal de **533**/400 **MHz**

Chipset

El chipset **Intel 845GV/GL** contiene Hub de Controlador de Memoria Intel 82845 y Hub (ICH4) de Controlador Intel 82801DB I/O según una arquitectura innovadora y escalable con la fiabilidad y rendimiento aprobados. He aquí una lista del arreglo del chipset y sus respectivas características:

Northbridge	Función
845**GV**	Soporta: CPU FSB: **533**/400MHz **Tecnología Hyper-Threading** DDR**333**/266; USB2.0; Ultra ATA **100**/66/33
845**GL**	Soporta: CPU FSB: **533***/400MHz DDR**266** ; USB2.0; Ultra ATA **100**/66/33 No soporta: Tecnología Hyper-Threading *: Sobre-cronometraje

Soporte de Memoria

- Dos ranuras 184-pin DIMM para módulos de memoria DDR SDRAM
- Soporta DDR hasta bus de memoria de **333**MHz (**845GV**) o DDR266MHz (**845GL**)
- Memoria máxima instalada es 2GB

AC'97 Codec

- Conforme con la especificación AC'97 2.3
- Full-duplex Codec con índice de muestreo independiente y variable
- Buffer de Audífono Incorporado, SNR hasta 90db
- 6Ch DAC, soporte de altoparlante de 6 canales
- Soporte de administración de energía avanzada

Ranuras de Expansión

La placa principal viene con las sigtes. opciones de expansión:

- Una ranura AGPro (refiera a la pg 20 para más detalles)
- Tres ranuras 32-bit PCI
- Una ranura CNR (Communications and Networking Riser)
- Soporta mastering de bus IDE Ultra DMA con índices de transferencia de **100**/66/33 MB/seg

Puertos I/O Abordos

La placa principal tiene un juego completo de puertos I/O y conectores:

- Dos puertos PS/2 para ratón y teclado
- Un puerto serial
- Un puerto VGA
- Un puerto paralelo
- Seis puertos USB (cuatro puertos del panel trasero, los cabezales USB abordo provee dos puertos extras)-USB2.0
- Clavijas de sonido para micrófono, entrada y salida de línea

Fast Ethernet LAN (optativo)

- **Soporta la operación de 10/100Mbps**
- Fast Ethernet MAC Integrado
- Controlador de Fast Ethernet de chip singular de bus local PCI
  - Conforme con PCI Revisión 2.2
  - Soporta administración de suministro ACPI, PCI
- Conforme con la norma PC99/PC2001
- Soporta un cronómetro de todo propósito 32-bit con el reloj PCI externo como fuente de reloj, para generar interrupción de cronómetro
- Soporta Control de Flujo Full Duplex (IEEE 802.3x)

USB 2.0

- Incluye tres controladores anfitriones UCHI que soporta seis puertos externos
- Nuevo: Incluye un Controlador Anfistrión USB 2.0 de EHCI alta velocidad que soporta todos los seis puertos
- Nuevo: Soporta un puerto de debug de USB 2.0 alta velocidad
- Soporta despertar de los estados de dormir S1-S5
- Soporta software teclado/ratón de legado

Tradução da Lista & Características

Lista de verificação

A embalagem da sua placa principal contém os seguintes itens:

- A placa principal
- O Manual do Utilizador
- Um cabo para a unidade de disquetes (opcional)
- Um cabo para a unidade IDE
- CD de suporte para o software

Características

Suporte do Processador Socket-478

- Suporta CPU série **Intel Pentium 4** com/sem **Tecnologia Hyper-Threading**
- Suporta até **533**/400 **MHz** Front-Side Bus

Chipset

Há chipsets **Intel 845GV/GL** contendo Intel 82845 Memory Controller Hub (ICH4) e Intel 82801DB I/O Controller Hub de acordo com uma arquitetura inovativa escalável com performance e confiabilidade comprovada. Aqui fica uma lista da organização do chipset e das respectivas características:

Northbridge	Função
845**GV**	Suporta: CPU FSB: **533**/400MHz **Teconologia Hyper-Threading**, DDR**333**/266 USB2.0; Ultra ATA **100**/66/33
845**GL**	Suporta: CPU FSB: **533***/400MHz DDR**266;** USB2.0; Ultra ATA **100**/66/33 Não suporta: Teconologia Hyper-Threading *: Overclocking

Suporte de memória

- Dois sockets DIMM com 184 pinos para módulos de memória DDR SDRAM
- Suporta no máximo DDR até **333**MHz (845GV) ou bus de memória DDR266MHz (845GL)
- A memória máxima instalada é de 2GB

AC'97 Codec

- Compatível com a especificação AC'97 2.3
- Full-duplex Codec com razão de amostra variável independente
- Buffer de Fone de Ouvido embutido, SNR até 90db
- 6 canais DAC, suporta 6 canais de altifalantes
- Suporte de gerenciamento de força avançado

Slots de expansão

A placa principal possui as seguintes slots de expansão:

- Uno slot AGPro (fare riferimento alla pagina 20 per ulteriori dettagli)
- Três encaixes 32-bit PCI slots
- Um encaixe para CNR (Communications and Networking Riser)
- Suporta IDE Ultra DMA bus mastering com razão de transferência de **100**/66/33 MB/seg

Portas I/O na placa

A placa principal possui um conjunto completo de portas e conectores I/O:

- Duas portas PS/2 para o rato e teclado
- Uma porta série
- Uma porta VGA
- Uma porta paralela
- Seis portas USB (quatro portas de painel de interconexão, suportes USB onboard fornecendo duas portas extra)-USB2.0
- Jacks audio para microfone, line-in e line-out

Ethernet Rápida LAN (opcional)

- **Suporta o funcionamento 10/100Mb/s**
- Fast Ethernet MAC integrado
- Controlador PCI bus local de chip único Fast Ethernet
    - PCI Revision 2.2 complacente
    - Suporta gerenciamento de força ACPI, PCI
- Padrão PC99/PC2001 complacente
- Suporta um cronômetro de 32-bit com propósito geral, relógio externo PCI como fonte do relógio, para gerar interrupção do cronômetro
- Suporta Controle de Fluxo Full Duplex (IEEE 802.3x)

USB 2.0

- Incluiu três controladores host UHCI que suportam seis portas externas
- Novo: Incluiu um Controlador Host USB 2.0 de alta velocidade EHCI que suporta todas as seis portas
- Novo: Suporta uma porta de depuração de alta velocidade USB 2.0
- Suporta sistema de despertar de estados de adormecimento S1-S5
- Suporta software herdado de teclado/rato

功能和检查单翻译

检查单

您的主板包装含有以下项目：

- 主板
- 用户手册
- 一根磁盘驱动器扁平电缆（可选）
- 一根 IDE 驱动器扁平电缆
- 软件支持 CD

功能

支持 Socket-478 处理器

- 支持带有/不带有多线程技术的 Intel Pentium 4 系列 CPU
- 支持 533/400 MHz 前端总线

芯片组

Intel 845GV/GL 芯片组包含 Intel 82845 存储控制器 Hub (ICH4)和 Intel 82801DB I/O 控制器 Hub，它基于一种新型的、可扩展的架构，能提供已经证明的可靠性和高性能。以下是芯片组和它们的功能：

北桥	功能
845GV	支持: CPU FSB: 533/400MHz 多线程技术 DDR333/266; USB2.0; Ultra ATA 100/66/33
845GL	支持: CPU FSB: 533*/400MHz DDR266; USB2.0; Ultra ATA 100/66/33 不支持：多线程技术 *: 超频

内存支持

- 2个用于 DDR SDRAM 内存条的 184-pin DIMM 插槽
- 支持 DDR 到 333MHz (845GV) 或 DDR266MHz (845GL)存储总线
- 内存最多可达 2GB

AC'97 编解码器

- 兼容 AC'97 2.3 规格
- 具有独立和可调采样速率的全双工编解码器
- 内建耳机缓冲，SNR 到 90db
- 6路DAC，支持6路扬声器输出。
- 支持高级电源管理

