Trademarks

IBM, VGA, and PS/2 are registered trademarks of International Business Machines.
Intel, Pentium/II/III, Pentium 4, Celeron and MMX are registered trademarks of Intel Corporation.
Microsoft, MS-DOS and Windows 98/ME/NT/2000/XP are registered trademarks of Microsoft Corporation.
PC-cillin is a trademark of Trend Micro Inc.
AMI is a trademark of American Megatrends Inc.
It has been acknowledged that other brands or product names in this manual are trademarks or the properties of their respective owners.

T10 Series, V1.2B
I848P/December 2003

Table of Contents

Static Electricity Precautions

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

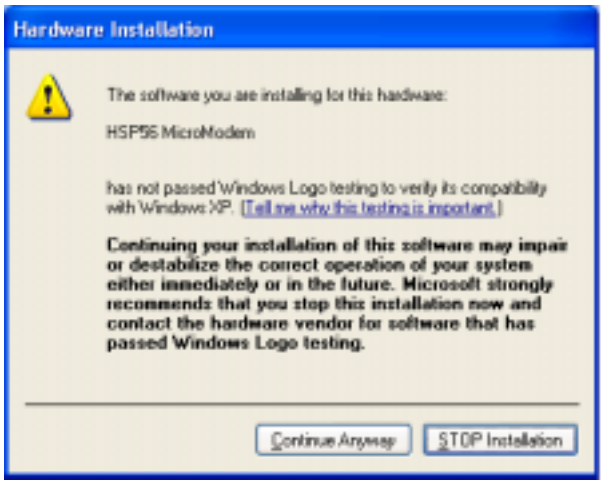
1. Don’t take this mainboard and components out of their original static-proof package until you are ready to install them.
2. While installing, please wear a grounded wrist strap if possible. If you don’t have a wrist strap, discharge static electricity by touching the bare metal of the system chassis.
3. Carefully hold this mainboard by its edges. Do not touch those components unless it is absolutely necessary. Put this mainboard on the top of a 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 mainboard 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. Click the "Continue Anyway" button and go ahead the installation.



Features & Checklist Translations

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

Features

Processeur	**Prise en charge du Processeur Socket-478** • Supporte le CPU Intel Pentium 4 series avec la Technologie **Hyper Threading** • Supporte un Bus Avant allant jusqu'à **800 MHz** La technologie "Hyper-Threading" permet au système d'exploitation de penser qu'il est connecté à deux processeurs, permettant d'exécuter deux threads en parallèle, à la fois sur des processeurs 'logiques' dans le même processeur physique.
Chipset	Ce chipset comporte **Intel 848P Northbridge** et **Intel 82801EB I/O Controller Hub (ICH5)** conformément à une architecture novatrice et dimensionnable avec une fiabilité et des performances prouvées. • Support d'Interface d'Hôte: Fréquences FSB 64 bits de 400 MHz (horloge de bus de 100 MHz), 533 MHz (horloge de bus de 133 MHz), et 800 MHz (horloge de bus de 200 MHz); BW maximum théorique de 6.4 Go/s, Technologie Hyper Threading • Support de Contrôleur de Mémoire Système: Interface de mémoire DDR à Canal simple (largeur de 64 bits), jusqu'à 2Go de mémoire système; maximum de deux DIMM DDR, simple face et/ou double face • Support d'Interface AGP: AGP 3.0 avec transferts de données AGP 4X/8X et fast writes 4X/8X , respectivement. • Interfact de Bus PCI supporte les Spécifications PCI Révision 2.3 • Contrôleur LAN intégré: Conforme WfM 2.0 et IEEE802.3 • Contrôleur d'Hôte ATA Série intégré: Opération DMA indépendante et Vitesse de Transfert allant jusqu'à 1.5 Gb/s (150 Mo/s)
Support de Mémoire	• Deux logements DIMM 184 broches pour modules mémoire • Supporte le bus mémoire DDR**400** MHz • La mémoire maximum installée est 2Go
AC97 Audio Codec	• L'architecture matérielle 6-CH permet au southbridge multi-canal de lire l'audio 6CH • Compatible Intel® AC'97 (REV. 2.2), conforme aux exigences de Microsoft® PC2001 • Tampon d'écouteur intégré et PLL interne, le dernier cristal supplémentaire d'économie • Lignes d'entrée/ sortie arrière partageant la même prise ; Centre/basse partageant la prise MIC • Support de SORTIE S/PDIF numérique • CRL® 3D: HRTF basé BS3D compatible moteur audio

Logements d'Extension	• Six slots PCI 32 bits (Cinq Master PCI 1~5 et Un Slave PCI6) • Un logement 8x AGP • Un logement CNR (Communications and Networking Riser)
IDE Interne	• Deux Connecteurs IDE • Prend en Charge les modes PIO (Entrée/Sortie Programmable) et DMA (Accès Direct à la Mémoire) • Supporte maîtrise de bus Ultra DMA IDE avec vitesse de transfert de 33/66/100/**133** Mo/sec
ATA Série	• Deux ATA Série connecteurs • Vitesse de transfert supérieure au meilleur ATA (~150 Mo/s) avec extensibilité aux vitesses supérieures • Comptage de broche faible pour l'hôte et les périphériques
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 parallèle • Huit ports USB 2.0 (quatre ports fond de panier, connecteurs USB internes USB2/USB3 offrant quatre ports supplémentaires) • Prises audio pour microphone, ligne d'entrée et ligne de sortie
LAN Fast Ethernet (optionnel)	• **LAN Gigabit Interne:** – **Emetteur-récepteur intégré 10/100/1000** – Auto Négotiation avec capacité de page Suivante – Supporte le contrôle de flux en Full Duplex (IEEE 802.3x), et marquage VLAN IEEE 802.1Q – Entièrement conforme à IEEE 802.3, IEEE 802.3u, IEEE 802.3ab • **Onboard 10/100Mbps Ethernet LAN:** – **Fonctionnement 10 Mb/s et 100 Mb/s** – Fast Ethernet MAC intégré, puce physique, et émetteur-récepteur sur une seule puce – Supporte l'auto-négociation N-way en 10Mb/s et 100Mb/s – Supporte la gestion d'alimentation ACPI – Contrôle de Flux en Full Duplex (IEEE 802.3x) et capacité Half/Full duplex
USB 2.0	• Conforme aux Spécifications de Bus Série Universel Révision 2.0 • Conforme aux Spécifications d'interface de Contrôleur d'Hôte Amélioré de Intel Révision 0.95 • Conforme aux Spécifications d'Interface de Contrôleur d'Hôte Universel Révision 1.1 • Le périphérique multifonction PCI consiste en deux noyaux de Contrôleur d'Hôtes UHCI pour signalisation pleine/faible vitesse et un noyau de Contrôleur d'Hôtes EHCI pour signalisation haute vitesse • Le hub racine consiste en 4 ports de face en aval avec émetteurs-récepteurs de couche physique intégrés partagés par le Contrôleur d'Hôte UHCI et EHCI • Support des Spécifications d'Interface de Gestion d'Alimentation de Bus PCI version 1.1 • Support hérité pour tous les ports face à l'aval.

Certaines spécifications matérielles et éléments de logiciels peuvent être modifiés sans avertissement.

Checkliste

Die Verpackung Ihres Mainboards enthält folgende Teile:

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

Ausstattung

Prozessor	**Unterstütz Socket-478-Prozessoren** • Unterstützung für Intel Pentium 4-CPUs mit "**Hyper-Threading**"-Technologie • Unterstützung von bis zu **800 MHz** Front-Side Bus "Hyper-Threading"-Technologie läßt das Betriebssystem glauben, es sei an zwei Prozessoren angeschlossen, was zwei parallele Threads auf separaten 'logischen' Prozessoren im selben physischen Prozessor erlaubt.
Chipsatz	Dieser Chipsatz besteht aus einer **Intel 848P Northbridge** und einer **Intel 82801EB I/O Controller Hub (ICH5).** Die Chipsatzarchitektur ist in einem innovativen und skalierbaren Design gehalten und verspricht sowohl Zuverlässigkeit als auch Leistungsstärke. • Host-Unterstützungsschnittstelle: 64-Bit FSB auf Frequenzen von 400 MHz (100 MHz Bus-Uhr), 533 MHz (133 MHz Bus-Uhr), und 800 MHz (200 MHz Bus-Uhr); maximale theoretische Bandbreite von 6.4 GB/s, Hyper Threading Technology • Unterstützung der Speichersystemkontrolle: Ein-Kanal (64-Bit-Breite) DDR-Speicherschnittstelle, bis zu 2GB Systemspeicher; maximal zwei DDR DIMMs, einzelseitig und/oder doppelseitig • Unterstützung der AGP-Schnittstelle: AGP 3.0 mit 4X/8X AGP Datenübertragungen und 4X/8X Schnellschreibungen, beziehungsweise. • Die PCI Bus Schnittstelle unterstützt Spezifikationen von PCI Revision 2.3 • Integrierter LAN Controller: gemäß WfM 2.0 und IEEE802.3 • Integrierter Serien ATA Host Controller: Unabhängige DMA Operation and Datenübertragungsrate bis zu 1.5 Gb/s (150 MB/s)
Speicherunterstützung	• Zwei 184-pin DIMM Steckplätze für DDR Speichermodule • Unterstützung für DDR**400**MHz Speicherbus • Maximal auf 2GB Speicher erweiterbar
AC97 Audio Codec	• 6-CH Hardware-Architektur erlaubt einen Multikanal south bridge für die 6CH Tonwiedergabe • Kompatibel mit Intel® AC'97 (REV. 2.2), gemäß Microsoft® PC2001 Richtlinien • Eingebauter Kopfhörer-Puffer und interner PLL, letzterer spart das zusätzliche Kristall. • Line-in/rear out (hinterer Ausgang) benutzen die gleiche Buchse; Zentrum/Bass benutzen die gleiche MIC Buchse • Digitale S/PDIF OUT Unterstützung • CRL® 3D: BS3D kompatibler Audio Motor, basierend auf HRTF
Erweiterungssteckplätze	• Sechs 32-Bit PCI-Steckplätze (Fünf Master PCI 1~5 und Ein Slave PCI6) • Ein 8xAGP-Steckplatz

	• Ein CNR-Steckplatz
Onboard IDE	• Zwei IDE-Header • Unterstützt die Modi PIO (Programmable Input/Output) und DMA (Direct Memory Access) • Unterstützung für IDE Ultra DMA-Busmastering mit Transferraten von 33/66/100/**133** MB/Sek
Serial ATA	• Zwei Serial ATA Headers • Datentransferrate übertrifft beste ATA-Werte (~150 MB/Sek.); höhere Transferraten möglich • Low Pin Count (LPC) für Host und Geräte
Onboard I/O Ports	Das Mainboard verfügt über einen kompletten Satz von I/O-Schnittstellen und Anschlüssen: • Zwei PS/2-Steckplätze für Maus und Tastatur yboard • Ein serieller Steckplatz • Ein paralleler Steckplatz • Acht USB2.0-Ports (vier Ports auf der Rückseite; die Onboard-USB-Header USB2/USB3 bieten vier zusätzliche USB-Ports). • Audioanschlüsse für Mikrofon, line-in und line-out
Fast Ethernet LAN (optional)	• **Onboard Gigabit LAN:** – **Integrierter 10/100/1000 Transceiver** – Selbstverhandlung mit “Next page”- (nächste Seite) Kapazität – Unterstützt eine Full Duplex Flußkontrolle (IEEE 802.3x), und IEEE 802.1Q VLAN-Markierung – In Übereinstimmung mit IEEE 802.3, IEEE 802.3u, IEEE 802.3ab • **Onboard 10/100Mbps Ethernet LAN:** – **10 Mb/s und 100 Mb/s Betrieb** – Integrierter Fast Ethernet MAC, physikalischer Chip und Transceiver in einem einzigen Chip – Unterstützt 10Mb/s und 100Mb/s N-way Auto-Verhandlung – Unterstüzt ACPI Versorgungs-Betriebssystem – Fließende Full Duplex Kontrolle (IEEE 802.3x) und halbe/Full duplex Kapazität
USB 2.0	• Entspricht Universal Serial Bus-Spezifikation, Revision 2.0 • Entspricht Intels Enhanced Host Controller Interface-Spezifikation, Revision 0.95 • Entspricht Universal Host Controller Interface -Spezifikation Revision 1.1 • PCI-Multifunktionsgerät besteht aus zwei UHCI Host Controller-Kernen für Signalübertragung bei voller und niedriger Geschwindigkeit sowie einem EHCI Host Controller-Kern für Hochgeschwindigkeits- Signalübertragung • Root Hub besteht aus 4 Downstream-Ports mit integrierten Physical Layer-Überträgern für gemeinsame Nutzung durch UHCI und EHCI Host Controller • Unterstützt PCI-Bus Power Management Interface , Spezifikation Release 1.1 • Legacy-Unterstützung für alle Downstream-Ports

Bestimmte Hardwarespezifikationen und Teile der Softwareausstattung können ohne weitere Ankündigung abgeändert werden.

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

Processor	**Dotata di Socket 478 per Processori** • Supporta CPU Intel Pentium serie 4 con tecnologia Hyper Threading • Supporta fino a **800 MHz** Front Side Bus La tecnologia **Hyper-Threading** permette al sistema operative di essere dotato di due procressori. Permettendovi di effettuare due operazioni in parallelo, entrambe su processori 'logici' separati all'interno dello stesso processore fisico.
Chipset	In accordo ad una architettura scabile e innovative sono presenti nel chipset il **Northbridge Intel 848P** e **Intel 82801EB I/O Controller Hub (ICH5)**. • Supporto Interface Host: Frequenze FSB a 64bit a 400 MHz (clock del bus a 100 MHz), 533 MHz (clock del bus a 133 MHz) ed 800 MHz (clock del bus a 200 MHz); BW massima teorica pari a 6.4 GB/s, supporto tecnologia Hyper Threading • Controller di Memoria di Sistema: Interfaccia DDR a canale singolo (64 bit), Fino a 2GB di memoria di sistema; supporto Massimo di due DIMM DDR, single-sided e/o double-sided • Supporto Interfaccia AGP: AGP 3.0 con trasferimento dati AGP 4X/8X e fast writes 4X/8X. • Interfaccia PCI integrata: supporto delle specifiche PCI Rev. 2.3 • Interfaccia LAN integrata: supporto delle specifiche WfM 2.0 e IEEE802.3 • Controller Host Serial ATA intergrata: Operazioni DMA indipendente e trasferimento dati Massimo fino a 1.5 Gb/s (150 MB/s)
Memory Support	• Due slot DIMM a 184 pin per moduli di memoria DDR • Supporta bus di memoria DDR**400** MHz • Quantità massima di memoria installabile, 2GB
AC97 Audio Codec	• Architettura hardware 6-CH che permette l'utilizzo del "multi-channel south bridge" per la riproduzione 6CH • Compatibilità con lo standard Intel® AC'97 (REV. 2.2) secondo i requisiti Microsoft® PC2001 • buffer cuffie integrato e PLL interno, l'ultimo eliminando la necessità di cristalli ulteriore • Line-in/rear out condividono lo stesso jack; • MIC e Center/bass condividono lo stesso jack • Supporto S/PDIF OUT Digitale • CRL® 3D: HRTF basata su un motore audio compatibile con lo standard BS3D
Slot di espansione	• Sei slot PCI a 32 bit (Cinque Master PCI 1~5 e Una Slave PCI6) • Una slot AGP 8x • Una slot CNR

Onboard IDE	• Due connettori IDE • Supporto della modalità PIO (Programmable Input/Output) e DMA (Direct Memory Access) • Supporto per le modalità Bus Mastering e Ultra DMA ATA 33/66100/**133** MB/sec
ATA Seriale	• Due connettori Serial ATA • Altissima velocità di trasferimento dati ATA (~150 MB/s) con la possibilità di scalabilità della velocità stessa verso valori piú alti • Pin Count ridotto sia per l'host sia per le periferich
Onboard I/O Ports	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 parallela • Otto porte USB2.0 (Quattro presenti nella parte posteriore, connettori USB integrati nella scheda madre per l'aggiunta di altre 4 porte USB2/USB3 • Jack audio per microfono, ingresso linea e uscita linea
Fast Ethernet LAN (opzionale)	• **LAN Gigabit integrata:** – **transceiver 10/100/1000 Integrato** – Negoziazione automatica con capacità Next page – Controllo flusso dati Full Duplex (IEEE 802.3x) e tagging VLAN IEEE 802.1Q – Supporto degli standard IEEE 802.3, IEEE 802.3u e IEEE 802.3ab • **Onboard 10/100Mbps Ethernet LAN:** – **Operazioni 10 Mb/s a 100 Mb/s** – Fast Ethernet MAC integrata, chip fisico e transceiver nello stesso chip – Supporto della negoziazione automatica N-way a 10Mb/s e 100Mb/s – Supporto di gestione del consumo energetico ACPI – Controllo di flusso Full Duplex (IEEE 802.3x) e Half/Full
USB 2.0	• Conforme alle specifiche Universal Serial Bus 2.0 • Conforme alle specifiche Intel Enhanced Host Controller revisione 0.95 • Conforme alle specifiche Universal Host Controller Interface revisione 1.1 • Il dispositivo PCI multifunzione consiste di due schede di controllo **UHCI** per la trasmissione segnali pieno/basso e una scheda di controllo **EHCI** per la trasmissione segnali ad alta velocità. • Il porto hub di base consiste di 4 porte downstream con ricetrasmittenti integrati nel layer fisico condivisi dalla scheda di controllo interfaccia **UHCI** e **EHCI** • Supporto per interfaccia risparmio energia bus PCI specifiche release 1.1 • Supporto per tutte le porte downstream precedenti

Alcune specifiche hardware ed elementi software sono soggetti a variazioni senza preavviso.

