

Preface

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Version 2.0

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Federal Communications Commission (FCC)

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

About the Manual

The manual consists of the following:

Chapter 1 Introducing the Motherboard	Describes features of the motherboard, and provides a shipping checklist. Go to ➞ page 1
Chapter 2 Installing the Motherboard	Describes installation of motherboard components. Go to ➞ page 7
Chapter 3 Using BIOS	Provides information on using the BIOS Setup Utility. Go to ➞ page 25
Chapter 4 Using the Motherboard Software	Describes the motherboard software. Go to ➞ page 47

Features Translations

Caractéristiques

Processeur	<p>La carte mère utilise un Socket mPGA 478 broches présentant les caractéristiques suivantes :</p> <ul style="list-style-type: none">• Intègre le CPU Intel/P4 Celeron/Northwood/Prescott 478 broches (conforme aux spéc. Intel VRM 10.0. 0.8375V ~ 1.6V)• Support un bus système (FSB) de 400/533/800 MHz• Supporte l'Inversion Bus Système Bus Dynamique (DBI)
Chipset	<p>Les chipsets novateurs Intel 848P (MCH) et 82801EB (ICH5) sont basés sur une architecture novatrice et dimensionnable avec une fiabilité et des performances prouvées. Quelques-unes des caractéristiques avancées des chipsets sont:</p> <ul style="list-style-type: none">• Supporte un Processeur unique avec une vitesse de Transfert de 400/533/800MHZ• Support de DDR-SDRAM en fonctionnement à 200/266/333/400 MHz• Interface AGP 1.5V avec 8X SBA/Transfert de Données et Capacité d'Ecriture Rapide 1X/4X/8X• Contrôleur USB 2.0 (capacités étendues pour 8 Ports)• 2 Contrôleurs IDE de Maître Bus de Canal Ultra ATA/100• 2 contrôleurs d'hôte ATA série• Huit Ports USB 2.0 pour les transferts en série en 480Mbps/Sec Max• Conforme à l'interface PCI Rev. 2.3, 3.3V (Tolérance de 5V), 33 MHz• Transmission en Continu de PCI vers la Mémoire Système Jusqu'à 132Mo/sec <p>Support de fonctions de touches supplémentaires pour une interface AC 97 pour audio et modem, surveillance matérielle, et gestion d'alimentation ACPI/OnNow.</p>
Mémoire	<p>La carte mère peut recevoir une SDRAM DDR 2.5V. Elle reçoit deux logements 2.5V 184 broches sans mémoire tampon avec une capacité totale maximum de 2 Go.</p>
AGP	<p>Cette carte mère comprend un logement AGP qui offre huit fois la bande passante des spécifications AGP d'origine à 2.1 gigaoctets par seconde (Go/s). La technologie AGP offre une connexion directe entre le sous-système graphique et le processeur de sorte que les graphiques n'ont pas à entrer en concurrence avec d'autres périphériques pour le temps d'utilisation du processeur sur le bus PCI.</p>
CODEC Audio AC'97	<p>La ALC655 est conforme au CODEC AC'97 (REV 2.3) et prend en charge le CODEC audio à six canaux conçu pour les systèmes multimédia PC. Elle offre trois entrées stéréo de niveau de ligne analogique avec contrôle de volume 5 bits : ENTRÉE Ligne, CD, AUX Elle prend aussi en charge la fonction de sortie S/PDIF et fonctionne à partir d'une alimentation en 3.3V.</p>
Options d'Extensions	<p>La carte mère est livrée avec les options d'extensions suivantes:</p>

	<ul style="list-style-type: none"> • Cinq logements PCI 32 bits • Un logement AGP (supporte 1.5V seulement) • Un logement Communications Network Riser (CNR) (Interface AC97 seulement) • Deux connecteurs IDE supportant quatre canaux IDE et une interface de lecteur de disquette <p>La carte mère supporte la maîtrise de bus Ultra DMA avec des vitesses de transfert de 33/66/100 Mo/sec.</p>
E/S Intégrées	<p>La carte mère possède un jeu complet de ports d'E/S et de connecteurs:</p> <ul style="list-style-type: none"> • Deux ports PS/2 pour souris et clavier • Un port série • Un port parallèle • Quatre ports USB • Un port LAN (optionnel) • Prises audio pour microphone, ligne d'entrée et ligne de sortie
LAN Interne (optionnel)	<p>La puce LAN Realtek RTL8100C est incorporée dans le chipset offrant à la carte mère les capacités de contrôleur fast Ethernet 10/100Mbps et LAN PCI Ethernet intégrées.</p>
Microprogramme BIOS	<p>Cette carte mère utilise Award BIOS qui permet aux utilisateurs de configurer de nombreuses caractéristiques du système comprenant les suivantes:</p> <ul style="list-style-type: none"> • Gestion d'alimentation • Alarmes de réveil • Paramètres de CPU et synchronisation de mémoire • Synchronisation de CPU et de mémoire <p>Le microprogramme peut aussi être utilisé pour définir les paramètres pour les vitesses d'horloges de différents processeurs.</p>



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

Features

Prozessor	<p>Das Motherboard verwendet einen mPGA 478-Pin Sockel mit den folgenden Eigenschaften:</p> <ul style="list-style-type: none"> • Nimmt Intel/P4 Celeron/Northwood/Prescott 478-Pin CPU auf (kompatibel mit Intel VRM 10.0 Spezifikation 0.8375 Volt ~ 1.6 Volt) • Unterstützt einen Systembus (FSB) mit 400/533/800 MHz • Unterstützt System Bus Dynamic Bus Inversion (DBI)
Chipsatz	<p>Intels innovative 848P (MCH) and 82801EB (ICH5) Chipsätze basieren auf einer innovativen und skalierbaren Architektur mit bewiesener Zuverlässigkeit und Leistung. Einige der modernen Eigenschaften des Chipsatzes:</p> <ul style="list-style-type: none"> • Unterstützung für einen einzelnen Prozessor mit einer Datentransferrate von 400/533/800MHz • Unterstützung für DDR-SDRAMs mit 266/333/400MHz • 1.5 Volt AGP-Interface mit 8X SBA/Datentransfer und 1X/4X/8X Fast Write-Fähigkeit • USB-Controller 2.0 (Unterstützung für bis zu 8 Ports) • 2-Kanal-Ultra ATA/100 Bus Master IDE-Controller • 2 Serial ATA Host-Controller • Acht USB 2.0 Ports für seriellen Datentransfer mit max. 480 MB/Sek • PCI Rev. 2.3 Volt, 3.3 Volt (bzw. 5 Volt), kompatibel mit 33 MHz-Interface • Datenstreaming PCI zu Systemspeicher bis zu 132 MB/Sek <p>Zusätzliche Schlüsseleigenschaften umfassen Unterstützung für ein AC 97-Link für Audio und Modem, Hardwareüberwachung und ACPI/OnNow-Energieverwaltung.</p>
Speicher	<p>Das Motherboard kann 2.5 Volt DDR SDRAMs aufnehmen. Es verfügt über zwei ungepufferte 2.5 Volt 184-Pin Steckplätze mit einer maximalen Kapazität von insgesamt 2 GB.</p>
AGP	<p>Dieses Motherboard enthält einen AGP-Steckplatz, der die achtfache Bandbreite der originalen AGP-Spezifikation ermöglicht (bis zu 2.1 MB/Sek.). Die AGP-Technologie bietet eine direkte Verbindung zwischen dem Grafik-Subsystem und dem Prozessor, damit die Grafik nicht mit anderen Geräten auf dem PCI-Bus um Prozessorzeit wetten muss.</p>
AC' 97 Audio CODEC	<p>Der ALC655 ist kompatibel mit dem AC'97 (REV 2.3)-CODEC. Er unterstützt sechs Audio-CODEC-Kanäle für Multimedia-PC-Systeme. Es verfügt über drei analoge Line-Level Stereo-Eingänge mit 5-Bit Lautstärkenkontrolle: Line_IN, CD, AUX. Außerdem unterstützt er die S/PDIF-Ausgabefunktion und wird mit einem 3.3 Volt-Netzteil betrieben.</p>

Erweiterungs-Optionen	<p>Das Motherboard bietet die folgenden Erweiterungsoptionen:</p> <ul style="list-style-type: none"> • Fünf 32-Bit PCI-Steckplätze • Ein AGP-Steckplatz (unterstützt nur 1.5 Volt); unterstützt ADD-Karten (nur 865G) • Einen Steckplatz für Communications Network Riser (CNR) (nur für AC97-Interfaces) • Zwei IDE-Anschlüsse, die vier IDE-Kanäle und eine Schnittstelle für ein Floppydiskettenlaufwerk unterstützen <p>Das Motherboard unterstützt Ultra DMA Bus-Mastering mit Übertragungsraten von 33/66/100 MB/Sek.</p>
Integrierte I/O	<p>Das Motherboard verfügt über einen kompletten Satz von I/O-Ports und Anschlüssen::</p> <ul style="list-style-type: none"> • Zwei PS/2-Ports für Maus und Tastatur • Eine serielle Schnittstelle • Eine parallele Schnittstelle • Eine parallele Schnittstelle • Vier USB-Port • Ein LAN-Port (optional) • Audio-Ports für Mikrofon, Line-in und Line-out
Integriertes LAN (optional)	<p>Realtek RTL8100C LAN-Chip ist im Chipsatz eingebaut und bietet dem Motherboard damit integrierte Ethernet PCI LAN Fähigkeiten.</p>
BIOS Firmware	<p>Dieses Motherboard setzt das Award BIOS ein, mit dem der Anwender viele Systemeigenschaften selbst konfigurieren kann, einschließlich der folgenden:</p> <ul style="list-style-type: none"> • Energieverwaltung • Wake-up Alarm • CPU-Parameter und Speichertiming • CPU- und Speichertiming <p>Mit der Firmware können auch die Parameter für verschiedene Prozessortaktgeschwindigkeiten eingestellt werden.</p>