扩展槽

此主板提供如下扩展选项：

- 1 个 AGPro 插槽（参见第 20 页获取详细信息）
- 3个 32 位 PCI 扩展插槽
- 一个通信网络转接 (CNR) 插槽
- 支持 IDE Ultra DMA 总线控制，传输速率可达 100/66/33 MB/sec。

集成 I/O 端口

此主板具有完整的 I/O 端口和插孔：

- 2 个用于连接鼠标和键盘的 PS/2 端口
- 1 个串口
- 1 个 VGA 端口
- 1 个并口
- 6 个 USB 端口（主板后面板带 4 个接口，板上 USB 接口提供其它 2 个端口）— USB2.0
- 麦克风、线入和线出声音插孔

快速以太网 LAN (可选)

- 10 Mb/s 和 100 Mb/s 工作
- 集成高速以太网 MAC
- PCI 局域总线单芯片高速以太网控制器
  - 兼容 PCI 2.2 版本
  - 支持 ACPI，PCI 电源管理
- 符合 PC99/PC2001 标准
- 支持 32 位多用途定时器（带有外部 PCI 时钟作为时钟脉冲源），可以产生定时中断
- 支持全双工流控制 (IEEE 802.3x)

USB 2.0

- 包括 3 个UHCI 主控器，支持 6 个外部端口
- 新功能：包括 1 个 EHCI 高速 USB 2.0 主控器，支持所有 6 个端口
- 新功能：支持 1 个 USB 2.0 高速调试端口
- 支持从休眠状态 S1-S5 的唤醒功能
- 支持传统键盘/鼠标软件

Chapter 1 Introduction

This motherboard has a **Socket-478** supporting **Intel Pentium 4/ Prescott** with **Hyper-Threading Technology** processors with Front-Side Bus (FSB) speeds up to **533**/400 MHz. Hyper-Threading Technology, designed to take advantage of the multitasking features in Windows XP, gives you the power to do more things at once.

Note: *It supports Hyper-Threading Technology only when the Intel 845GV is installed. Intel 845GL supports FSB 533 MHz only by overclocking.*

This motherboard has the **Intel 845GL/GV** chipset that contains Intel 82845 Memory Controller Hub and Intel 82801 I/O Controller Hub. It supports built-in **USB 2.0** providing higher bandwidth. It implements **Universal Serial Bus Specification Revision 2.0** and includes three UHCI host controllers that support six external ports. This motherboard supports **AC' 97 audio codec** and provides **Ultra DMA 100**/66/33 function.

This motherboard has one **CNR** (Communications and Networking Riser), three 32-bit PCI slots and one **AGPro** slot. There is a full set of I/O ports including two PS/2 ports for mouse and keyboard and audio jacks for microphone, line-in and line-out. There are one serial port, one VGA port, one parallel port, one LAN port(optional), and six USB ports (**USB2.0**)–four back-panel ports and onboard USB header USB3 providing two extra ports by connecting the Extended USB Module to the motherboard.

This motherboard is a **Micro ATX** motherboard that uses a 4-layer printed circuit board and measures 244 x 220mm.

Note: *You must initiate the HT CPU function through BIOS setup. It is strongly recommended you refer to Page 48 for related details.*

Key Features

The key features of this motherboard include:

Socket-478 Processor

- Supports **Intel Pentium 4 series** CPU with/without **Hyper-Threading** Technology
- Supports up to **533**/400 **MHz** Front-Side Bus

Chipset

There are **Intel 845GV/GL** chipsets that contain Intel 82845 Memory Controller Hub and Intel 82801 I/O Controller Hub(ICH4) in accordance with an innovative and scalable architecture with proven reliability and performance. Here is a list of the chipset arrangement and their respective features:

Northbridge	Function
845**GV**	Support: CPU FSB: **533**/400MHz **Hyper-Threading Technology** DDR**333**/266; USB2.0; Ultra ATA **100**/66/33
845**GL**	Support: CPU FSB: **533***/400MHz DDR**266;** USB 2.0; Ultra ATA **100**/66/33 Doesn't support:Hyper-Threading Technology * Supports FSB 533 MHz only by over-clocking

Memory Support

- Two 184-pin DIMM sockets for DDR SDRAM memory modules

- Support DDR up to **333**MHz (845**GV**) or DDR266MHz (845GL) memory bus
- Maximum installed memory is 2GB

AC'97 Codec

- Compliant with AC'97 2.3 specification
- Full-duplex Codec with independent and variable sampling rate
- Earphone Buffer Built-In, SNR up to 90db
- 6Ch DAC, support 6-channel speak-out
- Advanced power management support

Expansion Options

The motherboard comes with the following expansion options:

- One AGPro slot (refer to page 20 for more details)
- Three 32-bit PCI slots
- One CNR (Communications and Networking Riser) slot
- Support IDE Ultra DMA bus mastering with transfer rates of **100**/66/33 MB/sec

Onboard I/O Ports

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One serial port
- One VGA port
- One parallel port
- Six **USB 2.0** ports (four back-panel and onboard USB header providing two extra ports)
- Audio jacks for microphone, line-in and line-out

Fast Ethernet LAN (optional)

- 10 Mb/s and 100 Mb/s operation
- Integrated Fast Ethernet MAC
- PCI local bus single-chip Fast Ethernet controller
  –Compliant to PCI Revision 2.2
  –Supports ACPI, PCI power management

- Compliant to PC99/PC2001 standard
- Supports a 32-bit general-purpose timer with the external PCI clock as clock source, to generate timer-interrupt
- Supports Full Duplex Flow Control (IEEE 802.3x)

USB 2.0

- Includes three UHCI host controllers that support six external ports
- New: Includes one EHCI high-speed USB 2.0 Host Controller that supports all six ports
- New: Supports a USB 2.0 high-speed debug port
- Supports wake-up from sleeping states S1-S5
- Supports legacy keyboard/mouse software

BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters and memory timing
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

Bundled Software

- **PC-Cillin** provides automatic virus protection under Windows 98/ME/NT/2000/XP
- **Adobe Acrobat Reader** is the software to help users read PDF files.

Dimensions

- Micro ATX form factor of 244 x 220mm

Package Contents

Your motherboard package contains the following items:

- The motherboard
- The User's Guide
- One diskette drive ribbon cable (optional)
- One IDE drive ribbon cable
- Software support CD

Optional Accessories

You can purchase the following optional accessories for this motherboard.

- Extended USB module
- CNR v.90 56K Fax/Modem card

***Note**: You can purchase your own optional accessories from the third party, but please contact your local vendor on any issues of the specification and compatibility.*

Chapter 2 Motherboard Installation

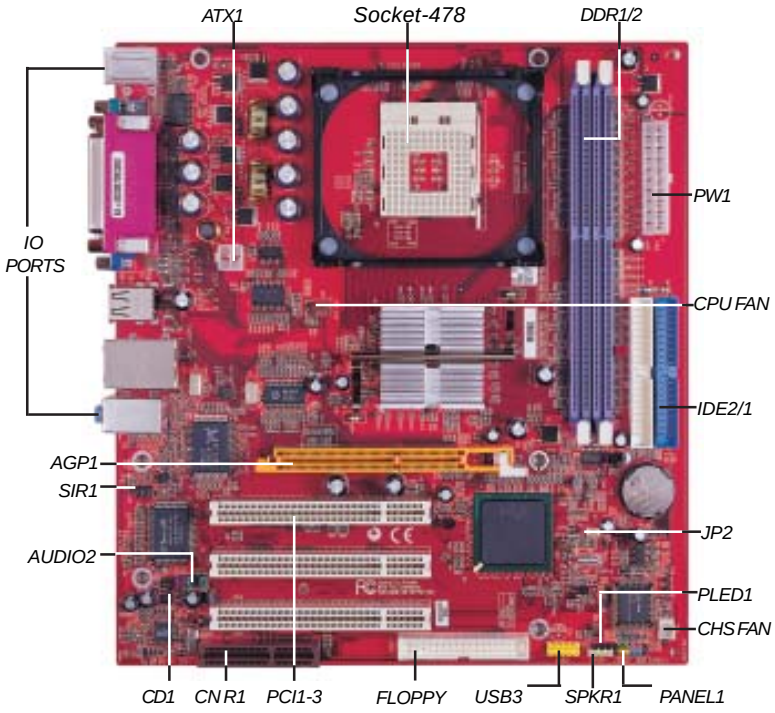
To install this motherboard in a system, please follow these instructions in this chapter:

- Identify the motherboard components
- Install a CPU
- Install one or more system memory modules
- Make sure all jumpers and switches are set correctly
- Install this motherboard in a system chassis (case)
- Connect any extension brackets or cables to headers/ connectors on the motherboard
- Install peripheral devices and make the appropriate connections to headers/connectors on the motherboard

Note:

1. Before installing this motherboard, make sure jumper JP2 is under Normal setting. See this chapter for information about locating JP2 and the setting options.
2. Never connect power to the system during installation; otherwise, it may damage the motherboard.
3. Please refer to details of the AGPro slot on page 20 before installing an AGP graphics card.