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

Processor	**Soporte de Procesador Socket-478** • Soporta CPU de Intel Pentium 4 con la Tecnología Hyper Threading • Soporta hasta Bus de Lado Frontal de **800 MHz** La tecnología "Hyper-Threading" habilita el sistema operativo en pensar que está conectado a dos procesadores, que permite dos hilos a correr en paralelo, ambos en procesadores 'lógicos' dentro del mismo procesador físico.
Chipset	Hay **Intel 848P Northbridge** y **Intel 82801EB I/O Controller Hub (ICH5)** en este chipset en confomidad con una arquitectura innovadora y escalable con fiabilidad y rendimiento comprobados. • Soporte de Interfaz Anfitrión: 64-bit FSB en frecuencias de 400 MHz (reloj de bus en 100 MHz), 533 MHz (reloj de bus en 133 MHz), y 800 MHz (reloj de bus en 200 MHz); ancho de banda teórica máxima de 6.4 GB/s, Hyper Threading Technology (Tecnología de Híper Hilado) • Soporte de Controlador de Memoria de Sistema: Canal Singular (ancho de 64-bits) interfaz de memoria DDR, Hasta memoria de sistema de 2GB; máximo de dos DDR DIMMs, lado singular y/o lado doble • Soporte de Interfaz AGP: AGP 3.0 con transferencias de datos en 4X/8X AGP y escritura rápida en 4X/8X, respectivamente. • Interfaz de Bus PCI: soporta la especificación PCI Revisión 2.3 • Controlador LAN Integrado: Conformidad de WfM 2.0 y IEEE802.3 • Controlador Anfitrión Serial Integrado: Operación DMA independiente e Índice de Transferencia de Datos hasta 1.5 Gb/s (150 MB/s)
Soporte de Memoria	• Dos ranuras 184-pin DIMM para módulos de memoria DDR • Soporta DDR**400** MHz • Memoria máxima instalada es 2GB
AC97 Audio Codec	• Arquitectura de hardware 6-CH permite south bridge de multicanal para reproducir sonido 6CH • Compatible con Intel® AC'97 (REV. 2.2), satisface los requisitos de Microsoft® PC2001 • Buffer de audífono incorporado y PLL interno, éste último ahorra el cristal adicional • Line-in/salida trasera comparten la misma clavija; Centro/bajo comparten la clavija MIC • Soporte S/PDIF OUT digital • CRL® 3D: HRTF basado del motor de sonido compatible con BS3D
Ranuras de Expansión	• Seis ranuras 32-bit PCI (Cinco Master PCI 1~5 y Una Slave PCI6) • Una ranura 8xAGP • Una ranura CNR

IDE Abordos	• Dos conectores IDE • Soporta modos PIO (Entrada/Salida Programable/Programmable Input/Output) y modos DMA (Acceso de Memoria Directo/Direct Memory Access). • Soporta mastering de bus IDE Ultra DMA con índices de transferencia de 33/66/100/**133** MB/sec
ATA Serial	• Dos conectores Serial ATA • Índice de transferencia que excede el mejor ATA (~150 MB/s) con escalabilidad a índices superiores • Cuenta de pin baja para ambos anfitrión y dispositivos
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 paralelo • Ocho puertos USB2.0 (cuatro puertos de panel trasero, conectores USB abordo USB2/USB3 que provee cuatro puertos extras • Clavijas de sonido para micrófono, entrada y salida de línea
Ethernet LAN Rápido (optional)	• **Gigabit LAN Abordo:** – **Transreceptor 10/100/1000 integrado** – Auto-Negociación con capacidad Next page(Próxima página) – Soporta control de flujo Full Duplex (IEEE 802.3x), y marcación IEEE 802.1Q VLAN – Conformidad total con IEEE 802.3, IEEE 802.3u, IEEE 802.3ab • **Onboard 10/100Mbps Ethernet LAN:** – **Operación 10 Mb/s y 100 Mb/s** – Fast Ethernet MAC integrado, chip fisico, y transceptor en un solo chip – Soporta N-way auto-negociación 10Mb/s y 100Mb/s – Soporta administración de suministro ACPI – Control de Flujo Full Duplex (IEEE 802.3x) y capacidad Medio/Full duplex
USB 2.0	▪ Conforme con la Especificación de Bus Serial Universal Revisión 2.0 ▪ Conforme con Controlador Anfitrión Reforzado de Intel Interface Specification Revision 0.95 ▪ Conforme con la Especificación de Interfaz de Controlador Anfitrión Universal Revisión 1.1 ▪ Dispositivo PCI multi-función se consiste de dos centros de Controlador Anfitrión UHCI para señalización de velocidad completa/baja y un centro de Controlador Anfitrión EHCI para señalización de alta velocidaa ▪ Root hub consiste de 4 puertos que miran hacia abajo con transceptores de capa física integrado compartido por Controlador Anfitrión UHCI y EHCI ▪ Soporta Especificación de Interfaz de Administración de Energía de BUS PCI versión 1.1 ▪ Soporte de legado para todos los puetos que miran hacia abajo

Algunas especificaciones de hardware e ítems de software son sujetos a cambio sin aviso previo .

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

Processador	**Suporte do Processador Socket-478** • Suporta CPU série **Intel Pentium 4** com Tecnologia **Hyper Threading** • Suporta até **800 MHz** Front-Side Bus Tecnologia Hyper-Threading que permite o sistema operador a pensar que ele está conectado em dois processadores, fazendo com que duas tranças operem em paralelo, ambas em dois processadores "lógicos"separdos dentro do mesmo processador físico.
Chipset	Conta com **Intel848P Northbridge** e **Intel 82801EB I/O Controller Hub (ICH5)** neste chipset, de acordo com uma arquitectura inovadora e escalável com um nível de confiança e desempenho comprovado. • Suporte Host Interface: 64-bit FSB freqüência de 400 MHz (100 MHz relõgio bus), 533 MHz (133 MHz relógio bus), e 800 MHz (200 MHz relógio bus); teoria máxima BW de 6.4 GB/s, Tecnologia Hyper de Entrelaçamento • Suporte do Controlador do Sistema de Memória: Canal Simples (64-bits de largura) interface de memória DDR, Até 2GB de sistema de memória; máximo dois DDR DIMMs, simples e/ou duplo • Suporte de Interface AGP: AGP 3.0 com 4X/8X AGP transferência de dado e 4X/8X fast writes, respectivamente. • PCI Bus Interface: suporta Especificação PCI Revisão 2.3 • Controlador de LAN Intergrado: WfM 2.0 e IEEE802.3 Complacente • Controlador de Host Serial ATA: Operação Independente DMA e Taxa de Transferência de Dados até 1.5 Gb/s (150 MB/s)
Suporte de memória	• Dois sockets DIMM com 184 pinos para módulos de memória DDR • Suporta bus de memória DDR**400** MHz • A memória máxima instalada é de 2GB
AC97 Audio Codec	• Arquitetura 6-CH hardware permite que a ponte sul de canais múltiplos reapresente o áudio 6CH • Intel® AC'97 (REV. 2.2) compatível, de acordo com os requerimentos do Microsoft® PC2001 • Buffer de fone de ouvido embutido e PLL interno, o último podendo salvar cristais adicionais • Line-in/rear out usam a mesma tomada, Center/bass usam a mesma tomada de MIC • Suporte Digital S/PDIF OUT • CRL® 3D: HRTF baseado em engenho BS3D áudio compatível
Slots de expansão	• Seis slots PCI de 32 bit (Cinco Master PCI 1~5 e Um Slave PCI6) • Um slot AGP8x • Um slot CNR