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

Caratteristiche

Processore	<p>La scheda è dotata di un socket mPGA a 478 pin che presenta le seguenti caratteristiche:</p> <ul style="list-style-type: none"> • Possibilità di alloggiare la CPU Intel/P4 Celeron/Northwood/Prescott a 478 pin (conforme alle specifiche Intel VRM 10.0 0.8375V ~ 1.6V) • Supporta un bus di sistema (FSB) fino a 400/533/800 Mhz • Supporta un bus di sistema con DBI (Dynamic Bus Inversion)
Chipset	<p>Gli innovativi chipset Intel 848P (MCH) e 82801EB (ICH5) sono basati su un'architettura facilmente espandibile dall'affidabilità e dalle prestazioni dimostrate. Ecco alcune delle caratteristiche avanzate dei chipset:</p> <ul style="list-style-type: none"> • Supporta un processore singolo con velocità di trasferimento dati di 400/533/800MHz • Supporta DDR-SDRAM con velocità da 266/333/400MHz • Interfaccia 1.5V AGP con con trasferimento dati 8x SBA e protocollo Fast Write 1X/4X • Controller USB 2.0 (con capacità di espansione a 8 porte) • 2 controller IDE bus master per canali Ultra ATA/100 • 2 controller host seriali ATA • Otto porte USB 2.0 per trasferimenti seriali a velocità di 480Mbps/sec Max • PCI Rev. 2.3, 3.3V (5V Tolerant), 33 MHz, conforme con l'interfaccia • Data streaming dal bus PCI alla memoria di sistema sino a 132mb/sec <p>Alcune ulteriori caratteristiche chiave includono il supporto per il collegamento AC 97 per audio e modem, monitoraggio hardware e Sistema Risparmio Energetico ACPI/OnNow</p>
Memoria	<p>La scheda madre è in grado di ospitare SDRAM DDR a 2.5V. Presenta due slot unbuffered (184 pin) a 2.5V, per un totale massimo di 2 GB.</p>
AGP	<p>Questa scheda madre possiede uno slot AGP in grado di garantire una larghezza di banda 8 volte superiore rispetto a quella prevista dalle specifiche dello standard AGP originale che posso arrivare a 2.1 gigabytes al secondo (GB/s). Questa tecnologia fornisce un collegamento diretto tra il sotto sistema grafico ed il processore, evitando così che la scheda non debba competere con altre per l'utilizzo del processore tramite il bus PCI.</p>
AC' 97 Audio CODEC	<p>ALCC655 è conforme allo standard AC'97 (REV 2.3). Supporta 6 canali audio CODEC progettati per il Pc multimediali. È dotato di tre ingressi analogici stereo con controllo volume a 5 bit: LINE IN, CD, AUX. Supporta inoltre l'output S/PDIF e viene alimentato a 3.3V.</p>
Opzioni di espansione	<p>La scheda madre presenta le seguenti possibilità per l'espansione:</p> <ul style="list-style-type: none"> • Cinque slot PCI da 32 bit • Uno slot AGP (supporta solo 1.5V); • Una slot Communications Network Riser (CNR) (solo per interfaccia AC97)

	<ul style="list-style-type: none"> • Due connettori IDE che supportano quattro canali IDE ed una interfaccia per il collegamento del lettore Floppy <p>La scheda madre supporta la gestione di canali Ultra DMA con transfert rate pari a 33/66/100 MB/sec.</p>
I/O integrati	<p>La scheda madre è dotata di un set completo di connettori e porte I/O:</p> <ul style="list-style-type: none"> • Due porte PS/2 per mouse e tastiera • Una porta seriale • Una porta parallela • Quattro porte USB • Una porta LAN (opzionale) • Jack audio per microfono e connettori ingresso/uscita Line
LAN integrato (opzionale)	<p>Il chip Realtek RTL8100C LAN è integrato al chipset consentendo la scheda madre di funzionare con Ethernet PCI LAN integrato.</p>
Firmware BIOS	<p>Questa scheda madre utilizza il BIOS Award che permette all'utente di configurare numerose caratteristiche del sistema tra cui le seguenti:</p> <ul style="list-style-type: none"> • Risparmio energetico • Segnali Wake Up • Parametri della CPU e sincronizzazione memoria • Timing della memoria e della CPU <p>E' possibile inoltre impostare i parametri di velocità del clock del processore su diversi valori.</p>



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

Características

Procesador	<p>El panel principal usa un enchufe mPGA 478-pin que tiene las siguientes características:</p> <ul style="list-style-type: none"> • Acomoda el CPU Intel/P4 Northwood/Prescott 478 pines (conforme con Intel VRM 10.0 espec. 0.8375V – 1.6V) • Soporta un sistema de bus (FSB) de 400/533/800 MHz • Soporta la Inversión de Bus Dinámico de Bus del Sistema (DBI)
Chipset	<p>Los chipsets innovadores 848P (MCH) y 82801EB (ICH5) de Intel se basan en una arquitectura innovadora y escalada con probada fidelidad y realización. Algunas de las características avanzadas del los chipsets son:</p> <ul style="list-style-type: none"> • Soporta un solo procesador con un índice de transferencia de 400/533/800MHz • Permite DDR-SDRAM 266/333/400MHz de operación • Intefaz 1.5V AGP con 8X SBA/Transferencia de Datos y Capacidad de Escritura Rápida 1X/4X/8X • • Controlador USB 2.0 (capacidades expandidas para 8 Ports) • Controladores de 2 Canales Ultra ATA/100 bus IDE master • 2 controladores anfitriones ATA seriales • Ocho Puertos USB 2.0 para transferencias seriales en 480Mbps/seg Máx • PCI Rev. 2.3, 3.3V (5V Tolerante), conforme con la interfaz 33 MHz • PCI para datos de memoria de sistema corriendo hasta 132 MB/por segundo <p>Características importantes adicionales incluyen el soporte para un enlace AC 97 para audio y modem, monitorización de hardware, y administración de potencia ACPI/OnNow.</p>
Memoria	<p>El panel principal está diseñado para permitir dos 2.5 V DDR SDRAM sin registrar 2.5V 184-pines con dos capacidad máxima de 2 GB.</p>
AGP	<p>Esta placa principal incluye una ranura AGP que provee ocho tiempos de amplitud de la especificación original AGP a 2.1 gigabytes por segundo (GB/s). La tecnología AGP provee una conexión directa entre el sub-sistema de gráficos y el procesador para que los gráficos no tengan que rivalizar por el tiempo del procesador con otros componentes en la Ruta PCI.</p>
CODEC de Sonido AC'97	<p>El ALC655 se conforma con el CODEC AC'97 (REV 2.3) y soporta seis canales de CODEC de sonido diseñado para los sistemas de multimedia de PC. Provee tres entradas en estéreo a nivel de línea analógico con control de volumen de 5 bits: Line_IN, CD, AUX. También soporta la función de salida S/PDIF y opera de un suministro de 3.3V.</p>
Opciones de Expansión	<p>El panel principal viene con las siguientes opciones de expansión:</p> <ul style="list-style-type: none"> • Cinco ranuras PCI de 32 bits • Una ranura 4xAGP (soporta solo 1.5V solamente) • Una ranura de Communications Network Riser (Levanta-dor de Redes de Comunicaciones/CNR) (Interfaz AC97

	<p>solamente)</p> <ul style="list-style-type: none"> • Dos conectores IDE que soportan cuatro canales IDE y un interfase de disquetera de disco flexible <p>El panel principal soporta la dominación de bus Ultra DMA con velocidades de transferencia de 33/66/100 MB/seg.</p>
I/O Integrado	<p>El tablero principal tiene un set completo de puertos de Entrada/Salida y conectores:</p> <ul style="list-style-type: none"> • Dos puertos PS/2 para ratón y teclado • Un puerto de serie • Un puerto paralelo • Cuatro puertos USB • Un puerto LAN (opcional) • Enchufes de audio para micrófono, línea de entrada y línea de salida
LAN Incorporada (opcional)	<p>El chip Realtek RTL8100C LAN está incorporado en el chipset que provee con el controlador Ethernet rápido de 10/100Mbps y capacidades de Ethernet PCI Lan integradas.</p>
BIOS Firmware	<p>Este panel principal usa el Award BIOS que posibilita a los usuarios configurar muchas características de sistema incluidas las siguientes:</p> <ul style="list-style-type: none"> • Administración de potencia • Alarmas despertadoras • Parámetros y memoria de temporizador CPU • Memoria de temporizador CPU <p>El firmware puede también ser usado para ajustar parámetros para velocidades diferentes de procesador de reloj.</p>