Motherboard Components

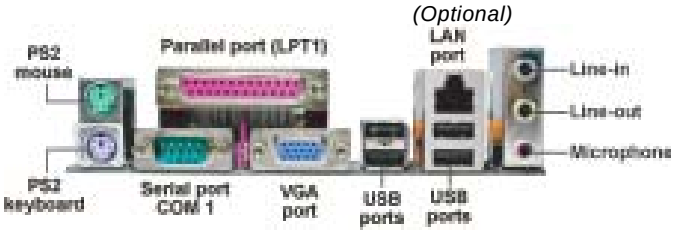


LABEL	COMPONENTS
DDR1-2	Two 184-pin DDR SDRAM sockets
IDE1/2	Primary/Secondary IDE connectors
ATX1	Standard 4-Pin ATX Power connector
PW1	Standard 20-Pin ATX Power connector
USB3	Front Panel USB header
FLOPPY	Floppy Disk Drive connector
PANEL1	Front Panel Switch/LED header
CHS FAN	System Fan connector
JP2	Clear CMOS jumper
SPKR1	Speaker header
CD1	Analog Audio Input header
PLED1	Power-On indicator header

LABEL	*COMPONENTS*
SIR1	*Infrared Port header*
PCI 1-3	*32-bit PCI slots*
AUDIO2	*Front Panel Audio header*
CPUFAN	*CPU Fan connector*
CNR1	*Communications Networking Riser slot*
AGP1	*AGPro slot *See page 21 for details*

I/O Ports

The illustration below shows a side view of the built-in I/O ports on the motherboard.



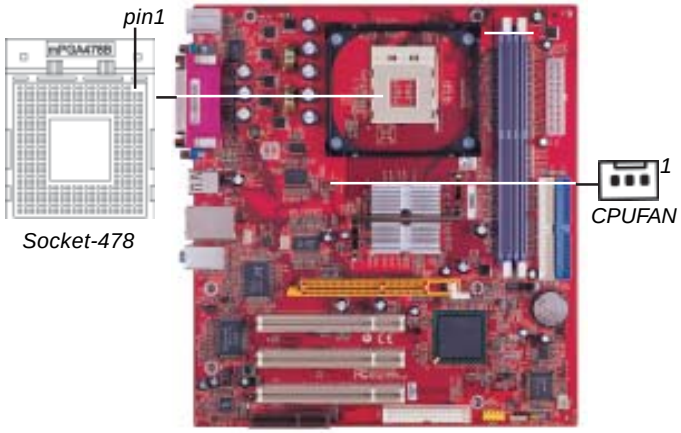
PS/2 Mouse	*Use the upper PS/2 port to connect a PS/2 pointing device.*
PS/2 Keyboard	*Use the lower PS/2 port to connect a PS/2 keyboard.*
Parallel Port (LPT1)	*Use the Parallel port to connect printers or other parallel communications devices.*
Serial Port COM1	*Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1.*
VGA Port	*Use the VGA port to connect VGA devices.*
LAN Port (optional)	*Connect an RJ-45 jack to the LAN port to connect your computer to the Network.*
USB Ports	*Use the USB ports to connect USB devices.*
Audio Ports	*Use the three audio ports to connect audio devices. The first jack is for stereo Line-In signal. The second jack is for stereo Line-Out signal. The third jack is for Microphone.*

Installing the Processor

This motherboard has a Socket 478 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

Follow these instructions to install the CPU:

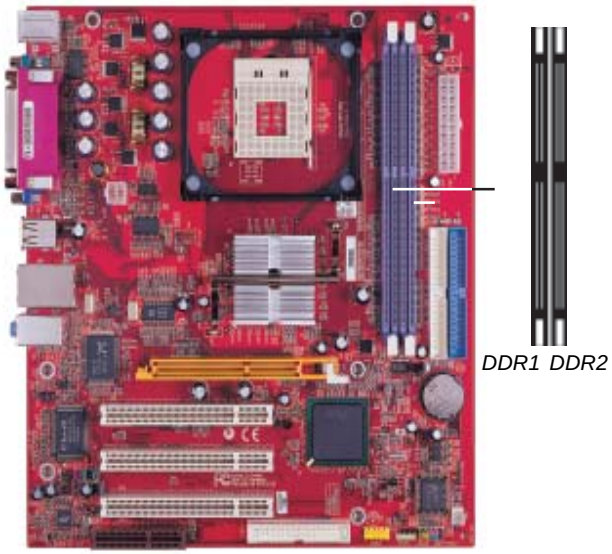


1. Unhook the locking lever of the CPU socket. Pull the locking lever away from the socket and raising it to the upright position.
2. Match the pin1 corner marked as the beveled edge on the CPU with the pin1 corner on the socket. Insert the CPU into the socket. Do not use force.
3. Push the locking lever down and hook it under the latch on the edge of socket.
4. Apply thermal grease to the top of the CPU.
5. Install the cooling fan/heatsink unit onto the CPU, and secure them all onto the socket base.
6. Plug the CPU fan power cable into the CPU fan connector (CPUFAN) on the motherboard.

Installing Memory Modules

This motherboard accommodates two 184-pin 2.5V unbuffered Double Data Rate SDRAM (DDR SDRAM) Dual Inline Memory Module (DIMM) sockets, and supports up to 2.0 GB of **333**(845GV)/266/200 MHz DDR SDRAM.

DDR SDRAM is a type of SDRAM that supports data transfers on both edges of each clock cycle (the rising and falling edges), effectively doubling the memory chip's data throughput.



Memory Module Installation Procedure

These modules can be installed with up to 2 GB system memory. Refer to the following to install the memory module.

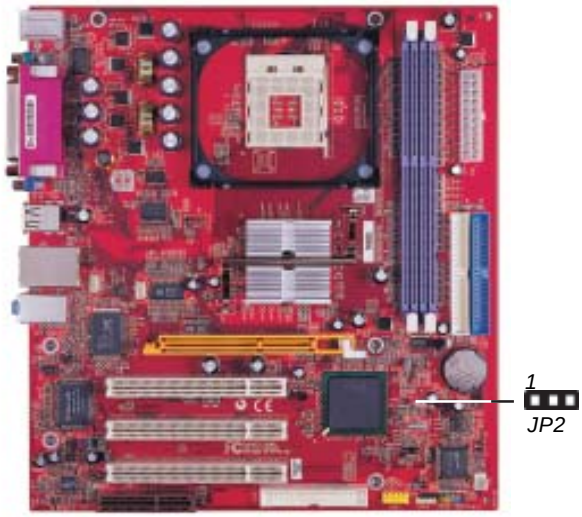
1. Push down the latches on both sides of the DIMM socket.
2. Align the memory module with the socket. There is a notch on the DIMM socket that you can install the DIMM module in the correct direction. Match the cutout on the DIMM module with the notch on the DIMM socket.

3. Install the DIMM module into the socket and press it firmly down until it is seated correctly. The socket latches are levered upwards and latch on to the edges of the DIMM.

4. Install any remaining DIMM modules.

Jumper Settings

Connecting two pins with a jumper cap is SHORT; removing a jumper cap from these pins, OPEN.