IDE na placa	• Dois conectores IDE • Suporta modos PIO (Input/Output Programável) e DMA (Direct Memory Access) • Suporta IDE Ultra DMA bus mastering com razão de transferência de 33/66/100/**133** MB/sec
Série ATA	• Dois conectores Série ATA • Razão de transferência excedendo o melhor ATA (~150 MB/s) com escalabilidade para razões mais altas • Contagem baixa de pin para ambos os dispositivos e host
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 paralela • Oito portes USB2.0 (quatro portes traseiros, conectores USB embutidos USB2/USB3 fornecendo quatro portes extras • Jacks audio para microfone, line-in e line-out
Fast Ethernet LAN (optional)	• **LAN Onboard Gigabit:** – **Transreceptor integrado 10/100/1000** – Auto-Negociação com capacidade Next page (Próxima página) – Suporta controle de fluxo Full Duplex (IEEE 802.3x), e alongamento IEEE 802.1Q VLAN – Totalmente complacente com IEEE 802.3, IEEE 802.3u, IEEE 802.3ab • **Onboard 10/100Mbps Ethernet LAN:** – **Operação 10 Mb/s e 100 Mb/s** – Fast Ethernet MAC integrado, chipe físico e transreceptor em um único chipe – Suporta auto-negociação N-way de 10Mb/s e 100Mb/s – Suporta gerenciamento de força ACPI – Controle de Fluxo Duplex Completo (IEEE 802.3x) e capacidade duplex Half/Full (Parcial/Total)
USB 2.0	• Compatível com Universal Serial Bus Revisão 2.0 da especificação • Compatível com controlador Enhanced Host da Intel Revisão 0.95 da especificação da interface • Compatível com controlador Universal Host Revisão 1.1 da especificação da Interface • O dispositivo PCI muli-funções consiste em dois núcleos de **Controlador UHCI Host Controller** para sinalização de velocidade total/baixa em um núcleo de **Controlador EHCI Host** para sinalização de alta velocidade • O núcleo de raiz consiste em 4 portas de protecção a jusante com transreceptores de camadas físicas integrados partilhados pelos controladores Host **UHCI** e **EHCI** • Suporte de gestão de energia PCI-Bus Revisão 1.1 da especificação da interface • Suporte para todas as portas de protecção a jusante

As especificações de alguns artigos de hardware e software encontram-se sujeitos a alterações sem aviso prévio.

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

处理器	**支持 Socket-478 处理器** • 支持带有/多线程技术的 Intel Pentium 4 系列 CPU • 支持 **800 MHz** 前端总线 "多线程"技术可以让操作系统认为自己连接了两个处理器，允许两个线程并行运行，每个线程位于同一处理器中的单独"逻辑"处理器中。
芯片组	芯片组包含 **Intel 848P 北桥** 和 **Intel 82801EB I/O Controller Hub (ICH5),** 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。 • 主机接口支持：400 MHz (100 MHz 总线时钟)、533 MHz (133 MHz 总线时钟) 和 800 MHz (200 MHz 总线时钟) 的 64 位 FSB ，最大理论带宽 6.4 GB/s，超线程技术 • 支持系统存储控制器：单通道 (64-位) DDR 存储接口，最大 2GB 系统内存，最多 2 条 DDR DIMM，单面和/或双面 • 支持 AGP 接口：带 4X/8X AGP 数据传输和 4X/8X 快写功能的 AGP 3.0 • PCI 总线接口：支持 PCI Revision 2.3 规格 • 集成 LAN 控制器：符合 WfM 2.0 和 IEEE802.3 标准 • 集成 Serial ATA 主控器：独立 DMA 操作，数据传输速率可达 1.5 Gb/s (150 MB/s)
内存支持	• 2 个用于 DDR 内存条的 184-pin DIMM 插槽 • 支持 DDR**400** MHz 存储总线 • 内存最多可达 2GB
AC97 Audio Codec	• 6-CH 硬件结构，允许多声道南桥播放 6CH 音频 • 符合 Intel® AC' 97 (REV. 2.2) 规格，满足 Microsoft® PC2001 要求 • 内建耳机缓存和内部 PLL，后者可节省额外的晶体 • 线入/后部输出共享同一插孔，中置/低音共享 MIC 插孔 • 支持数字 S/PDIF OUT • CRL® 3D：与基于 HRTF 的 BS3D 兼容的音频引擎
扩展槽	• 6 个 32 位 PCI 插槽 (5 个 Master PCI 1~5 和 1 个 Slave PCI6) • 1 个 CNR 槽 • 1 个 8XAGP 插槽

Onboard IDE	• 2 个 IDE 接口 • 支持 PIO (程控输入/输出) 和 DMA (直接存储器存取) 模式 • 支持 IDE Ultra DMA 总线控制，传输速率可达 33/66/100/133 MB/sec
Serial ATA	• 2 个Serial ATA 接口 • 传输速率超过 ATA (~150 MB/s)，可扩展到更高速率 • 主机和设备管脚数量少
集成 I/O 端口	此主板具有完整的 I/O 端口和插孔: • 2 个用于鼠标和键盘的 PS/2 端口 • 1 个串口 • 1 个并口 • 8 个 USB2.0 端口（主板后面板带 4 个接口，板上 USB 接口 USB2/USB3 提供其它 4 个端口） • 麦克风、线入和线出声音插孔
Fast Ethernet LAN (optional)	• **板上集成千兆 LAN：** – **集成 10/100/1000 收发器** – 带续页能力的自协商 – 支持全双工数据流控制 (IEEE 802.3x) 和 IEEE 802.1Q VLAN 标记 – 完全符合 IEEE 802.3、IEEE 802.3u、IEEE 802.3ab • **Onboard 10/100Mbps Ethernet LAN:** – **10 Mb/s 和 100 Mb/s 工作** – 单芯片集成了快速乙太网 MAC、物理芯片和收发器 – 支持 10Mb/s 和 100Mb/s N 路自协商 – 支持 ACPI 电源管理 – 全双工数据流控制 (IEEE 802.3x) 和半双工/全双工功能
USB 2.0	• 符合通用串行总线规格 2.0 版本 • 符合 Intel 0.95 版本的增强主控器接口规格 • 符合 1.1 版本的通用主控器接口规格 • PCI 多功能设备由 2 个用于全速/低速传输数据的 UHCI 主控器 和 • 1 个用于高速传输数据的 EHCI 主控器组成 • Root 集线器包括 4 个下行端口，带有与 UHCI 和 EHCI 主控制器共用的集成物理层收发器。 • 支持 1.1 版本的 PCI 总线电源管理接口规格 • 支持所有传统下行端口

部分硬件规格和软件项目若有更改恕不另行通知。

Chapter 1

Introduction

This mainboard has a **Socket-478** supporting **Intel Pentium 4/Hyper Threading Technology** processors with Front-Side Bus (FSB) speeds up to **800** 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.

This mainboard integrates the **Intel 848P** Northbridge along with **Intel 82801EB I/O Controller Hub (ICH5)** chipsets that supports the **Serial ATA** — a new interface for high-performance and mainstream desktop PCs; the built-in **USB 2.0** providing higher bandwidth, implementing **Universal Serial Bus Specification Revision 2.0** and is compliant with **UHCI 1.1** and **EHCI 0.95**. This mainboard supports **AC 97 Audio Codec** and provides **Ultra DMA** 33/66/100/**133** function. It has one **8x AGP**, one **CNR** (Communications and Networking Riser) and six 32-bit **PCI** slots. There is a full set of I/O ports including two PS/2 ports for mouse and keyboard, one serial port, one parallel port and maximum eight USB2.0 ports – four back-panel ports and onboard USB connectors USB3/USB2 providing four extra ports by connecting the Extended USB Module to the mainboard.

This mainboard is an **ATX** mainboard and has power connectors for an ATX power supply.

***Note**: You must initiate the HT CPU function through BIOS setup. It is strongly recommended you refer to Page 34 for relative details.*

Key Features

This mainboard has these key features:

Socket-478 Processor

- Supports **Intel Pentium 4 series** CPU with **Hyper Threading** Technology
- Supports up to **800 MHz** Front-Side Bus

> ***Hyper-Threading*** *technology enables the operating system into thinking it's hooked up to two processors, allowing two threads to be run in parallel, both on separate 'logical' processors within the same physical processor.*

Chipset

There are **Intel 848P Northbridge** and **Intel 82801EB I/O Controller Hub (ICH5)** in the chipsets in accordance with an innovative and scalable architecture with proven reliability and performance.