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

製品特徴

プロセッサ	<p>このメインボードに搭載している mPGA 478ピンソケットは次の特長があります：</p> <ul style="list-style-type: none"> Intel P4 Celeron/Northwood/Prescott 478ピンCPUに対応（Intel VRM 10.0の0.8375V～1.6Vに互換性） 400/533/800 MHzのシステムバス（FSB）をサポート システムバスのダイナミックバスインバージョン（DBI）をサポート
チップセット	<p>Intel社848P（MCH）および82801EB（ICH5）チップセットは最新且つ拡張性あるアーキテクチャを採用し、高い安定性およびパフォーマンスを兼ね備えたものであります。また、次の特徴があります：</p> <ul style="list-style-type: none"> 400/533/800 MHz のデータ転送率でフシングルプロセッサをサポート 作動速度200/266/333/400MHzのDDR-SDRAMをサポート、 8X SBA/データ転送及び1X/2X/4X高速書き込み機能を持つ 1.5V AGPインターフェースを搭載、 USB コントローラ2.0（最大8ポートまで拡張可能） 2チャンネルのUltra ATA100バスマスタIDEコントローラ シリアルATAホストコントローラが2つ 最大480Mビット/秒シリアル転送率可能な8つのUSB2.0ポート PCI-Rev2.3に対応した3.3V（許容電圧5V）、33MHzインターフェース PCIからシステムメモリへのデータストリームは最大132 MB/秒 <p>その他に、次の重要機能をサポートしています：オーディオおよびモデム向けのAC 97（2.3）リンク、ハードウェアのモニタ、およびACPI/OnNow 電源管理。</p>
メモリ	<p>本メインボードは2.5VDDR SDRAMに対応しております。メインボードに搭載された2つの非バッファード2.5V184ピン仕様のスロットで、トータルでメモリを2GBまでサポートします。</p>
AGP	<p>本マザーボードは、従来のAGP仕様の8倍、2.1GB/秒に相当する帯域幅を提供することができるAGPスロットが搭載されています。AGP技術は、グラフィックサブシステムとプロセッサとの間での直接通信を実現することにより、グラフィックサブシステムがPCIバスでその他のデバイスと競合する問題ことを解消します。</p>
AC' 97 オーディオコーデック	<p>搭載されているALC655チップは、AC' 97 2.2仕様に適合したもので、P Cマルチメディアシステムのために6チャンネルオーディオCODECをお届けします。さらに、次の3つのアナログラインレベルのステレオ入力5ビット音声コントローラで提供されます：ラインインと、CD、AUX。また、3.3V電源サブライで作動するこのチップは、S/PDIF出力をもサポートします。</p>

拡張オプション	<p>本メインボードには次の拡張オプションが搭載されています：</p> <ul style="list-style-type: none"> • 5つ32ビットPCIスロット • 1つのAGPスロット (1.5Vのみ適用) • 1つの通信ネットワークライザー (CNR) スロット (AC97インターフェースのみ) • 4つのIDEチャネルおよび1つのフロッピーディスクドライブインターフェースを、2つのIDEコネクタでサポート <p>メインボードはUltra DMA パスマスタ機能、33/66/100 MB/秒の転送レートをサポートします。</p>
統合の入出力ポート	<p>このメインボードにはフルセットのI/Oポートおよびコネクタが搭載しています。</p> <ul style="list-style-type: none"> • 2つのマウスおよびキーボード向けPS/2ポート • 1つのシリアルポート • 1つのパラレルポート • 4つのUSBポート • 1つのLANポート (オプション) • マイクロフォンやラインイン、ラインアウト向けのオーディオジャック
オンボードLAN (オプション)	<p>チップセットに統合されたRealtek RTL8100C LAN チップは、10/100Mbps 高速イーサネットコントロールをお届けし、イーサネットPCI LAN 機能をも内蔵しています。</p>
BIOS ファームウェア	<p>本メインボードは次のシステム機能を含めた設定をすることができるAward BIOSを採用しています：</p> <ul style="list-style-type: none"> • 電源管理 • Wake-up警告 • CPUパラメータおよびメモリのタイミング • CPUおよびメモリのタイミング <p>その他に、各種プロセッサクロック速度のパラメータを設定することができます。</p>



一部のハードウェア仕様及びソフトウェアアイテムは予告なく変更されることがあります。

기능

프로세서	<p>본 메인보드는 mPGA 478 핀 소켓을 사용하며 다음과 같은 특징을 지닌다:</p> <ul style="list-style-type: none"> • Intel/P4 Northwood/Prescott 478-핀 CPU 사용 (Intel VRM 10.0 사양. 0.8375V ~ 1.6V 호환) • 400/533/800 MHz 시스템 버스 (FSB) 지원 • System Bus Dynamic Bus Inversion (DBI) 지원
칩셋	<p>Intel의 혁신적인 848P (MCH) 및 82801EB (ICH5) 칩셋은 인정된 신뢰성과 성능을 지닌 혁신적이고 범용성을 지닌 아키텍처를 바탕으로 한다. 이 칩셋이 지닌 주요 고급 특징은 다음과 같다:</p> <ul style="list-style-type: none"> • 데이터 전송 속도 400/533/800MHz의 시그널 프로세서 지원 • 266/333/400MHz의 DDR-SDRAM 지원 • 8X SBA/데이터 전송의 1.5V AGP 인터페이스 및 1X/4X/8X Fast Write 기능 • USB 컨트롤러 2.0 (8 포트 확장 가능) • 2 채널 Ultra ATA/100 버스 마스터 IDE 컨트롤러 • 2 시리얼 ATA 호스트 컨트롤러 • 480Mbps/sec Max 의 시리얼 전송을 위한 8 개의 USB 2.0 포트 • PCI Rev. 2.3, 3.3V (5V Tolerant), 33 MHz 인터페이스 부합 • PCI에서 시스템 메모리 데이터 스트리밍 최대 132 MB/sec <p>이외의 주요 특징으로 오디오와 모뎀을 위한 AC' 97 (2.3) 인터페이스, 하드웨어 모니터링 및 ACPI/OnNow 전원 관리를 지원한다.</p>
메모리	<p>본 메인보드는 2.5V DDR SDRAM을 사용한다. 최대 용량 2 GB 인 2 개의 unbuffered 2.5V 184핀 슬롯이 있다.</p>
AGP	<p>본 마더보드는 기존 AGP 사양의 8배의 대역폭을 매초간 2.1 기가바이트 (GB/s) 을 제공하는 AGP 슬롯을 사용한다. AGP 기술은 그래픽 하부 시스템과 프로세서를 직접 연결하여 그래픽이 PCI 버스 상에 있는 다른 장치와 프로세서 시간을 다룰 필요가 없다.</p>
AC' 97 오디오 코덱	<p>ALC655 는 AC' 97 (REV 2.3) 코덱과 호환하고 PC 멀티미디어 시스템을 위해 디자인된 6-채널 오디오 코덱을 지원한다. 이것은 5 비트 볼륨 컨트롤과 함께 다음과 같은 3 개의 아날로그 라인 레벨 스테레오 입력을 제공한다: Line_IN, CD, AUX. 이것은 또한 S/PDIF 출력 기능을 지원하며 3.3V 파워 쉐플라이로 작동한다.</p>
확장 옵션	<p>본 메인보드는 다음과 같은 풀 세트의 확장 옵션이 있다:</p> <ul style="list-style-type: none"> • 32-bit PCI 슬롯 5개 • AGP 슬롯 1 개 (1.5V 만 지원) • Communications Network Riser (CNR) 슬롯 1 개 (AC97 인터페이스의 경우에만)

	<ul style="list-style-type: none"> 4개의 IDE 채널 및 플로피 디스크 드라이브 인터페이스를 지원하는 IDE 커넥터 2개 <p>메인보드는 전송 속도 33/66/100 MB/sec 의 Ultra DMA bus mastering 을 지원한다.</p>
통합 I/O	<p>본 메인보드는 다음과 같은 풀 세트의 확장 옵션이 있다:</p> <ul style="list-style-type: none"> 마우스와 키보드용 PS/2 포트 2 개 시리얼 포트 1 개 패러럴 포트 1 개 USB 포트 4 개 LAN 포트 1 개 (선택 사항) 마이크 용 오디오 잭, 라인 입력 및 라인 출력
보드 내장 LAN (선택 사항)	<p>Realtek RTL8100C LAN 칩은 메인보드에 10/100Mbps 패스트 이더넷 컨트롤러와 통합 이더넷 PCI LAN 성능을 제공하는 칩셋에 사용된다.</p>
BIOS 펌웨어	<p>본 메인보드는 Award BIOS 를 사용하여 사용자는 다음과 같은 시스템 기능을 구성할 수 있다:</p> <ul style="list-style-type: none"> 전원 관리 Wake-up 알람 CPU 파라미터 및 메모리 타이밍 CPU 및 메모리 타이밍 <p>펌웨어는 다른 프로세서의 클럭 속도를 설정하는 데도 사용될 수 있다.</p>



하드웨어 사양 및 소프트웨어 아이템은 사전 통보 없이 변경될 수 있음.