JP2: Clear CMOS Jumper

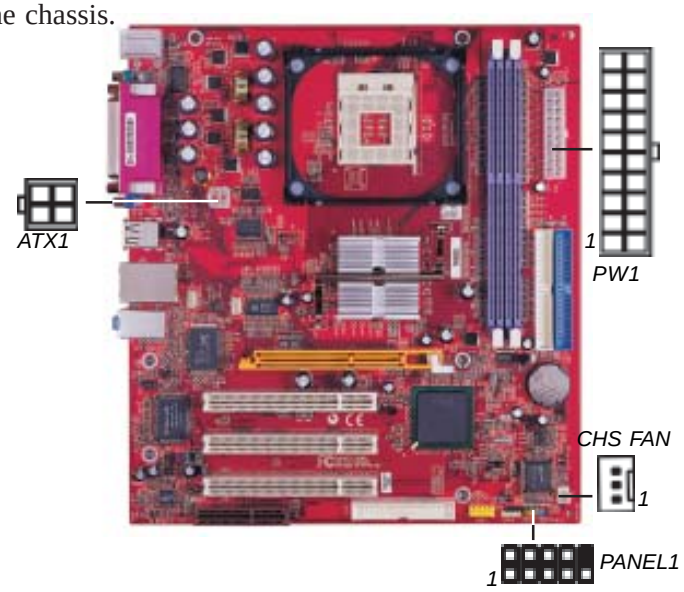
Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your motherboard from operating. To clear the CMOS memory, disconnect all the power cables from the motherboard and then move the jumper cap into the CLEAR setting for a few seconds.

Function	*Jumper Setting*
Normal	*Short Pins 1-2*
Clear CMOS	*Short Pins 2-3*

Install the Motherboard

Install the motherboard in a system chassis (case). The board is a Micro-ATX size motherboard. You can install this motherboard in an ATX case. Make sure your case has an I/O cover plate matching the ports on this motherboard.

Install the motherboard in a case. Follow the case manufacturer's instructions to use the hardware and internal mounting points on the chassis.



Connect the power connector from the power supply to the **PW1** connector on the motherboard. The **ATX1** is a +12V connector for CPU Vcore power.

If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **CHS FAN** fan power connector on the motherboard.

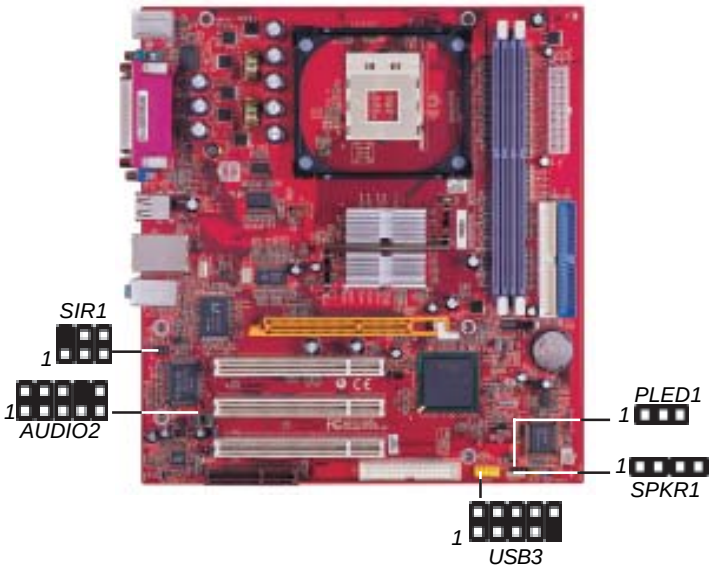
Connect the case switches and indicator LEDs to the **PANEL1** header.

Please refer to the following list of the PANEL1 pin assignments.

Pin	Signal	Pin	Signal
1	HD_LED_P(+)	2	FP PWR/SLP(+)
3	HD_LED_N(-)	4	FP PWR/SLP(-)
5	RESET_SW_N(-)	6	POWER_SW_P(+)
7	RESET_SW_P(+)	8	POWER_SW_N(-)
9	RSVD_DNU	10	KEY

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



SPKR1: Speaker Header

Connect the cable from the PC speaker to the SPKR1 header on the motherboard.

Pin	Signal	Pin	Signal
1	SPKR	2	NC
3	GND	4	+5V

AUDIO2: Front Panel Audio Header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal	Pin	Signal
1	AUD_MIC	2	AUD_GND
3	AUD_MIC_BIAS	4	AUD_VCC
5	AUD_FPOUT_R	6	AUD_RET_R
7	HP_ON	8	KEY
9	AUD_FPOUT_L	10	AUD_RET_L

USB3: Front Panel USB Header

The motherboard has USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB header USB3 to connect the front-mounted ports to the motherboard.

Pin	Signal	Pin	Signal
1	VERG_FP_USBPWR0	2	VERG_FP_USBPWR0
3	USB_FP_P0(-)	4	USB_FP_P1(-)
5	USB_FP_P0(+)	6	USB_FP_P1(+)
7	GROUND	8	GROUND
9	KEY	10	USB_FP_OC0

1. Locate the USB3 header on the motherboard.
2. Plug the bracket cable onto the USB3 header.
3. Remove a slot cover from one of the expansion slots on the system chassis. Install an extension bracket in the opening. Secure the extension bracket to the chassis with a screw.

PLED1: Power-On Indicator Header

If there is another power-on indicator LED installed in the system chassis, connect the LED to the **PLED1** header.

Pin	*Signal*
1	*GROUND*
2	*NC*
3	*POWER*

SIR1: Infrared Header

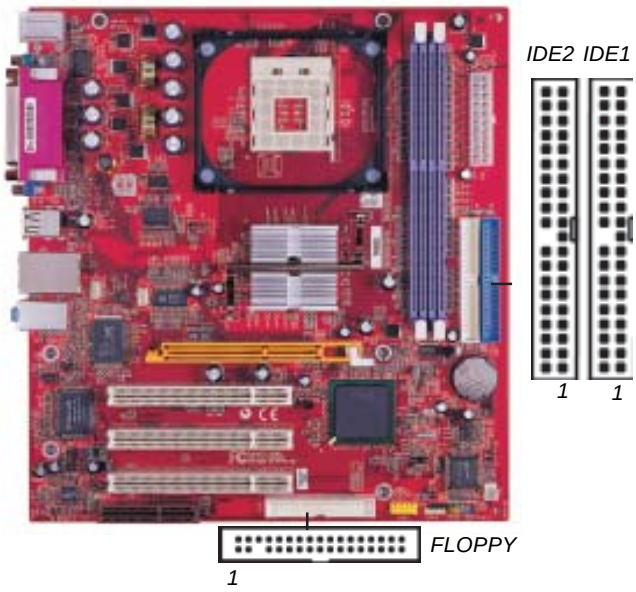
The infrared port allows the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

Pin	*Signal*	*Pin*	*Signal*
1	*NC*	*2*	*KEY*
3	*+5V*	*4*	*GND*
5	*IRTX*	*6*	*IRRX*

1. Locate the infrared port-**SIR1** header on the motherboard.
2. If you are adding an infrared port, connect the ribbon cable from the port to the SIR1 header and then secure the port to an appropriate place in your system chassis.

Install Other Devices

Install and connect any other devices in the system following the steps below.



Floppy Disk Drive

The motherboard ships with a floppy disk drive cable that can support one or two drives. Drives can be 3.5" or 5.25" wide, with capacities of 360K, 720K, 1.2MB, 1.44MB, or 2.88MB.

Install your drives and connect power from the system power supply. Use the cable provided to connect the drives to the floppy disk drive connector **FLOPPY**.

IDE Devices

IDE devices include hard disk drives, high-density diskette drives, and CD-ROM or DVD-ROM drives, among others.

The motherboard ships with an IDE cable that can support one or two IDE devices. If you connect two devices to a single cable, you must configure one of the drives as Master and one of the drives as Slave. The documentation of the IDE device will tell you how to configure the device as a Master or Slave device. The Master device connects to the end of the cable.

Install the device(s) and connect power from the system power supply. Use the cable provided to connect the device(s) to the Primary IDE channel connector **IDE1** on the motherboard.