- Host Interface Support: 64-bit FSB frequencies of 400 MHz (100 MHz bus clock), 533 MHz (133 MHz bus clock), and 800 MHz (200 MHz bus clock); maximum theoretical BW of 6.4 GB/s, Hyper Threading Technology
- System Memory Controller Support: Single-channel (64-bits wide) DDR memory interface, Up to 2GB system memory; maximum of two DDR DIMMs, single-sided and/or double-sided
- AGP Interface Support: AGP 3.0 with 4X/8X AGP data transfers and 4X/8X fast writes, respectively.
- PCI Bus Interface: supports PCI Revision 2.3 Specification
- Integrated LAN Controller: WfM 2.0 and IEEE802.3 Compliant
- Integrated Serial ATA Host Controller: Independent DMA operation and Data Transfer Rate up to 1.5 Gb/s (150 MB/s)

Memory Support

- Two 184-pin DIMM sockets for DDR SDRAM memory modules
- Supports DDR**400** memory bus
- Maximum installed memory is 2GB

AC97 Audio Codec

- 6-CH hardware architecture allows multi-channel south bridge to playback 6CH audio
- Intel® AC'97 (REV. 2.2) compatible, meeting Microsoft® PC2001 requirements
- Built-in earphone buffer and internal PLL, the latter saving additional crystal
- Line-in/rear out share the same jack; Center/bass share the MIC jack
- Digital S/PDIF OUT Support
- CRL® 3D: HRTF based BS3D compatible audio engine

Expansion Options

The mainboard comes with the following expansion options:

- Six 32-bit PCI slots (five Master PCI 1~5 and one Slave PCI6)
- One 8x AGP slot
- One Communications Network Riser (CNR) slot

Onboard IDE

- Two IDE Connectors
- Supports PIO (Programmable Input/Output) and DMA (Direct Memory Access) modes
- Supports IDE Ultra DMA bus mastering with transfer rates of 33/66/100/**133** MB/sec

Serial ATA

- Two Serial ATA Connectors
- Transfer rate exceeding best ATA (~150 MB/s) with scalability to higher rates
- Low pin count for both host and devices

Onboard I/O Ports

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

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port
- Eight USB2.0 ports (four back-panel ports, onboard USB connectorsUSB2/USB3 providing four extra ports
- Audio jacks for microphone, line-in and line-out

Fast Ethernet LAN (optional)

- **Onboard Gigabit LAN:**
  - **Integrated 10/100/1000 transceiver**
  - Auto-Negotiation with Next page capability
  - Supports Full Duplex flow control (IEEE 802.3x), and IEEE 802.1Q VLAN tagging
  - Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
- **Onboard 10/100Mbps Ethernet LAN:**
  - **10 Mb/s and 100 Mb/s operation**
  - Integrated Fast Ethernet MAC, physical chip, and transceiver onto a single chip
  - Supports 10Mb/s and 100Mb/s N-way auto-negotiation
  - Support ACPI power management
  - Full Duplex Flow Control (IEEE 802.3x) and Half/Full duplex capability

USB 2.0

- Compliant with Universal Serial Bus Specification Revision 2.0
- Compliant with Intel's Enhanced Host Controller Interface Specification Revision 0.95
- Compliant with Universal Host Controller Interface Specification Revision 1.1
- PCI multi-function device consists of two **UHCI Host Controller** cores for full-/low-speed signaling and one **EHCI Host Controller** core for high-speed signaling

- Root hub consists 4 downstream facing ports with integrated physical layer transceivers shared by **UHCI** and **EHCI** Host Controller
- Support PCI-Bus Power Management Interface Specification release 1.1
- Legacy support for all downstream facing ports

BIOS Firmware

This mainboard 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-Cillin2002** provides automatic virus protection under Windows 98/ME/NT/2000/XP
- **Adobe Acrobat Reader V5.0** is the software to help users read .PDF files.
- **ShowShifter** provides you with various options to create an ultimate home media center for your PC that you can use it to record and playback TV, enjoy your entertainment over a network, look at digital photos as a slide show on your TV or PC monitor, and so on.
- **WinDVD creator Plus** is a storyboard interface making the entire DVD-making process as easy as moving pictures around on your screen.
- **WinDVD 4** provides the automatic WinDVD software installation.

Dimensions

- ATX form factor of 305 x 220mm

***Note**: Hardware specifications and software items are subject to change without notification.*

Package Contents

Your mainboard package contains the following items:

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

Optional Accessories

You can purchase the following optional accessories for this mainboard.

- The Extended USB module
- The CNR v.90 56K Fax/Modem card
- The Serial ATA cable (optional)

***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

Mainboard Installation

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

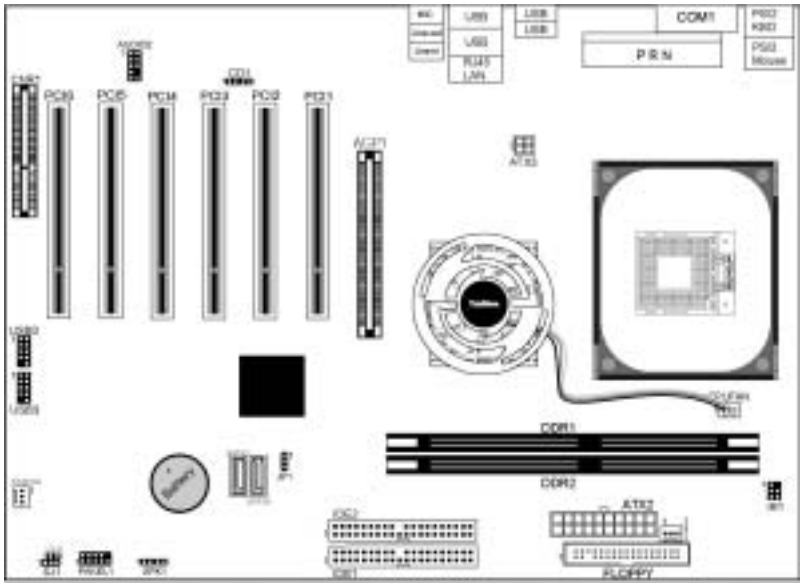
- Identify the mainboard components
- Install a CPU
- Install one or more system memory modules
- Make sure all jumpers and switches are set correctly
- Install this mainboard in a system chassis (case)
- Connect any extension brackets or cables to connectors on the mainboard
- Install peripheral devices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

Note:

1. Before installing this mainboard, make sure jumper JP1 is under Normal setting. See this chapter for information about locating JP1 and the setting options.
2. Never connect power to the system during installation; otherwise, it may damage the mainboard.

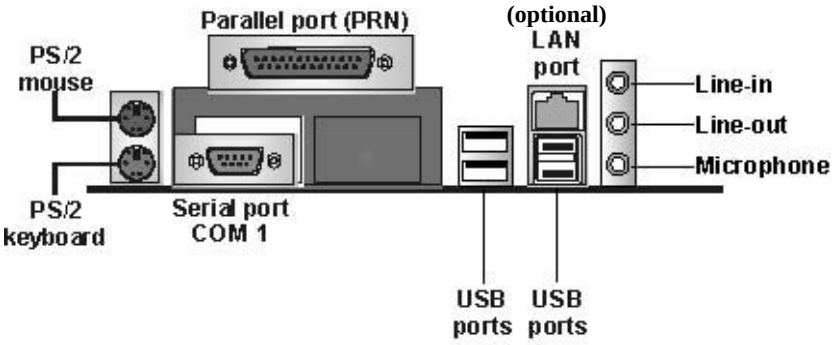
Mainboard Components

Identify major components on the mainboard via this diagram underneath.



I/O Ports

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



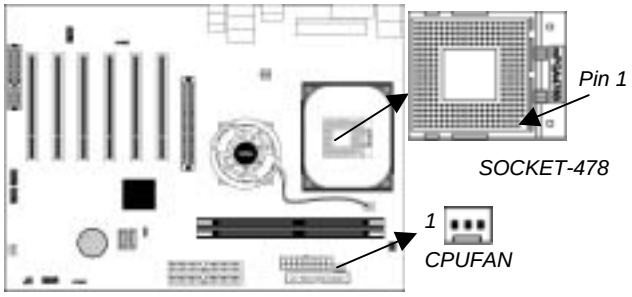
PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
Parallel Port (PRN)	Use the Parallel port to connect printers or other parallel communications devices.
COM1	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1.
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 mainboard 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.