性能

處理器	<p>本主機板採用了具有下列功能之m PGA478針插槽：</p> <ul style="list-style-type: none"> • 支援 Intel P4 Celeron/Northwood/Prescott 478針處理器 (相容於Intel VRM 0.8375V~1.6V規格) • 支援高達400/533/800 MHz之系統匯流排 (FSB) • 支援系統匯流排的動態匯流排轉換功能 (DBI)
晶片組	<p>Intel公司新推出之848P (MCH) 及82801EB (ICH5) 晶片組採行了一種創新且具擴充性之架構，可提供您滿足之穩定性及效能。本晶片組的特點包含如下：</p> <ul style="list-style-type: none"> • 支援資料傳送速率為 400/533/800 MHz 之處理器 • 支援2200/266/333/400 MHz DDR SDRAM • 1.5V AGP介面具有8x SBA/資料傳輸及1X/4x/8x快寫功能 • USB控制器2.0 (最多可擴充成8個埠) • 具有2通路的Ultra ATA100匯流排主IDE控制器 • 2個串列ATA主控器 • 8個 USB 埠，提供高達480M位元/秒之傳輸速度 • 符合PCI2.3版規格的3.3V (額定電壓5V) 33MHz介面 • 提供高達132M位元/秒之PCI與系統記憶體間之資料串流速率 <p>其他重要功能包括：音效及數據機連接用的 AC 97連接埠、硬體監視功能、及ACPI/OnNow 電源管理功能。</p>
記憶體	<p>本主機板支援無緩衝2.5V DDR SDRAM。藉由配備2個無緩衝2.5V184針插槽，可支援高達2GB的記憶體。</p>
AC' 97 音效解碼/編碼器	<p>配備之ALC655晶片不僅相容於AC' 97 2.3版 規格，且支援為個人電腦多媒體系統設計的6通道音訊CODEC功能。此外，以5位元音量控制功能提供3種類比線級立體音效輸入：Line-in、CD、及AUX。本晶片以3.3V電源來驅動，能夠支援S/PDIF輸出。</p>
AGP	<p>本主機板配備有一個AGP插槽，能夠支援為舊型AGP規格8倍之頻寬，相當於2.1GB/秒。AGP技術能使繪圖子系統與中央處理器直接連接，藉此繪圖子系統將無需與其他PCI插槽設備在爭取處理器資源上發生衝突。</p>
擴充選項	<p>本主機板提供有如下擴充選項：</p> <ul style="list-style-type: none"> • 5個32位元PCI 插槽 • 1個 AGP 插槽 (僅適用1.5V規格) • 1個CNR(Communications Network Riser) 槽(僅適用AC97介面) • 2個IDE連接器，支援4個IDE 通路及1個軟碟槽介面 <p>本主機板之Ultra DMA 匯流排主控功能可支援高達33/66/100 MB/秒之資料傳輸。</p>

整合之輸出入介面	<p>本主機板完整地支援各種 I 輸出入及連接器：</p> <ul style="list-style-type: none"> • 2個 PS/2 埠，分供滑鼠及鍵盤連接 • 1個串列埠 • 1個平行埠 • 4個USB埠 • 1個LAN埠(選項) • 麥克風、line-in及line-out音效端
機載LAN功能 (選購)	<p>內建於晶片組的Realtek RTL8100C LAN晶片能夠提供10/100Mbps 高速乙太網路功能，且內建有乙太網路 PCI LAN 功能。</p>
BIOS 韌體	<p>本主機板使用了Award BIOS，使用者可藉此對包括下列之系統功能進行設定：</p> <ul style="list-style-type: none"> • 電源管理功能 • 喚醒警示功能 • CPU參數及記憶體頻率 • CPU及記憶體頻率 <p>本BIOS也可用以設定各種有關處理器時脈的參數。</p>



有些硬體規格以及軟體物件將視狀況適當調整，不予另行通知。

特性

处理器	<p>主板使用一个 mPGA 478-pin 插座，此插座具有以下特点：</p> <ul style="list-style-type: none"> 支持 Intel/P4 Northwood/Prescott 478-pin CPU（兼容 Intel VRM 10.0 规格）0.8375V ~ 1.6V） 支持 400/533/800 MHz 系统总线（FSB） 支持系统总线动态总线倒置（DBI）
芯片组	<p>Intel 最新推出的848P（MCH）和 82801EB（ICH5）芯片组是基于一种新型的、可扩展的架构，能提供已经证明的可靠性和高性能。此芯片组具有以下一些高级功能：</p> <ul style="list-style-type: none"> 支持400/533/800MHZ 传输速率的单处理器 支持在 266/333/400MHz 下工作的 DDR-SDRAM 带有 8X SBA/数据传输和 1X/4X/8X 快写功能的 1.5V AGP 接口 USB 2.0 控制器（可扩展 8 个端口） 2 通道 Ultra ATA/100 总线主控 IDE 控制器 2 个串行 ATA 主控器 8 个用于串行传输的 USB 2.0 端口，最大传输速率可到 480Mbps /Sec 兼容 PCI Rev. 2.3, 3.3V (5V Tolerant)、33 MHz 接口 PCI 到系统内存数据传输速率可到 132 MB/sec <p>其它主要功能包括支持用于音频和调制解调器的 AC' 97 (2.3) 连接、硬件监测和 ACPI/OnNow 电源管理。</p>
内存	<p>此主板可支持 2.5V DDR SDRAM。它有 2 个非缓冲 2.5V 184 pin 插槽，最大可支持 2 GB。</p>
AGP	<p>此主板含有一个 AGP 插槽，可提供普通 AGP 规格 8-倍的带宽，可达 2.1 GB/s。AGP 技术能提供图像子系统和处理器之间的直接连接，这样图像就不需要与 PCI 总线上的其它设备争用处理器时间。</p>
AC' 97 音频编码器	<p>ALC655 符合 AC' 97 (REV 2.3) 编解码器规格，支持为 PC 多媒体系统设计的 6 声道音频 CODEC。它提供 3 路带 5 位音量控制的模拟线路电平立体声输入：Line_IN、CD、AUX。它还支持 S/PDIF 输出功能，可在 3.3V 电源下工作。</p>
扩展 选项	<p>此主板提供如下扩展选项：</p> <ul style="list-style-type: none"> 5 个 32 位 PCI 扩展插槽 5 个 32 位 AGP 插槽（只支持 1.5V） 1 个通信网络转接（CNR）插槽（仅对于 AC97 接口） 2 个 IDE 接口，可支持 4 个 IDE 通道；1 个软驱接口 <p>主板支持 Ultra DMA 总线控制，传输速率可达 33/66/100 MB/sec。</p>
集成 I/O	<p>此主板具有完整的 I/O 端口和插孔：</p> <ul style="list-style-type: none"> 2 个用于连接鼠标和键盘的 PS/2 端口 1 个串口 1 个并口 4 个 USB 端口 1 个 LAN 端口（可选） 麦克风、线入和线出声音插孔

Onboard LAN (可选)	Realtek RTL8100C LAN 芯片包含在芯片组中，能够为主板提供集成的以太网 PCI LAN 功能。
BIOS	<p>此主板使用 Award BIOS，可以让用户自己配置以下系统功能：</p> <ul style="list-style-type: none">• 电源管理• 唤醒报警• CPU 参数和记忆定时• CPU 和记忆定时 <p>还可用于设置不同处理器时钟速度的参数。</p>



部分硬件规格和软件项目若有更改恕不另行通知。

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Chapter 1

Introducing the Motherboard

Introduction

Congratulations on purchasing this motherboard. This motherboard is an ATX motherboard that uses a 4-layer printed circuit board and measures 305 mm x 220 mm. The motherboard is designed to support the mPGA Socket 478 Intel P4 Celeron/Northwood/Prescott processors.

Based on the 848P (MCH) and 82801EB (ICH5) chipsets. This motherboard offers up to 400/533/800MHz system bus speeds, AGP8X graphics interface, Hyper-Threading technology, 200/266/333/400 MHz DDR memory controller, 10/100 LAN, dual independent Serial ATA ports and high-speed USB 2.0 connectivity.

This motherboard represents the most powerful desktop and cost-effective available today. It provides advanced set of I/O ports, such as dual channel IDE interfaces, a floppy controller, one high-speed serial port, an EPP/ECP capable bi-directional parallel port connector, four USB (Universal Serial Bus) connector, a PS/2 keyboard connector, mouse connector and audio jacks for microphone, line-in and line-out. One AGP slot, five PCI local bus slots and one CNR slot provide expandability for add-on peripheral cards.

In addition to its excellent performance and stability, the motherboard is highly suited for Internet and rich multimedia applications, including streaming video download and are ideal for workstations and high-end home use.