If you want to install more IDE devices, you can purchase a second IDE cable and connect one or two devices to the Secondary IDE channel connector **IDE2** on the motherboard. If you have two devices on the cable, one must be Master and one must be Slave.

Analog Audio Input Header

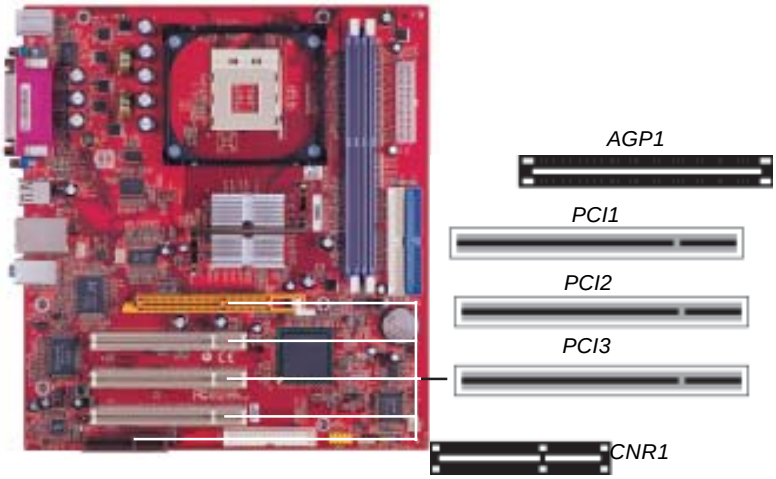
If you have installed a CD-ROM drive or DVD-ROM drive, you can connect the drive audio cable to the onboard sound system.

When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed. On the motherboard, locate the 4-pin header **CD1**.

Pin	*Signal*
1	*CD IN L*
2	*GND*
3	*GND*
4	*CD IN R*

Expansion Slots

This motherboard has one AGPro, one CNR and three 32-bit PCI slots.



Follow the steps below to install a CNR/PCI expansion card.

1. Locate the CNR or PCI slots on the motherboard.
2. Remove the slot cover for this slot from the system chassis.
3. Insert the expansion card edge connector into the slot and press it firmly down into it so that it is fully inserted.
4. Secure the expansion card bracket to the system chassis with a screw.

AGPro Slot (AGP1)

The AGPro slot is used to install AGP graphics card that emulates the AGP function. In order to get better performance and compatibility on our special design AGPro slot, we recommend users use one of the AGP graphics cards that have been tested by our company. Please refer to page 21 for the "VGA Card Support list for AGPro slot".

Note: *If the AGP card is already installed, the computer won't auto setup the onbaord VGA driver.*

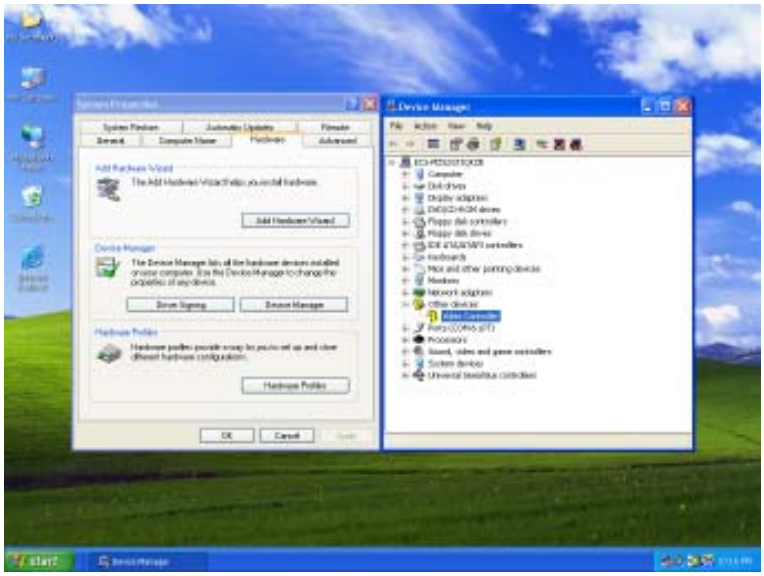
VGA Card Support List for AGPro Slot:

VENDER	AGP 4X/8X	CHIPSET	MANUFACTURE
ATI	4X	ATI Radeon 8500	ATI RADEON 8500 DDR
		ATI Radeon 9000 PRO	Gigabyte GV-R9000 PRO
	8x	ATI Radeon 9200	ECS R9200LE / 64M
		ATI Radeon 9200	ECS R9200LE / 128M
		ATI Radeon 9500	Power Color ATI 9500
		ATI Radeon 9700 PRO	Power Color ATI 9700Pro
		ATI Radeon 9800 PRO	MIC Radeon9800Pro/128M
		ATI Radeon 9800 XT	ECS 9800XT
NVIDIA	4X	TNT2 M64	Win Fast S325
		GeForce 256	Creative CT6940
		GeForce 256 DDR	ASUS V6800
		GeForce 2 GTS	Gigabyte GA-66032D
		GeForce 2 GTS	ELSA GLADIAC GTS DDR PRO/64M
		GeForce 2 MX	ASUS AGP-V7100
		GeForce 2 MX	ELSA Gladiac MX
		GeForce 2 MX	Triplex Mohock
		GeForce 2 Ultra	WINFAST GeForce 2 Ultra
		GeForce 2 MX200	Triplex-MX2200
		GeForce 2 MX400	ELSA GLADIAC 511
		GeForce 3	ELSA GLADIAC 920
		GeForce 3	ASUS V8200
		GeForce 3 Ti500	ASUS V8200
		GeForce 4 MX420	WINFAST A170TH SDR
		GeForce 4 MX440	ASUS V8170DDR
		GeForce 4 Ti4200	WINFAST A250TD/64M
		GeForce 4 Ti4400	ELSA 725DVI
		GeForce 4 Ti4600	ELSA 925ViVo
	8X	GeForce 4 Ti4200	ASUS V9280TD
		GeForce 4 MX440	ASUS V9180VS
		GeForce 4 MX4000	WinFast A180B
		GeForce FX5200	ASUS V9520 Magic
		GeForce FX5600	ELSA FX 732
		GeForce FX5700	ELSA FX 736
		GeForce FX5800	Triplex FX5800TD
		GeForce FX5900Ultra	MSI FX5900Ultra
		GeForce FX5950Ultra	ELSA FX938Ultra
SIS	8X	Xabre 200	ECS AG200E4-D32
		Xabre 200	ECS AG200T8_D64
		Xabre 400	ECS AG400T8_D64
		Xabre 400	ECS-MM AG400T8_D64

Note: *Please visit our website for the updated AGP graphics card support list : Http://www.pcchips.com/support/FAQ*

Once the AGP card is completely installed under Windows 2000 or Windows XP, the sign like this "? Video Controller" will pop up below the "Device Manager" as the following picture shows.

It is normal to see the sign as the onboard VGA card is "Disabled". Therefore, users don't have to worry about this point.



Note: *To install the system with an add-on AGP card, you must make sure to install the driver of add-on AGP card before you install the onboard VGA driver. If the onboard VGA driver has already been installed before you install the add-on AGP card, the system will set the onboard VGA as the primary graphics adapter automatically. In this situation, if you want to install the add-on AGP card, you need to remove the onboard VGA driver first, and then install the add-on AGP card and its driver.*

PCI Slot

You can install the 32-bit PCI interface expansion cards in the slots.

CNR Slot

This slot is used to insert CNR (Communications and Networking Riser) cards including LAN, Modem, and Audio functions.

Dual Monitor

In order to enable "Dual Monitor" Function, users must have "**Two Monitors"**, **"Two Graphics Devices"** (one is for AGP graphics card; the other one is for onboard VGA) and Windows 2000 or Windows XP that supports the Dual Monitor Function. Users must follow the "Dual Monitor Installation" below or visit our website at "Http://www.pcchips.com/support/FAQ" for detailed information.

Dual Monitor Installation (For Windows XP)

If the onboard VGA is first installed, and you would like to use the add-on AGP card. Please follow the installation steps 1-6. Users may go to step 4 directly if the add-on AGP card is installed first and then turned on the onboard VGA devices for " secondary display".