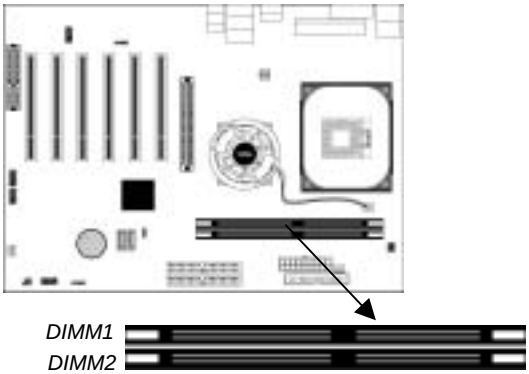
2. Match the pin1 corner marked as the beveled edge on the CPU with the pin1 corner on the socket. Insert the CPU into the socket. Do not use force.
3. Push the locking lever down and hook it under the latch on the edge of socket.
4. Apply thermal grease to the top of the CPU.
5. Install the cooling 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 mainboard.

Installing Memory Modules

This mainboard 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 **400** 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. DDR DIMMs can synchronously work with 100 MHz or 133 MHz memory bus.

DDR SDRAM provides 1.6 GB/s, 2.1 GB/s or 3.2 GB/s data transfer rate when the bus is 100 MHz, 133 MHz or 200 MHz respectively. DDR SDRAM uses additional power and ground lines and requires 184-pin 2.5V unbuffered DIMM module.



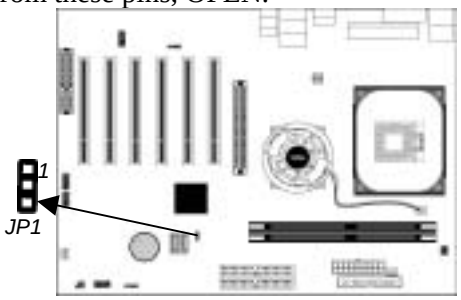
Memory Module Installation Procedure

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.



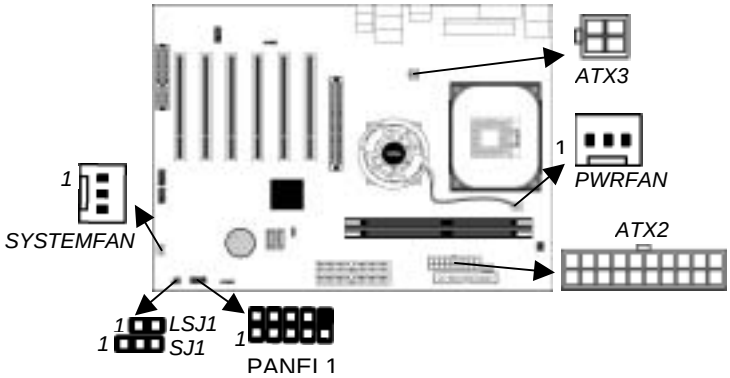
JP1: Clear CMOS Jumper

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 mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the mainboard 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 Mainboard

Install the mainboard in a system chassis (case). The board is an ATX size mainboard. You can install this mainboard in an ATX case. Make sure your case has an I/O cover plate matching the ports on this mainboard.
Install the mainboard 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 **ATX2** connector on the mainboard. **ATX3** is the CPU Vcore power connector.
If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **SYSFAN** fan power connector on the mainboard.
Connect the power cooling fan cable to **PWRFAN** connector.
Connect the case LED cables to the optional Single color LED connectors **LSJ1** and **SJ1**.

ACPI LED function:

LSJ1 (1,2)	**S0**	**S1**	**S3**	**S4/S5**
	Dark	Dark	Light	Dark

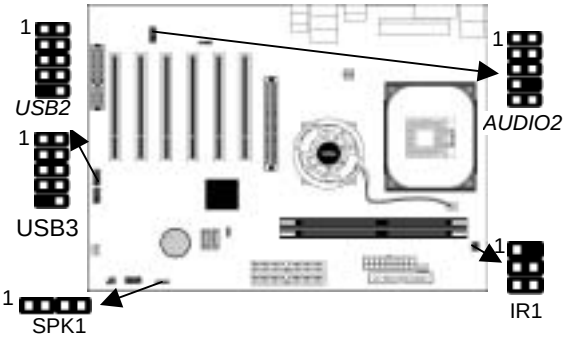
SJ1 (1,3) (2,3)	**S0**	**S1**	**S3**	**S4/S5**
	Light	Blinking	Blinking	Dark

Connect the case switches and indicator LEDs to the **PANEL1** connector. Here is a 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 mainboard's optional devices:



SPK1: Speaker Connector

Connect the cable from the PC speaker to the SPK1 connector on the mainboard.

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

AUDIO2: Front Panel Audio Connector

This connector 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

USB2/USB3: Front panel USB Connector

The mainboard 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 connectors USB2/USB3 to connect the front-mounted ports to the mainboard.

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 USB2/3 connector on the mainboard.
2. Plug the bracket cable onto the USB2/3 connector.
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.

IR1: Infrared Port

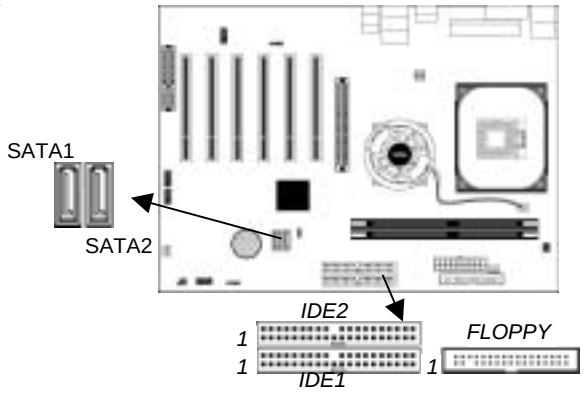
The infrared port allows the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

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

1. Locate the infrared port **IR1** connector on the mainboard.
2. If you are adding an infrared port, connect the ribbon cable from the port to the IR1 connector 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 mainboard 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 mainboard 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 mainboard.

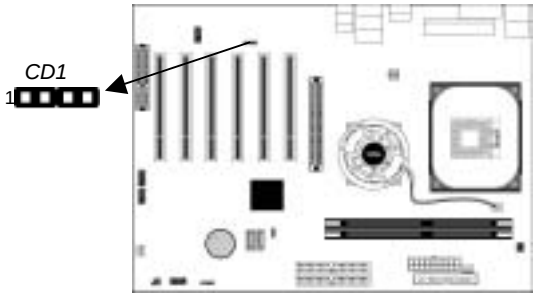
If you want to install more IDE devices, you can purchase a second IDE cable and connect one or two devices to the Secondary IDE channel connector **IDE2** on the mainboard. If you have two devices on the cable, one must be Master and one must be Slave.

Serial ATA Devices

The **Serial ATA (Advanced Technology Attachment)** is the standard interface for the IDE hard drives, which is designed to overcome the design limitations while enabling the storage interface to scale with the growing media rate demands of PC platforms. It provides you a faster transfer rate of **150 Mbytes/ second**. If you have installed a Serial ATA hard drive, you can connect the Serial ATA cables to the Serial ATA hard drive or the connecter on the mainboard.
On the mainboard, locate the Serial ATA connectors **SATA1/2**, which support new Serial ATA devices for the highest data transfer rates, simpler disk drive cabling and easier PC assembly.
It eliminates limitations of the current Parallel ATA interface, but maintains register compatibility and software compatibility with Parallel ATA.

Internal Sound Connections

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

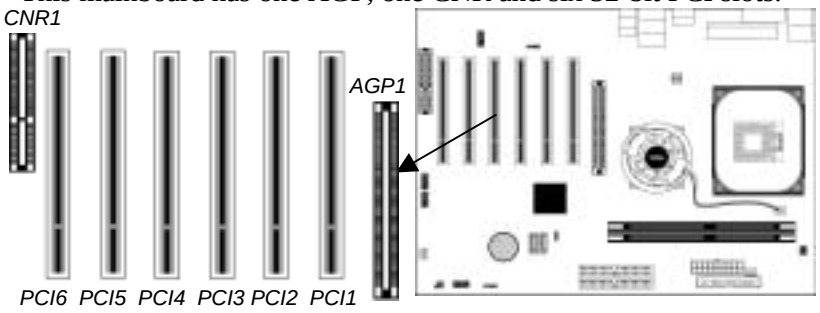


When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed. On the mainboard, locate the 4-pin connector **CD1**.

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

Expansion Slots

This mainboard has one AGP, one CNR and six 32-bit PCI slots.



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

1. Locate the AGP, CNR or PCI slots on the mainboard.
2. Remove the blanking plate of the slot from the system chassis.
3. Install the edge connector of the expansion card into the slot. Ensure the edge connector is correctly seated in the slot.
4. Secure the metal bracket of the card to the system chassis with a screw.