Features

Processor	<p>The motherboard uses a mPGA 478-pin socket that has the following features:</p> <ul style="list-style-type: none"> Accommodates Intel/P4 Celeron/Northwood/Prescott 478-pins CPU (compliant with Intel VRM 10.0 spec. 0.8375V ~ 1.6V) Supports a system bus (FSB) of 400/533/800 MHz Supports System Bus Dynamic Bus Inversion (DBI)
Chipset	<p>Intel's innovative 848P (MCH) and 82801EB (ICH5) chipsets are based on an innovative and scalable architecture with proven reliability and performance. A few of the advanced features of the chipsets are:</p> <ul style="list-style-type: none"> Support a single processor with a data transfer-rate of 400/533/800MHz Support DDR-SDRAM at 200/266/333/400MHz operation 1.5V AGP Interface With 8X SBA/Data Transfer and 1X/4X/8X Fast Write Capability USB Controller 2.0 (expanded capabilities for 8 Ports) 2 Channel Ultra ATA/100 bus master IDE controllers 2 serial ATA host controllers Eight USB 2.0 Ports for serial transfers at 480Mbps/sec Max PCI Rev. 2.3, 3.3V (5V Tolerant), 33 MHz interface Compliant PCI to System Memory Data Streaming up to 132 MB/sec <p>Additional key features include support for an AC'97 (2.3) interface for audio and modem, hardware monitoring, and ACPI/OnNow power management.</p>
Memory	<p>The motherboard can accommodate 2.5V DDR SDRAM. It accommodates two unbuffered 2.5V 184 pin slots with a total maximum capacity of 2 GB.</p>
AC' 97 Audio CODEC	<p>The ALC655 is compliant with the AC'97 (REV 2.3) CODEC and supports six channels audio CODEC designed for PC multimedia systems. It provides three analog line-level stereo inputs with 5-bit volume control: Line_IN, CD, AUX. It also supports S/PDIF output function and operates from a 3.3V power supply.</p>
AGP	<p>This motherboard includes an AGP slot that provides eight times the bandwidth of the original AGP specification to 2.1 gigabytes per second (GB/s). AGP technology provides a direct connection between the graphics sub-system and the processor so that the graphics do not have to compete for processor time with other devices on the PCI bus.</p>
Expansion Options	<p>The motherboard comes with the following expansion options:</p> <ul style="list-style-type: none"> Five 32-bit PCI slots One AGP slot (support 1.5V only) One Communications Network Riser (CNR) slot (AC97 interface only) Two IDE connectors which support four IDE channels and a floppy disk drive interface <p>The motherboard supports Ultra DMA bus mastering with transfer rates of 33/66/100 MB/sec.</p>

Integrated I/O	<p>The motherboard has a full set of I/O ports and connectors:</p> <ul style="list-style-type: none"> • Two PS/2 ports for mouse and keyboard • One serial port • One parallel port • Four USB ports • One LAN port (optional) • Audio jacks for microphone, line-in and line-out
Onboard LAN (optional)	<p>The Realtek RTL8100C LAN chip is incorporated in the chipset providing the motherboard with 10/100Mbps fast Ethernet controller and integrated Ethernet PCI LAN capabilities.</p>
BIOS Firmware	<p>This motherboard uses Award BIOS that enables users to configure many system features including the following:</p> <ul style="list-style-type: none"> • Power management • Wake-up alarms • CPU parameters and memory timing • CPU and memory timing <p>The firmware can also be used to set parameters for different processor clock speeds.</p>



Some hardware specifications and software items are subject to change without prior notice.

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Ensure that your case supports all the features required. The motherboard can support one or two floppy diskette drives and four enhanced IDE drives. Ensure that your case has sufficient power and space for all the drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

This motherboard has an ATX form factor of 305 mm x 220 mm. Choose a case that accommodates this form factor.

Motherboard Components

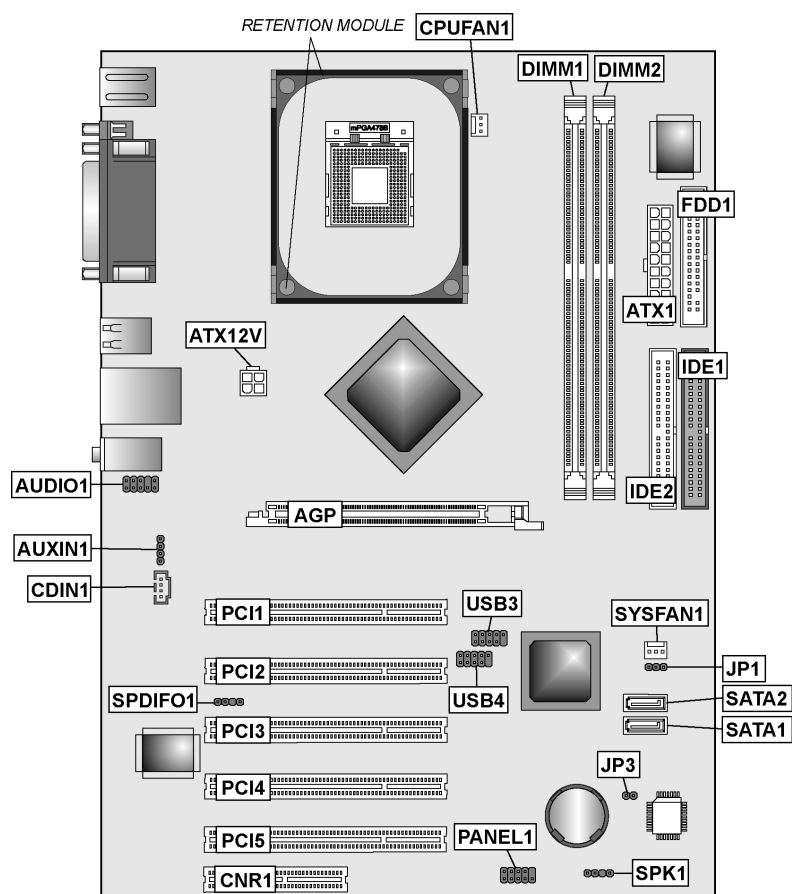


Table of Motherboard Components

Label	Component
AGP1	Accelerated Graphics Port
ATX1	Standard 20-pin ATX power connector
ATX12V	Power connector
AUDIO1	Front panel MIC/Speaker Out header
AUXIN1	Auxilliary In header
BAT1	Three volt realtime clock battery
CDIN1	Primary CD-in connector
CPUFAN1	Cooling fan for CPU
CPU Socket	CPU socket (mPGA478)
CNR1	Communications Networking Riser slot
DIMM1 ~ DIMM2	Two 184-pin DDR sockets
FDD1	Floppy disk drive connector
IDE1	Primary IDE channel
IDE2	Secondary IDE channel
JP1	Clear CMOS jumper
JP3	BIOS flash protect jumper
PANEL1	Panel connector for case switches and LEDs
PCI1 ~ PCI5	Five 32-bit add-on card slots
SATA1 ~ SATA2	Serial ATA header
SPDIFO1	SPDIF out header
SPK1	Speaker connector
SYSFAN1	System fan connector
USB3 ~ USB4	Connector for front panel USB ports

This concludes Chapter 1. The next chapter explains how to install the motherboard.

Chapter 2

Installing the Motherboard

Safety Precautions

Follow these safety precautions when installing the motherboard:

- Wear a grounding strap attached to a grounded device to avoid damage from static electricity.
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard.
- Leave components in the static-proof bags they came in.
- Hold all circuit boards by the edges. Do not bend circuit boards.

Quick Guide

This Quick Guide suggests the steps you can take to assemble your system with the motherboards.

The following table provides a reference for installing specific components:

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Setting Jumpers	Go to page 8
Installing Case Components	Go to page 10
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Installing Add-on Cards	Go to page 21
Connecting Options	Go to page 22
Connecting Peripheral (I/O) Devices	Go to page 24

Installing the Motherboard in a Case

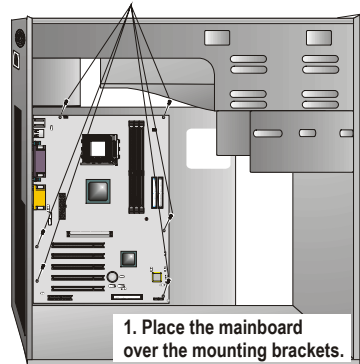
Refer to the following illustration and instructions for installing the motherboard in a case:

This illustration shows an example of a motherboard being installed in a tower-type case:

Note: Do not overtighten the screws as this can stress the motherboard.

Most system cases have mounting brackets installed in the case, which correspond to the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

2. Secure the mainboard with screws where appropriate.



Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.

Checking Jumper Settings

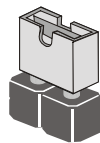
This section explains how to set jumpers for correct configuration of the motherboard.