Step 1: Remove the Onboard VGA Driver

Go to " Control Panel"
Choose "Add or Remove Programs"
Choose "Intel® Extreme Graphics Driver"
Click "Remove"
Shut down the computer

Step 2: Install the Add-on AGP Card

Shut down the system
Install the add-on AGP card in the AGPro slot
Turn on the computer

***Note**: When you turn on the system, windows might report Found New Hardware Wizard, "Video Controller(VGA Compatible)" or "Video Controller". When you see the Found New Hardware Wizard dialogue box, DO NOT insert any disk in your CD/DVD-ROM before clicking on the "Next" button. The Windows Auto-search will not be finished till it can't search the related driver.*

Step 3: Install the Add-on AGP Card Driver

Install the add-on AGP card driver
Restart the computer

Step 4: Install the Onboard VGA Driver

Install the onboard VGA driver from our support CD to utilize Dual Monitor Function. Here is the Driver Path:
CD-ROM:\VGA\Intel845g\WIN2K&XP\Graphics\Setup.exe
Restart the computer

***Note**: If the add-on AGP card driver and onboard VGA drivers are installed, the dual-monitor display will be enabled. As soon as it is enabled, follow the instructions to view the status of the dual-monitor display or adjust the parameters of the two monitors.*

Step 5: Right click the desktop. Select "Properties"
See the picture below:

Step 6: Select "Display Properties"
Click "Settings"
Then the parameters of the two monitors can be adjusted.

Dual Monitor Installation (For Windows 2000)

If the onboard VGA is first installed, and you would like to use the add-on AGP card. Please follow the installation steps 1-6. Users may go to step 4 directly if the add-on AGP card is installed first and then turned on the onboard VGA devices for "secondary display".

Step 1: Install the Add-on AGP Card

Shut down the system
Install your add-on AGP card in the AGPro slot
Turn on the computer

Step 2: Install the Add-on AGP Card Driver

Install the add-on AGP card driver
Restart the computer

***Note**: Windows might report Found New Hardware Wizard once the system is turned on. When you see the "dialogue box" of the Found New Hardware Wizard, please click on "Cancel" and DO NOT install the onboard VGA driver.*

Step 3: Remove the Onboard VGA Driver

Go to " Control Panel"
Choose "Add or Remove Programs"
Choose "Intel® Extreme Graphics Driver"
Click "Remove" and Restart the computer

***Note**: When you turn on the system, windows might report Found New Hardware Wizard, "Video Controller(VGA Compatible)" or "Video Controller". When you see the Found New Hardware Wizard dialogue box, DO NOT insert any disk in your CD/DVD-ROM before clicking on the "Next" button. The Windows Auto-search will not be finished till it can't search the related driver.*

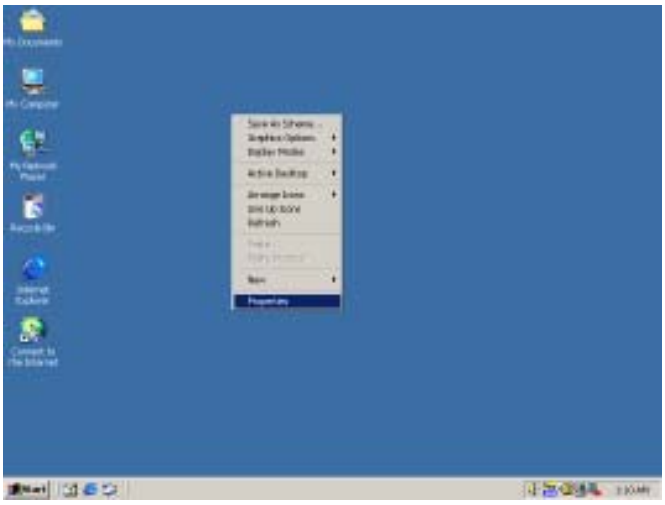
Step 4: Install the Onboard VGA Driver

Install the onboard VGA driver from our support CD to utilize Dual Monitor Function. Here is the Driver Path:
CD-ROM:\VGA\Intel845g\WIN2K&XP\Graphics\Setup.exe
Restart the computer

***Note**: If the add-on AGP card driver and onboard VGA drivers are installed, the dual-monitor display will be enabled. As soon as it is enabled, follow the instructions to view the status of the dual-monitor display or adjust the parameters of the two monitors.*

Step 5: Right click the desktop. Select "Properties"

See the picture below.



Step 6: Select "Display Properties"
Click "Settings"
Then the parameters of the two monitors can be adjusted.

MEMO

Chapter 3 BIOS Setup Utility

Introduction

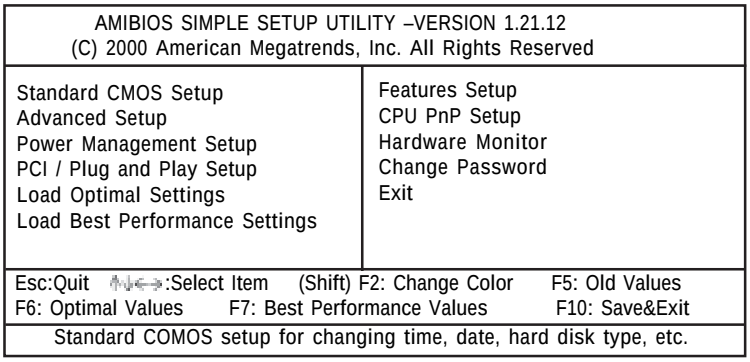
The BIOS Setup Utility records settings and information of your computer, such as date and time, the type of hardware installed, and various configuration settings. Your computer applies the information to initialize all the components when booting up and basic functions of coordination between system components.

If the Setup Utility configuration is incorrect, it may cause the system to malfunction. It can even stop your computer booting properly. If it happens, you can use the clear CMOS jumper to clear the CMOS memory which has stored the configuration information; or you can hold down the **Page Up** key while rebooting your computer. Holding down the **Page Up** key also clears the setup information.

You can run the setup utility and manually change the configuration. You might need to do this to configure some hardware installed in or connected to the motherboard, such as the CPU, system memory, disk drives, etc.

Running the Setup Utility

Every time you start your computer, a message appears on the screen before the operating system loading that prompts you to "*Hit <DEL>if you want to run SETUP*". Whenever you see this message, press the **Delete** key, and the Main menu page of the Setup Utility appears on your monitor.



You can use cursor arrow keys to highlight anyone of options on the main menu page. Press **Enter** to select the highlighted option. Press the **Escape** key to leave the setup utility. Press +/-/ to modify the selected field's values.

Some options on the main menu page lead to tables of items with installed values that you can use cursor arrow keys to highlight one item, and press **PgUp** and **PgDn** keys to cycle through alternative values of that item. The other options on the main menu page lead to dialog boxes requiring your answer Yes or No by hitting the **Y** or **N** keys.

If you have already changed the setup utility, press **F10** to save those changes and exit the utility. Press **F1** to display a screen describing all key functions. Press **F6** to install the setup utility with a set of default values. Press **F7** to install the setup utility with a set of high-performance values.

Standard CMOS Setup Page

This page displays a table of items defining basic information about your system.

```
                AMIBIOS SETUP – STANDARD CMOS SETUP
          (C) 2000 American Megatrends, Inc. All Rights Reserved

Date  (mm/dd/yyyy) : Tue Jun 08, 2004
Time  (hh/mm/ss)   : 12:41:42

                                                    LBA   Blk   PIO   32Bit
              Type  Size  Cyln  Head  WPcom  Sec   Mode  Mode  Mode  Mode
Pri  Master : Auto                                                    On
Pri  Slave  : Auto                                                    On
Sec Master : Auto                                                     On
Sec Slave  : Auto                                                     On

Floppy Drive A:  1.44 MB 31/2
Floppy Drive B:  Not Installed

Month  : Jan – Dec                                  ESC  :  Exit
   Day :  01 – 31                                   ↑↓←→:  Select Item
  Year :  1980 – 2099                               PU/PD/+/- :  Modify
                                                    (Shift)F2  :  Color
                                                    F3  :  Detect All HDD
```

Date & Time

These items set up system date and time.