8x AGP Slot

You can install a graphics adapter that supports the 8x AGP specification and has a 8x AGP edge connector in the AGP slot.

CNR Slot

You can install the CNR (Communications and Networking Riser) cards in this slot, including LAN, Modem, and Audio functions.

PCI Slots

You can install the 32-bit PCI interface expansion cards in the slots (Five Master PCI slots: PCI1~5 and one Slave PCI slot: PCI 6).

Chapter 3

BIOS Setup Utility

Introduction

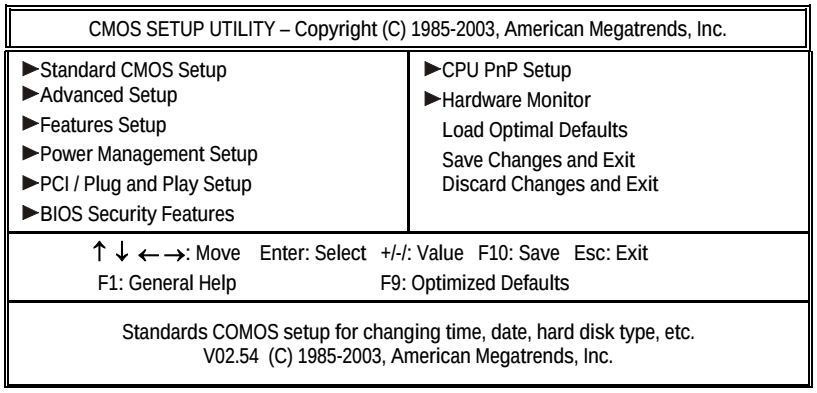
The BIOS Setup Utility records settings and information of your computer, such as date and time, the type of hardware installed, and various configuration settings. Your computer applies the information to initialize all the components when booting up and basic functions of coordination between system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



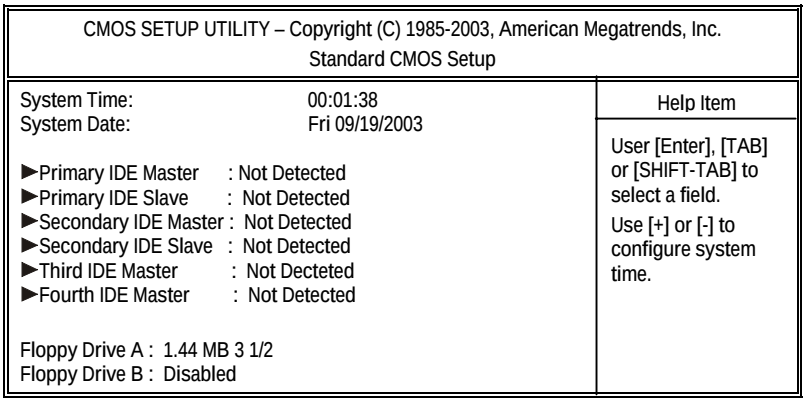
You can use cursor arrow keys to highlight anyone of options on the main menu page. Press **Enter** to select the highlighted option. Press the **Escape** key to leave the setup utility. Press +/-/ to modify the selected field's values.

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 **F9** to install the setup utility with a set of default values.

Standard CMOS Setup Page

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



Date & Time	These items set up system date and time.
IDE **Primary Master** **Primary Slave** **Secondary Master** **Secondary Slave** **Third Master** **Fourth Master**	These items configure devices connected to the Primary, Secondary, Third and Fourth 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 **Floppy Drive 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.

CMOS SETUP UTILITY – Copyright (C) 1985-2003, American Megatrends, Inc. Advanced Setup		
Quick Boot	Enabled	Help Item
1st Boot Device	1st Floppy Drive	
2nd Boot Device	Network: Realtek R	Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
Bootup Num-Lock	On	
Boot To OS/2 > 64MB	No	
Graphic Win Size	64MB	
Configure DRAM Timing by SPD	Enabled	
Hyper Threading Function	Disabled	
Auto Detect DIMM/PCI Clk	Enabled	
Spread Spectrum	Disabled	
Vdimm Voltage Control	2.65V	

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**	Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.
BootUp Num-Lock	This item determines if the Num Lock key is active or inactive at system start-up time.
Boot To OS/2> 64MB	Enable this item if you are booting the OS/2 operating system and you have more than 64MB of system memory installed.
Graphic Win Size	This item defines the size of aperture if you use a graphic adapter.
Configure DRAM Timing By SPD	This item allows you to enable or disable the DRAM timing defined by the Serial Presence Detect electrical.

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.
Auto detect DIMM/PCI Clock	When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.
Spread Spectrum	If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.
Vdimm Voltage Control	Use this item to adjust the voltage of the DIMM memory.

Features Setup Page

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

CMOS SETUP UTILITY – Copyright (C) 1985-2003, American Megatrends, Inc.
Features Setup

		Help Item
OnBoard Floppy Controller	Enabled	Allows BIOS to Enable or Disable Floppy Controller.
Serial Port1 Address	3F8/IRQ4	
OnBoard IR Port	Disabled	
Parallel Port Address	Disabled	
OnBoard PCI IDE Controller	Both	
Audio Device	Enabled	
Ethernet Device	Enabled	
Modem Device	Auto	
OnBoard USB Function	Enabled	
USB Function for DOS	Disabled	

OnBoard Floppy Controller	Use this item to enable or disable the onboard floppy disk drive interface.
Serial Port 1 Address	Use this item to enable or disable the onboard COM1/2 serial port, and to assign a port address.

OnBoard IR Port	Use this item to enable or disable the onboard infrared port, and to assign a port address.
Parallel Port Address	Use this item to enable or disable the onboard Parallel port, and to assign a port address.
OnBoard PCI IDE Controller	Use this item to enable or disable either or both of the onboard Primary and Secondary IDE channels.
Audio Device	This item enables or disables the AC'97 audio chip.
Ethernet Device	This item enables or disables the onboard Ethernet LAN.
Modem Device	This item enables or disables the AC'97 modem chip.
OnBoard USB Function	Enable this item if you plan to use the USB ports on this mainboard.
USB Function For DOS	Enable this item if you plan to use the USB ports on this mainboard in a DOS environment.

Power Management Setup Page

This page sets some parameters for system power management operation.

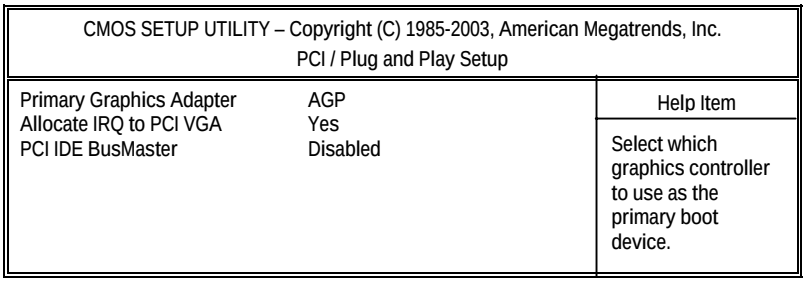
CMOS SETUP UTILITY – Copyright (C) 1985-2003, American Megatrends, Inc.
Power Management Setup

		Help Item
ACPI Aware O/S	Yes	Yes / No
Power Management/APM	Enabled	ACPI support for Operating System.
Suspend Mode	S1	Yes: If OS supports ACPI.
Suspend Time Out	Disabled	No: If OS does not support ACPI.
Resume On RTC Alarm	Disabled	
LAN/Ring Power On	Disabled	
Keyboard Power On	Disabled	

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 Mode	This item selects the status S1(Stop Clock) or S3(Suspend to RAM) when the system enters the power-saving Suspend mode.
Suspend Time Out	This item sets up 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	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	Your system can enter the software power down. If you enable this item, the system can automatically resume if there is traffic on the network adapter.
Keyboard Power On	If you enable this item, system can automatically resume by pressing hot keys on the keyboard or typing in the password. You must enable the Keyboard Power On jumper and use an ATX power supply in order to use this feature.

PCI / Plug and Play Setup Page

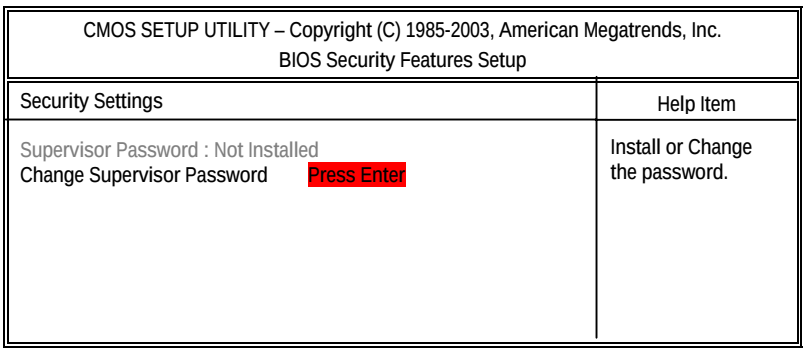
This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.