Setting Jumpers

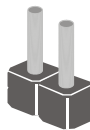
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations below show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

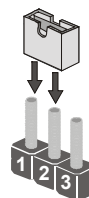
This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



Short

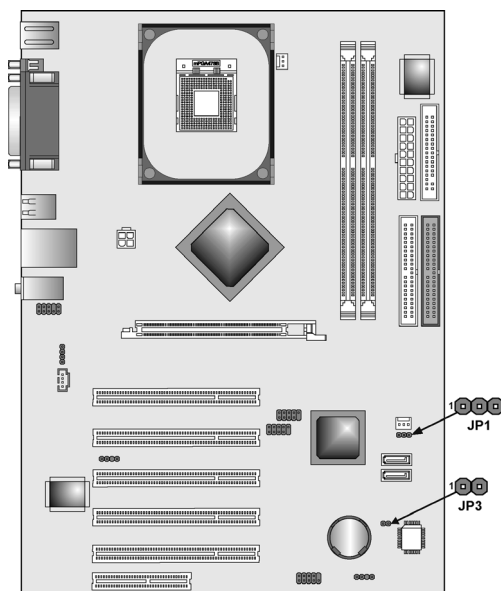


Open





Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



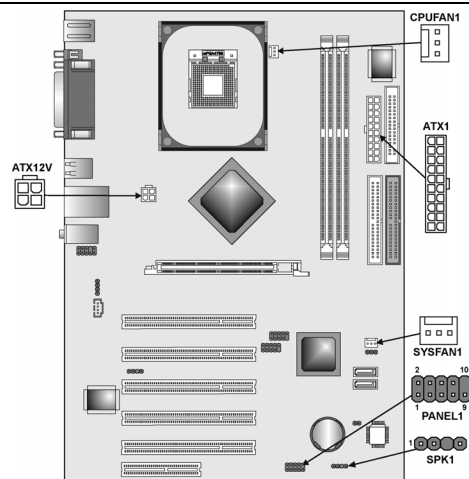
Jumper Settings

Jumper	Description	Setting
JP1	Clear CMOS	1-2: Normal (default) 2-3: Clear CMOS Before clearing the CMOS, make sure to turn off the system <div> JP1  1 </div>
JP3	BIOS Flash Protect	Open: Enable Flash (default) Short: Flash Protect <div> JP3  </div>

Connecting Case Components

After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1. Connect the CPU cooling fan cable to **CPUFAN1**.
2. If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **SYSFAN1** fan power connector on the motherboard.
3. Connect the case speaker cable to **SPK1**.
4. Connect the case switches and indicator to **PANEL1**.
5. Connect the standard power supply connector to **ATX1**.
6. Connect the Pentium 4 processor auxiliary case power supply connector to **ATX12V**.



Note: When the system is heavily loaded, you should install, at a minimum, an ATX12V power supply with a 300W capacity.

CPUFAN1/SYSFAN1: FAN Power Connectors

Pin	Signal Name	Function
1	GND	System Ground
2	+12V	Power +12V
3	Sense	Sensor

SPK1: Internal speaker

Pin	Signal Name
1	Signal
2	Buzzer
3	NC
4	VCC

ATX1: ATX 20-pin Power Connector

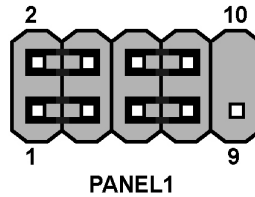
Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS ON#
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGD	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

ATX12V: ATX 12V Power Connector

Pin	Signal Name
1	+12V
2	+12V
3	Ground
4	Ground

Front Panel Connector

The front panel connector (PANEL1) provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases. Refer to the table below for information:



Pin	Signal	Function	Pin	Signal	Function
1	HD_LED_P	Hard disk LED (positive)	2	FP PWR/SLP	MSG LED [dual color or single color (+)]
3	HD_LED_N	Hard disk active LED (negative)	4	FP PWR/SLP	MSG LED [dual color or single color (-)]
5	RST_SW_N	Reset Switch	6	PWR_SW_P	Power Switch
7	RST_SW_P	Reset Switch	8	PWR_SW_N	Power Switch
9	RSVD	Reserved	10	Key	No pin

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power / Sleep / Message Waiting LED

Connecting pins 2 and 4 to a single- or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pins 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal debounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

Installing Hardware

Installing the Processor

Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.

On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.

Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.

Before installing the Processor

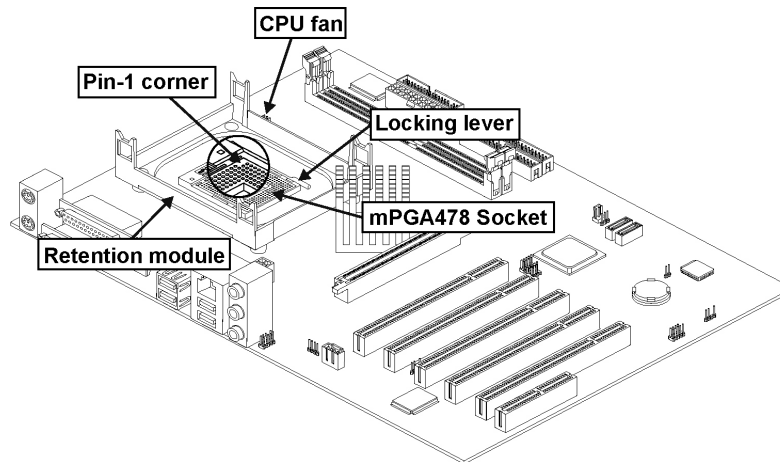
This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not overclock processors or other components to run faster than their rated speed.

Warning: Overclocking components can adversely affect the reliability of the system and introduce errors into your system. Overclocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

This motherboard has an mPGA478 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

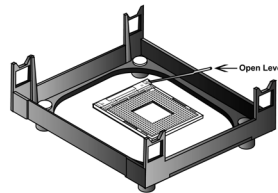
The following illustration shows CPU installation components:



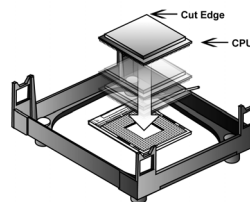
Note: The pin-1 corner is marked with an arrow ▼

Follow these instructions to install the Retention Module and CPU:

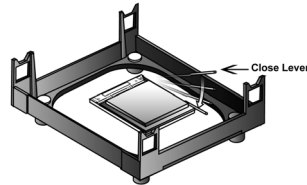
1. Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.



2. Locate the CPU cut edge (the corner with the pinhole noticeably missing). Align and insert the CPU correctly.

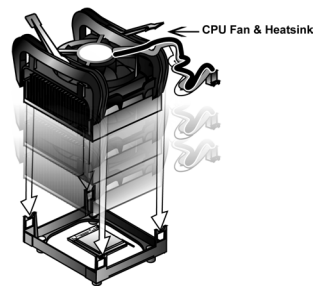


3. Press the lever down.



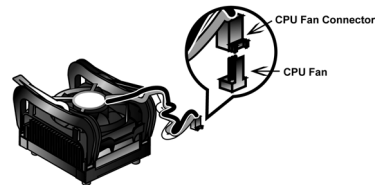
4. Apply thermal grease on top of the CPU.

5. Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.



6. Flip the levers over to lock the heat sink in place.

7. Connect the CPU Cooling Fan power cable to the CPUFAN1 connector. This completes the installation.



- Notes:**
- To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least.
 - CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.

Installing Memory Modules

This motherboard accommodates two 184-pin 2.5V unbuffered Double Data Rate (DDR) SDRAM memory modules. It can support DDR200/DDR266/DDR333/DDR400 memory modules and allow up to 3.2 GB/s data transfer rate.

You must install at least one module in any of the two slots. Each module can be installed with 32 MB to 1 GB of memory; total memory capacity is 2GB.

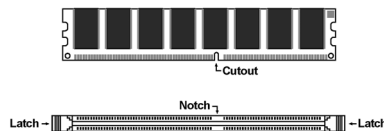


Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Installation Procedure

Refer to the following to install the memory modules.

1. This motherboard supports unbuffered DDR SDRAM only. Do not attempt to insert any other type of DDR SDRAM into the slots.



2. Push the latches on each side of the DIMM slot down.
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.



4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.



6. Install any remaining DIMM modules.

Installing a Hard Disk Drive/SATA Hard Drive/ CD-ROM

This section describes how to install IDE devices such as a hard disk drive SATA hard drive and a CD-ROM drive.

About IDE Devices

Your motherboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.

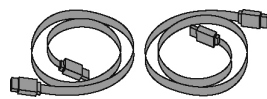
IDE devices have jumpers or switches that are used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. When installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About SATA Connectors

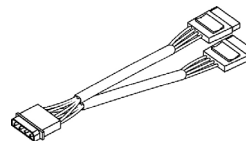
Your motherboard features two SATA connectors supporting a total of two drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard (see page 22) and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives (optional)

To install the Serial ATA (SATA) hard drives, use the SATA cable which supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.



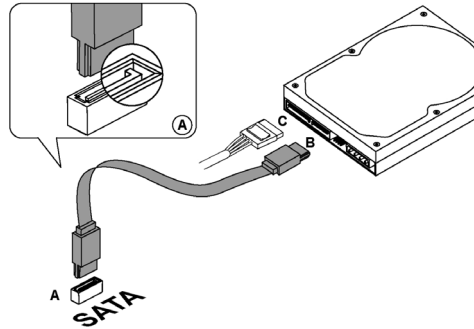
SATA cable



SATA power cable

Refer to the illustration below for proper installation:

1. Attach either cable end to the connector **(A)** on the motherboard.
2. Attach the other cable end **(B)** to the SATA hard drive.
3. Attach the SATA power cable to the SATA hard drive **(C)** and connect the other end to the power supply.



Note: This motherboard does not support the “Hot-Plug” function.

Installing a Hard Disk Drive/CD-ROM

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

Your motherboard has a primary and secondary IDE channel interface (IDE1 and IDE2). An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

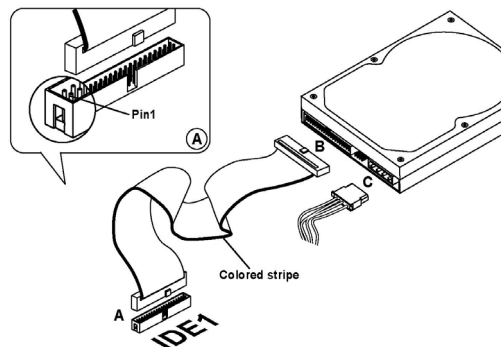
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.