IDE Pri Master/Pri Slave/Sec Master/Sec Slave

Use these items to configure devices connected to the Primary and Secondary IDE channels. To configure an IDE hard disk drive, choose *Auto*. If the *Auto* setting fails to find a hard disk drive, set it to *User*, and then fill in the hard disk characteristics (Size, Cyls, etc.) manually. If you have a CD-ROM drive, select the setting *CDROM*. If you have an ATAPI device with removable media (e.g. a ZIP drive or an LS-120), select *Floptical*.

Floppy Drive A/B

These items set up size and capacity of the floppy diskette drive(s) installed in the system.

Advanced Setup Page

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

AMIBIOS SETUP – ADVANCED SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved			
Quick Boot	Enabled	Memory Voltage Control	2.6V
1st Boot Device	IDE-0		
2nd Boot Device	Floppy		
3rd Boot Device	CD/DVD-0		
Try Other Boot Devices	Yes		
S.M.A.R.T. for Hard Disks	Disabled		
Floppy Drive Swap	Disabled		
Floppy Drive Seek	Disabled		
Password Check	Setup		
L2 Cache	Enabled		
System BIOS Cacheable	Enabled		
SDRAM Frequency	Auto		
SDRAM Timing by SPD	Enabled		
SDRAM CAS# Latency	2.5 Clocks		
SDRAM RAS# Precharge	3 Clocks	ESC:Quit	:Select Item
SDRAM RAS# to CAS# Delay	3 Clocks	F1:Help	PU/PD/+/-:Modify
SDRAM Precharge Delay	7 Clocks	F5:Old Values	(Shift)F2:Color
Hyper Threading Function	Disabled	F6:Load Optimal Values	
Spread Spectrum	Disabled	F7:Load Best Performance Values	
Auto Detect DIMM/PCI CLK	Enabled		

Quick Boot

If you enable this item, the system starts up more quickly be elimination some of the power on test routines.

1st Boot Device/2nd Boot Device/3rd Boot Device

Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.

Try Other Boot Device

If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.

S.M.A.R.T. for Hard Disks

Enable this item if any IDE hard disks support the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) feature.

Floppy Drive Swap

If you have two diskette drives installed and you enable this item, drive A becomes drive B and drive B becomes drive A.

Floppy Drive Seek

If you enable this item, your system will check all floppy disk drives at start up. Disable this item unless you are using an old 360KB drive.

Password Check

If you have entered a password for the system, use this item to determine, if the password is required to enter the Setup Utility (*Setup*) or required both at start-up and to enter the Setup Utility (*Always*).

L2 Cache

Leave these items enabled since all the processors that can be installed on this board have internal L2 cache memory.

System BIOS Cacheable

If you enable this item, a segment of the system BIOS will be copied to main memory for faster execution.

SDRAM Frequency

This item determines frequency of SDRAM memory.

SDRAM Timing By SPD

This item allows you to enable or disable the SDRAM timing defined by the Serial Presence Detect electrical.

SDRAM CAS # Latency

This item determins the operation of SDRAM memory CAS (column address strobe.) It is recommended that you leave this item at the default value. The 2T setting requires faster memory that specifically supports this mode.

SDRAM RAS# Precharge

Select the number of CPU clocks allocated for the Row Address Strobe (RAS#) signal to accumulate its charge before the SDRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

SDRAM RAS# to CAS# Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when SDRAM is written to, read from, or refreshed. Disabled gives faster performance; and Enabled gives more stable performance.

SDRAM Precharge Delay

The precharge time is the number of cycles it takes for SDRAM to accumulate its charge before refresh.

Hyper Threading Function

If your P4 CPU is not HT CPU, this item will be hidden. If your P4 CPU is HT CPU, BIOS will show this item. You can set "Disabled" or "Enabled" to control HT CPU support in O.S. Set "Enabled" to test HT CPU function.

Spread Spectrum

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

Auto Detect DIMM/PCI Clock

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Memory Voltage Control

Use this item to adjust the voltage of the memory.

Power Management Setup Page

This page sets some parameters for system power management operation.

AMIBIOS SETUP – POWER MANAGEMEMT SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved		
ACPI Aware O/S	Yes	
Power Management	Enabled	
Suspend Time Out(Minute)	Disabled	
Resume On RTC Alarm	Disabled	
RTC Alarm Date	15	
RTC Alarm Hour	12	
RTC Alarm Minute	30	ESC:Quit :Select Item
RTC Alarm Second	30	F1 :Help PU/PD/+/-:Modify
LAN/Ring Power On	Disabled	F5 :Old Values (Shift)F2:Color
Keyboard Power On	Disabled	F6 :Load Optimal Values
Specific Key for PowerOn	N/A	F7 :Load Best Performance Values

ACPI Aware O/S

This item supports ACPI (Advanced Configuration and Power management Interface). Use this item to enable or disable the ACPI feature.

Power Management

Use this item to enable or disable a power management scheme. If you enable power management, you can use the items below to set the power management operation. Both APM and ACPI are supported.

Suspend Time Out (Minute)

This sets the timeout for Suspend mode in minutes. If the time selected passes without any system activity, the computer will enter power-saving Suspend mode.

Resume On RTC Alarm / Date / Hour / Minute / Second

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

LAN/Ring Power On

The system can be turned off with a software command. If you enable this item, th system can automatically resume if there is an incoming call on the Modem/Ring, or traffic on the network adapter. You must use an ATX power supply in order to use this feature.

Keyboard Power On

If you enable this item, you can turn the system on and off by pressing password on the keyboard. You must use an ATX power supply in order to use this feature.

Specific Key for PowerOn

When the Power On function is set to Password, use this item to set the password.

PCI / Plug and Play Setup Page

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.

AMIBIOS SETUP – PCI / PLUG AND PLAY SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved		
Primary Graphics Adapter	AGPro	
OnChip VGA Mode Select	1MB	
Allocate IRQ to PCI VGA	Yes	
PCI IDE BusMaster	Disabled	
		ESC:Quit ↑↓←→:Select Item F1:Help PU/PD/+/-:Modify F5:Old Values (Shift)F2:Color F6:Load Optimal Values F7:Load Best Performance Values

Primary Graphics Adapter

This item indicates one of the three items; AGPro, OnChip VGA or PCI can be the primary graphics adapter.

OnChip VGA Mode Select

This item provides the VGA mode with four options of 1MB, 8MB, Disabled or 512KB. We recommend you leave this item at the default value.

Allocate IRQ to PCI VGA

If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

PCI IDE BusMaster

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Load Optimal Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of fail-safe default values. These default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.

Note: *It is highly recommended that users enter this option to load optimal values for accessing the best performance.*

Load Best Performance Settings

If you select this item and press **Enter** a dialog box appears. If you press **Y**, and then **Enter**, the Setup Utility loads a set of best-performance default values. These default values are quite demanding and your system might not function properly if you are using slower memory chips or other low-performance components.

Features Setup Page

This page sets up some parameters for peripheral devices connected to the system.

AMIBIOS SETUP – FEATURES SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	Enabled	
OnBoard Serial Port A	3F8/COM1	
OnBoard IR Port	Disabled	
OnBoard Parallel Port	Auto	
Parallel Port Mode	ECP	
EPP Version	N/A	
Parallel Port IRQ	Auto	
Parallel Port DMA	Auto	
OnBoard IDE	Both	
Audio Device	Auto	ESC:Quit ↑↓←→:Select Item
Modem Device	Auto	F1 :Help PU/PD/+/- : Modify
Ethernet Device	Enabled	F5 :Old Values (Shift)F2 : Color
OnBoard USB Function	Enabled	F6 :Load Optimal Values
USB Function For DOS	Disabled	F7 :Load Best Performance Values
ThumbDrive Support For DOS	Disabled	

OnBoard FDC

This item enables or disables the onboard floppy disk drive interface.

OnBoard Serial Port A

These items enable or disable the onboard COM1 serial port, and to assign a port address.

OnBoard IR Port

This item enables or disables the Infrared port, and assigns a port address. If you select a specific address, the resources are assigned to the IR port, and you can use these items below to determine the operation of the IR port.