Primary Graphics Adapter	This item indicates if the primary graphics adapter uses the PCI or the AGP bus. The default AGP setting still lets the onboard display work and allows the use of a second display card installed in an AGP slot.
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.

BIOS Security Features Setup Page

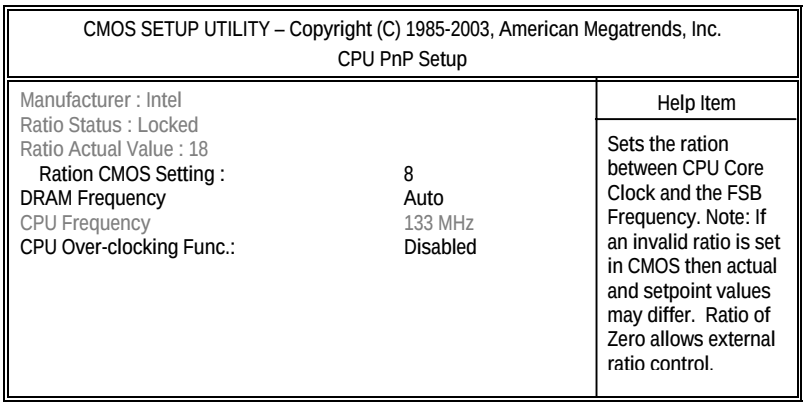
This page helps you install or change a password.



Supervisor Password	This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.
Change Supervisor Password	You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

CPU PnP Setup Page

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



Manufacturer/ Ratio Status/ Ratio Actual Value	These items show the brand, the Locked/ Unlocked ratio status, and the actual ratio of the CPU installed in your system.
Ratio CMOS Setting	This item selects the ratio of the CPU installed in your system.
DRAM Frequency	This item shows the frequency of the DRAM in your system.
CPU Frequency	This item shows the frequency of the CPU installed in your system.
CPU Over-clocking Func./ Freq.	This item decides the CPU over-clocking function/frequency installed in your system. If the over-clocking fails, please turn off the system power. And then, hold the PageUp key (similar to the Clear CMOS function) and turn on the power, the BIOS will recover the safe default.

Hardware Monitor Page

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

CMOS SETUP UTILITY – Copyright (C) 1985-2003, American Megatrends, Inc. Hardware Monitor Setup		
*** System Hardware Monitor***		Help Item
Vcore	1.129V	
Vdimm	1.564V	
Vcc5V	4.985V	
SB3V	3.338V	
SYSTEM Fan Speed	0 RPM	
CPU Fan Speed	4560 RPM	
NB Fan Speed	0 RPM	
SYSTEM Temperature	33°C/91°F	
CPU Temperature	37°C/98°F	

CPU/NB/System Temperature	These items display CPU, NB and system temperature measurement.
FAN & Voltage Measurements	These items indicate cooling fan speeds in RPM and the various system voltage measurements.

Load Optimal Defaults

This option opens a dialog box to ask if you are sure to install optimized defaults or not. You press <Y>, and then <Enter>, the Setup Utility loads all default values; or press <N>, and then <Enter>, the Setup Utility does not load default values.

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

Save Changes and Exit

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility configuration. When the Save Changes and Exit dialog box appears, press Y to save and exit, or press N to return to the main menu.

Discard Changes and Exit

Highlight this item and press <Enter> to discard any changes that

you have made in the Setup Utility and exit the Setup Utility. When the Discard Changes and Exit dialog box appears, press <Y> to discard changes and exit, or press <N> to return to the main menu.

Note: *If you have made settings that you do not want to save, use the "Discard Changes and Exit" item and press <Y> to discard any changes you have made.*

Chapter 4

Software & Applications

Introduction

This chapter describes the contents of the support CD-ROM that comes with the mainboard 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 mainboard; 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.

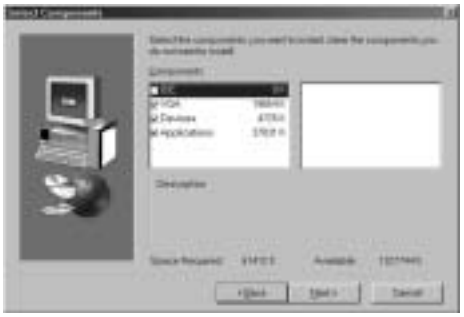
The **Setup** button runs the software auto-installing program as explained in next section.
The **Browse CD** button is a standard Windows command that you can check the contents of the disc with the Windows 98 file browsing interface.
The **Exit** button closes the Auto Setup window. To run the program 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:

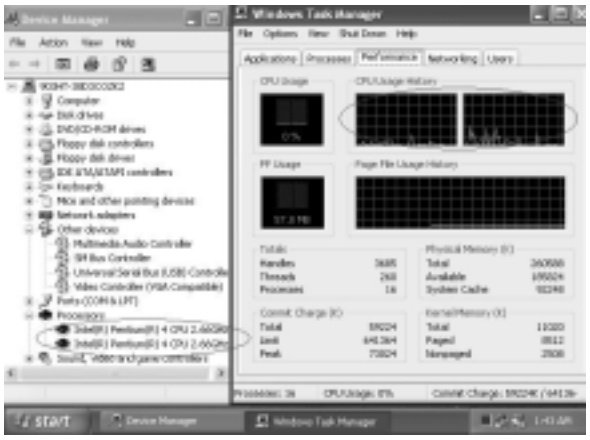
1. Click the **Application** button while the Auto Setup screen pops out after inserting the support CD-ROM.
2. A software menu appears. Click the software you want to install.
3. Follow onscreen instructions to install the software program step by step until finished.

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.*

Appendix

Intel USB 2.0 Driver Limitations & Manual Installation

♦ USB2.0 Driver only supports the Operating System WinXP/Win2K, and WinME & Win98SE driver only supports USB 1.1 function.

> ***Note**: If your Operating System Windows XP has the Service Pack, you can directly access the driver regardless of the driver limitation.*

♦You must follow these steps to manually install the WinXP driver; otherwise, you can't succeed this driver's installation.

1.Simply install Windows XP with PS2 Keyboard/Mouse.

2.Install INF Update 4.00.1009 PV.

- Install IAA 2.1 PV (2124).
- Install GFX 11.0 PC 1.01 (3051).
- Install LAN 6.1 PV.
- Install AC97 Beta.

3.Install USB 2.0 for XP 3616.

4.Use **Tools/Folder Options…/View.** to change the items below:

- Enable "Display the full path in the title bar".
- Enable "Show Hidden files and folders".
- Disable "Hide extensions of known files types".
- Disable "Hide protected operating system files (Recommended)".

5.Check USB driver version from:

C:\Windows\System32\Drivers directory

USBEHCI.SYS – 3/20/2002.

USBPORT.SYS – 8/17/2001.

USBHUB.SYS – 8/17/2001.

6.Go on executing the manual installation as below:

6-1 Disable Windows File Protection (WFP)

- From **Start button/run/Regedit.**
  - **Set HKEY_LOCAL_MACHINE\ Software\Microsoft\Windows NT\ CurrentVersion\Winlogon\SFCDisable** = 1

6-2 Copy all USB files from CD to HDD.

- Copy all test drivers to %windir%\driver cache\i386.
- **Copy all test drivers to %windir%\system32\dllcache**
  You need to copy file to this directory first. Otherwise, Windows XP will replace file from this directory to system32\drivers.
- Copy all test drivers to %windir%\system32\drivers.

6-3 Check USB driver version again.

USBEHCI.SYS – 3/20/2002.
USBPORT.SYS – 3/20/2001.
USBHUB.SYS – 3/20/2001.

6-4 Enable Windows File Protection (WFP)

- Start button/run/Regedit.
- Set HKEY_LOCAL_MACHINE\ Software\Microsoft\Windows NT\ CurrentVersion\Winlogon\SFCDisable = 0

- While installing the USB2.0 driver under WinME operating system, a green question mark pops out. Please rest assured it is normal.
- Under the Window operating system, the BIOS Setup Utility doesn't support the "USB Function For Dos Enable" feature.
- You can't use the USB Keyboard Chicony KU-8933.