You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

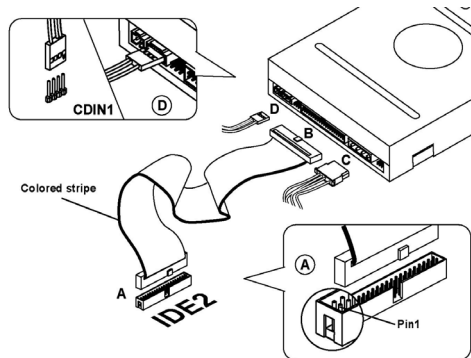
IDE1: Primary IDE Connector

The first hard drive should always be connected to IDE1.



IDE2: Secondary IDE

The second drive on this controller must be set to slave mode. The configuration is the same as IDE1.



IDE devices have jumpers or switches that are used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. When installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

About UltraDMA

This motherboard supports UltraDMA 66/100. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 66/100.

Installing a Floppy Diskette Drive

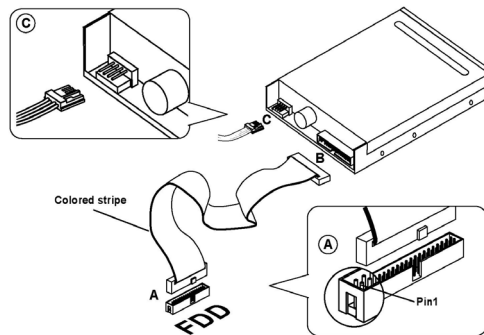
The motherboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch drive and another type of connector for a 3.5-inch drive.



You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.

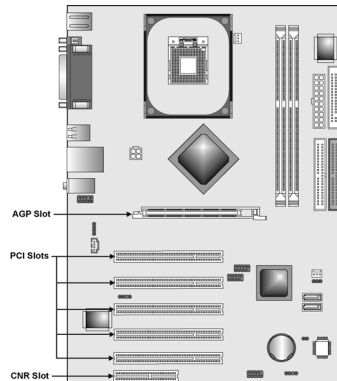
FDD1: Floppy Disk Connector

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



Installing Add-on Cards

The slots in this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware which performs tasks that are not part of the basic system.



PCI Slots PCI slots are used to install expansion cards that have the 32-bit PCI interface.

AGP Slot The AGP slot is used to install graphics adapter that supports the 1.5V 8X AGP card which is also backward compatible with 4X AGP card. The slot is keyed to support only the latest 1.5-volt AGP cards.

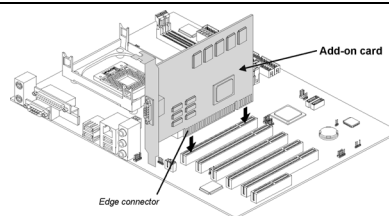
CNR Slot This slot is used to insert CNR cards with Modem and Audio functionality.

Note: Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

1. Remove a blanking plate from the system case corresponding to the slot you are going to use.

2. Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.

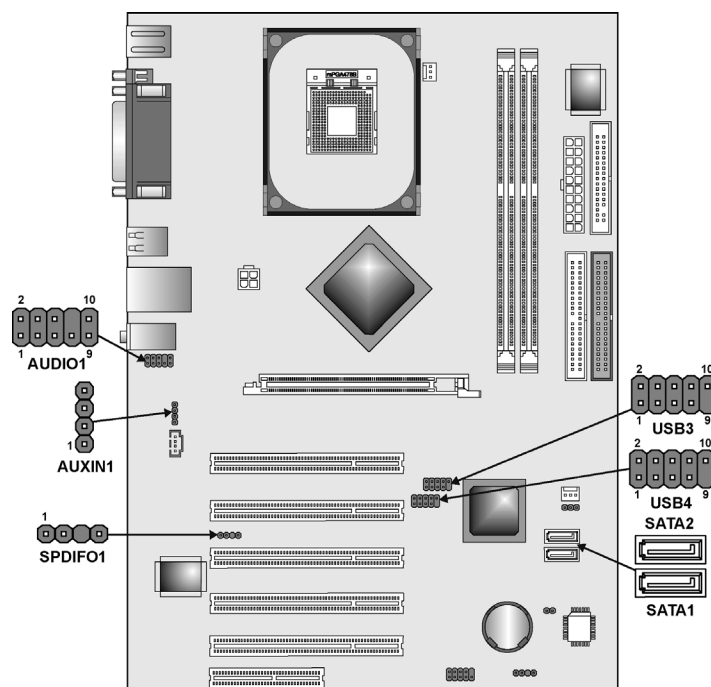


3. Secure the metal bracket of the card to the system case with a screw.

Note: For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

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



AUDIO1: Front Panel Audio header

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

Pin	Signal Name	Function
1	AUD_MIC	Front Panel Microphone input signal
2	AUD_GND	Ground used by Analog Audio Circuits
3	AUD_MIC_BIAS	Microphone Power
4	AUD_VCC	Filtered +5 V used by Analog Audio Circuits
5	AUD_FPOUT_R	Right Channel Audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	HP_ON	Reserved for future use to control Head-phone Amplifier
8	KEY	No Pin
9	AUD_FPOUT_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal Return from Front Panel

USB3/USB4: Front panel USB connectors

The motherboard has four 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 USB3 or USB4 to connect the front-mounted ports to the motherboard.

Pin	Signal Name	Function
1	VREG_FP_USBPWR0	Front Panel USB Power
2	VREG_FP_USBPWR0	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	KEY	No pin
10	NC	Not connected

Note: Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

SATA1/SATA2: Serial ATA header

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (150 MB/s), 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.

Pin	Signal Name	Pin	Signal Name
1	GND	2	TX+
3	TX-	4	GND
5	RX-	6	RX+
7	GND	-	-

AUXIN1: Auxiliary In header

This connector is an additional line-in audio connector. It allows you to attach a line-in cable when your rear line-in jack is set as line out port for 4-channel function.

Pin	Signal Name	Function
1	AUX_L	AUX In left channel
2	GND	Ground
3	GND	Ground
4	AUX_R	AUX In right channel

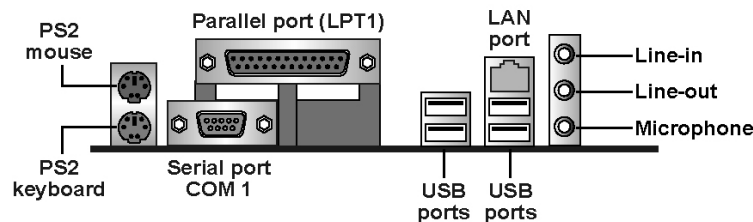
SPDIF01: SPDIF out header (optional)

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

Pin	Signal Name
1	SPDIF Out
2	VCC
3	KEY
4	GND

Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:



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.
LPT1	Use LPT1 to connect printers or other parallel communications devices.
COM1	Use the COM ports to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
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.
LAN Port	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.

This concludes Chapter 2. The next chapter covers the BIOS.

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest Award BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.


This Setup Utility should be used:

- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press **DEL** to enter **SETUP**

Pressing the delete key  accesses the BIOS Setup Utility:

Phoenix – AwardBIOS CMOS Setup Utility

<ul style="list-style-type: none">▶ Standard CMOS Features▶ Advanced BIOS Features▶ Advanced Chipset Features▶ Integrated Peripherals▶ Power Management Setup▶ PnP/PCI Configurations▶ PC Health Status	<ul style="list-style-type: none">▶ Frequency Control<ul style="list-style-type: none">Load Fail-Safe DefaultsLoad Optimized DefaultsSet Supervisor PasswordSet User PasswordSave & Exit SetupExit Without Saving
Esc : Quit F10 : Save & Exit Setup	
↑ ↓ → ← : Select Item	
Time, Date, Hard Disk Type . . .	

BIOS Navigation Keys

The BIOS navigation keys are listed below:

Key	Function
Esc	Exits the current menu
←↑↓→	Scrolls through the items on a menu
+/-/PU/PD	Modifies the selected field's values
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions
F5	Loads previously saved values to CMOS
F6	Loads a minimum configuration for troubleshooting.
F7	Loads an optimum set of values for peak performance

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.

2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 3.
5. Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
6. At the A:\ prompt, type the Flash Utility program name and press <Enter>.
7. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
8. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten.

Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ►) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ►.

Standard CMOS Features

This option displays basic information about your system.

Phoenix – AwardBIOS CMOS Setup Utility Standard CMOS Features

Date (mm:dd:yy)	Tue, July 11 2001	Item Help
Time (hh:mm:ss)	12 : 8 : 59	Menu Level ►
► IDE Primary Master		Change the day, month, year and century.
► IDE Primary Slave		
► IDE Secondary Master		
► IDE Secondary Slave		
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Floppy 3 Mode Support	[Disabled]	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Base Memory	640K	
Extended Memory	31744K	
Total Memory	32768K	

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

Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

► IDE Devices (None)

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Press <Enter> to display the IDE submenu:

Phoenix – AwardBIOS CMOS Setup Utility IDE Primary Master

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Primary Master	[Auto]	Menu Level ►►
Access Mode	[Auto]	To auto-detect the HDD's size, head . . . on this channel
Capacity	0 MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

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

IDE HDD Auto-Detection

Press <Enter> while this item is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.