OnBoard Parallel Port

This item enables or disables the onboard LPT1 parallel port, and to assign a port address. The Auto setting will detect and available address.

Parallel Port Mode

This item sets the parallel port mode. You can select Normal (Standard Parallel Port), Bi-Dir(Bi-Directional), EPP (Enhanced Parallel Port), or ECP(Extended Capabilities Port).

EPP Version

This item is for setting the EPP version. You can select version 1.7 or version 1.9.

Parallel Port IRQ
This item assigns IRQ to the parallel port.

Parallel Port DMA

This item assigns a DMA channel to the parallel port.

OnBoard IDE

This item enables or disables the onboard IDE channel.

Audio Device

This item enables or disables the AC'97 audio chip.

Modem Device

This item enables or disables the MC'97 modem chip.

Ethernet Device

This item enables or disables the Ethernet LAN.

OnBoard USB Function

Enable this item if you plan to use the USB ports on this motherboard.

USB Function For DOS

Enable this item if you plan to use the USB ports on this motherboard in a DOS environment.

ThumbDrive Support For DOS

Enable this item to make a small portion of memory storage device for the USB ports.

CPU PnP Setup Page

This page helps you manually configure the motherboard for the CPU. The system will automatically detect the type of installed CPU and make the appropriate adjustments to the items on this page.

AMIBIOS SETUP – CPU PnP SETUP (C) 2000 American Megatrends, Inc. All Rights Reserved		
CPU Type	INTEL P4	
CPU Core Voltage	1.536V	
CPU Ratio Selection	20.0x	
CPU Speed	100Mhz	
		ESC:Quit ↑↓←→ :Select Item F1 :Help PU/PD/+/- : Modify F5 :Old Values (Shift)F2 : Color F6 :Load Optimal Values F7 :Load Best Performance Values

CPU Type/ Core Voltage/Ratio /Speed
These items show the type, core voltage, ratio and speed of CPU installed in your system.

Hardware Monitor Page

This page sets up some parameters for the hardware monitoring function of this motherboard.

AMIBIOS SETUP –HARDWARE MONITOR
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*** System Hardware ***	
Vcore	1.536 V
Vcc3.3V	3.232 V
Vcc	5.085 V
+12V	11.437V
SB5V	4.848 V
VBAT	3.120 V
Chassis Fan Speed	0 RPM
CPU Fan Speed	3309 RPM
System Temperature	35°C/95°F
CPU Temperature	43°C/109°F

ESC:Quit :Select Item
F1:Help PU/PD/+/-:Modify
F5:Old Values (Shift)F2:Color
F6:Load Optimal Values
F7:Load Best Performance Values

CPU / Power/System Temperature

These items display CPU, NB and system temperature measurement.

FANs & Voltage Measurements

These items indicate cooling fan speeds in RPM and the various system voltage measurements.

Change Password

If you highlight this item and press Enter, a dialog box appears that you can enter a Supervisor password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. There will be the second dialog box asking you to retype the password for confirmation. Press Enter after you have retyped it correctly. Then, the password is required for the access to the Setup Utility or for it at start-up, depending on the setting of the Password Check item in Advanced Setup.

Exit

Highlight this item and press Enter to save the changes that you have made in the Setup Utility configuration and exit the program. When the Save and Exit dialog box appears, press Y to save and exit, or press N to exit without saving.

Chapter 4 Software & Applications

Introduction

This chapter describes the contents of the support CD-ROM that comes with the motherboard package.

The support CD-ROM contains all useful software, necessary drivers and utility programs to properly run our products. More program information is available in a README file, located in the same directory as the software.

To run the support CD, simply insert the CD into your CD-ROM drive. An Auto Setup screen automatically pops out, and then you can go on the auto-installing or manual installation depending on your operating system.

If your operating system is Windows 98/ME/2000/XP, it will automatically install all the drivers and utilities for your motherboard; if Windows NT or manual installation, please follow the instructions described as the Installing under Windows NT or Manual Installation section.

Installing Support Software

1 Insert the support CD-ROM disc in the CD-ROM drive.
2 When you insert the CD-ROM disc in the system CD-ROM drive, the CD automatically displays an Auto Setup screen.
3 The screen displays three buttons of **Setup**, **Browse CD** and **Exit** on the right side, and three others **Setup**, **Application** and **ReadMe** at the bottom. Please see the following illustration.

The **Setup** button runs the software auto-installing program as explained in next section.

The **Browse CD** button is a standard Windows command that you can check the contents of the disc with the Windows 98 file browsing interface.

The **Exit** button closes the Auto Setup window. To run the program again, reinsert the CD-ROM disc in the drive; or click the CD-ROM driver from the Windows Explorer, and click the Setup icon.

The **Application** button brings up a software menu. It shows the bundled software that this mainboard supports.

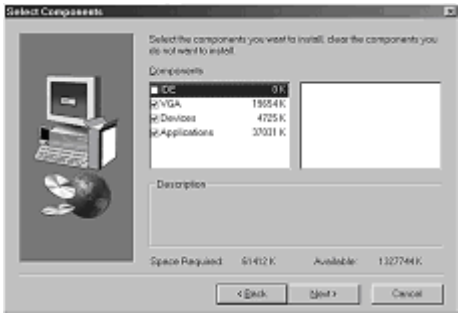
The **ReadMe** brings you to the Install Path where you can find out path names of software driver.

Auto-Installing under Windows 98/ME/2000/XP

If you are under Windows 98/ME/2000/XP, please click the **Setup** button to run the software auto-installing program while the Auto Setup screen pops out after inserting the support CD-ROM:

1 The installation program loads and displays the following screen. Click the **Next** button.

2 Select the items that you want to setup by clicking on it (the default options are recommended). Click the **Next** button to proceed.



3 The support software will automatically install.

Once any of the installation procedures start, software is automatically installed in sequence. You need to follow the onscreen instructions, confirm commands and allow the computer to restart as few times as needed to complete installing whatever software you selected. When the process is finished, all the support software will be installed and start working.

Installing under Windows NT or Manual Installation

If you are under Windows NT, the auto-installing program doesn't work out; or you have to do the manual installation, please follow this procedure while the Auto Setup screen pops out after inserting the support CD-ROM:

1. Click the **ReadMe** to bring up a screen, and then click the Install Path at the bottom of the screen.
2. Find out your mainboard model name and click on it to obtain its correct driver directory.
3. Install each software in accordance with the corresponding driver path.

Bundled Software Installation

All bundled software available on the CD-ROM is for users' convenience. You can install bundled software as follows:

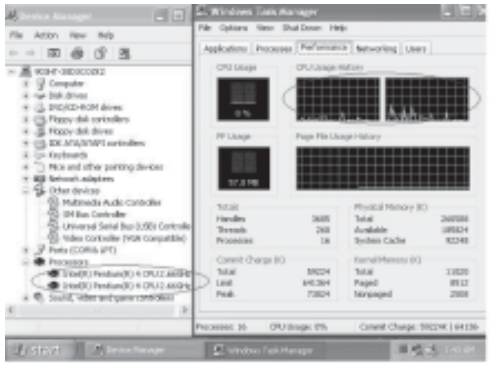
1. Click the **Application** button while the Auto Setup screen pops out after inserting the support CD-ROM.
2. A software menu appears. Click the software you want to install.
3. Follow onscreen instructions to install the software program step by step until finished.

Hyper-Threading CPU

You must update BIOS to initiate BIOS Hyper-Threading Function and use HT CPU function under WinXP Operating System; if not, please disable this option.

- When BIOS detects the HT CPU, it shows the "Hyper-Threading Function (default Disabled)" option, which you must set Enabled if you want to test HT CPU function. If there is no HT CPU, this option is hidden and default Disabled.

- You must re-install WINXP to activate the HT CPU function.



While you are in Windows Task Manager, please push down ctrl+Alt Del keys. A dual CPU appears in the CPU Usage History&Device Manager under WinXP.

***Note**: Hyper-Threading Function only works under WINXP Operating System; therefore, disable it under other Operating System.*