Note: If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

IDE Primary/Secondary Master/Slave (Auto)

Leave this item at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below.

Refer to your drive's documentation or look on the drive casing if you need to obtain this information. If no device is installed, change the value to None.

Note: Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.

Access Mode

This item defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

Press <Esc> to return to the Standard CMOS Features page.

Drive A/Drive B (1.44M, 3.5 in./None)

These items define the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

Floppy 3 Mode Support (Disabled)

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

Video (EGA/VGA)

This item defines the video mode of the system. This motherboard has a built-in VGA graphics system; you must leave this item at the default value.

Halt On (All Errors)

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

Base Memory, Extended Memory, and Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

Advanced BIOS Features

This option defines advanced information about your system.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features

		Item Help
► Hard Disk Boot Priority	[Press Enter]	
Hyper-Threading Technology	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[CD-ROM]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	
APIC Mode	[Enable]	
OS Select For DRAM > 64MB	[Non-OS2]	

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

Hard Disk Boot Priority (Press Enter)

Use this option to select the hard disk boot priority.

Hyper-Threading Technology (Enabled)

This item is only available when the chipset supports Hyper-Threading and you are using a Hyper-Threading CPU.

Quick Power On Self Test (Enabled)

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

First/Second/Third Boot Device (Floppy/Hard Disk/CD-ROM)

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

Boot Other Device (Enabled)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second, and Third boot devices.

Swap Floppy Drive (Disabled)

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

Boot Up Floppy Seek (Disabled)

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

Boot Up NumLock Status (On)

This item defines if the keyboard Num Lock key is active when your system is started.

Gate A20 Option (Fast)

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.

Typematic Rate Setting (Disabled)

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec):** Use this item to define how many characters per second are generated by a held-down key.
- **Typematic Delay (Msec):** Use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters.

Security Option (Setup)

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

APIC Mode (Enable)

This option enables/disables APIC (Advanced Programmable Interrupt Controller) functionality. The APIC is an Intel chip that provides symmetric multiprocessing (SMP) for its Pentium systems.

OS Select For DRAM > 64 MB (Non-OS2)

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

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

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

Report No FDD For WIN 95 (Yes)

Set this item to the default if you are running a system with no floppy drive and using Windows 95; this ensures compatibility with the Windows 95 logo certification.

Small Logo (EPA) Show (Disabled)

Enables or disables the display of the EPA logo during boot.

Advanced Chipset Features

These items define critical timing parameters of the motherboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.

Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable		Item Help
x CAS Latency Time	[By SPD] 2.5	Menu Level ►
x Active to Precharge Delay	7	
x DRAM RAS# to CAS# Delay	3	
x DRAM RAS# Precharge	3	
Memory Frequency For	[Auto]	
System BIOS Cacheable	[Disabled]	
Video RAM Cacheable	[Disabled]	
Delay Prior to Thermal	[16 Min]	
AGP Aperture Size (MB)	[128]	
Init Display First	[PCI]	
DDR Voltage	[Default]	
Fast Chip Select	[Auto]	
CPC Addr/Control	[Auto]	
Turbo Mode	[Auto]	

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

DRAM Timing Selectable (Manual)

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

CAS Latency Time

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

Active to Precharge Delay (7)

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

DRAM RAS# to CAS# Delay (3)

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

DRAM RAS# Precharge (3)

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

Memory Frequency For (Auto)

This item sets the main memory frequency. When you use an external graphics card, you can adjust this to enable the best performance for your system.

System BIOS Cacheable (Disabled)

This item allows the system to be cached in memory for faster execution. Enable this item for better performance.

Video RAM Cacheable (Disabled)

These items allow the video BIOS and RAM to be cached in memory for faster execution. Enable these items for better performance.

Delay Prior to Thermal (16 Min)

Enables you to set the delay time before the CPU enters auto thermal mode.

AGP Aperture Size (128 MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.

Init Display First (PCI Slot)

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the motherboard.

DDR Voltage (Default)

This item allows you to adjust the DDR voltage.

Fast Chip Select (Auto)

This item allows you to read the Data transfer from CPU to GMCH.

CPC Addr/Control (Auto)

This enables the DDR channel A and channel B memory access to reduce the loading for selective CPC (Clock Per Command).

Turbo Mode (Auto)

This item increases the performance of CPU L2 cache timing at high speed.

Integrated Peripherals

These options display items that define the operation of peripheral components on the system's input/output ports.

Phoenix – AwardBIOS CMOS Setup Utility Integrated Peripherals

► OnChip IDE Device	[Press Enter]	Item Help
► Onboard Device	[Press Enter]	Menu Level ►
► SuperIO Device	[Press Enter]	

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

► OnChip IDE Device

Scroll to this item and press <Enter> to view the following screen:

Phoenix – AwardBIOS CMOS Setup Utility OnChip IDE Device

IDE HDD Block Mode	[Enabled]	Item Help
On-Chip Primary PCI IDE	[Enabled]	Menu Level ▶
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
** On-Chip Serial ATA Setting **		
x SATA Mode	IDE	
On-chip Serial ATA	[Disabled]	
Serial ATA Port0 Mode	[Primary Master]	
x Serial ATA Port1 Mode	Primary Master	

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

IDE HDD Block Mode (Enabled)

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

On-Chip Primary/Secondary PCI IDE (Enabled)

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

IDE Primary/Secondary Master/Slave PIO (Auto)

Each IDE channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input/Output) is used by IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0-4.

IDE Primary/Secondary Master/Slave UDMA (Auto)

Each IDE channel supports a master device and a slave device device. This motherboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate item on this list to Auto. You may have to install the UltraDMA driver supplied with this motherboard in order to use an UltraDMA device.

SATA Mode (IDE)

Use this item to select the mode of the Serial ATA.

On-chip Serial ATA (Disabled)

Enables and disables the built-in on-chip serial ATA.

Serial ATA Port0/Port1 Mode (Primary Master)

Use this item to select the SATA0 master or SATA1 master.

► Onboard Device

Scroll to this item and press <Enter> to view the following screen:

Phoenix – AwardBIOS CMOS Setup Utility Onboard Device

		Item Help
USB Controller	[Enabled]	Menu Level ►
USB 2.0 Controller	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	
AC97 Audio	[Auto]	
AC97 Modem	[Auto]	
Onboard LAN Device	[Enabled]	
Onboard LAN Boot ROM	[Disabled]	
Onboard 1394 Device	[Enabled]	

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

USB Controller (Enabled)

Enable this item if you plan to use the Universal Serial Bus ports on this motherboard.

USB 2.0 Controller (Enabled)

Enable this item if want to use the USB 2.0 controller.

USB Keyboard Support (Disabled)

Enable this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

USB Mouse Support (Disabled)

Enable this item if you plan to use a USB mouse.

AC97 Audio (Auto)

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-on card.

AC97 Modem (Auto)

Enables and disables the onboard modem. Disable this item if you are going to install an external modem.

Onboard LAN Device (Enabled)

Enables and disables the onboard LAN.

Onboard LAN BOOT ROM (Disabled)

This item allows you to enable or disable the onboard LAN Boot ROM function.

Onboard 1394 Device (Disabled)

Enables and disables the onboard IEEE 1394 controller.

► SuperIO Device

Scroll to this item and press <Enter> to view the following screen:

Phoenix – AwardBIOS CMOS Setup Utility SuperIO Device

		Item Help
POWER ON Function	[Hot KEY]	Menu Level ►
KB Power ON Password	[Enter]	
Hot Key Power On	[Ctrl-F12]	
Onboard FDC Controller	[Enabled]	
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[ECP]	
ECP Mode Use DMA	[3]	
Power On After Power Fail	[Off]	

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

POWER ON Function (Hot KEY)

This feature allows you to set the method by which your system can be turned on.

KB Power ON Password (Enter)

When the POWER ON Function is set to Password, use this item to set the password.

HotKey Power On (Ctrl-F12)

When the POWER ON Function is set to Hot KEY, use this item to set the hot key combination that turns on the system.

Onboard FDC Controller (Enabled)

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

Onboard Serial Port 1 (3F8/IRQ4)

Select a logical COM port name and matching address for the first and second serial ports. Select an address and corresponding interrupt for the first port.

Onboard Parallel Port (378/IRQ7)

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

Parallel Port Mode (ECP)

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port), and ECP+EPP.

SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bi-directional modes, allowing both data input and output.

ECP and EPP modes are only supported with EPP- and ECP-aware peripherals.

ECP Mode Use DMA (3)

When the onboard parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

Power On After Power Fail (Off)

This item enables your computer to automatically restart or return to its last operating status after power returns from a power failure.

Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is Enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system realtime clock.

Phoenix – AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Suspend Type	[S3 (STR)]	Item Help
Run VGABIOS if S3 Resume	[Auto]	
Video Off Method	[DPMS]	Menu Level ►
Video Off In Suspend	[Yes]	
Suspend Type	[Stop Grant]	
MODEM Use IRQ	[3]	
Suspend Mode	Disable	
HDD Power Down	Disable	
Soft-Off by PWR-BTTN	[Instant-Off]	
Resume by PME	[Enabled]	
Resume by Ring	[Disabled]	
Resume by USB (S3)	[Disabled]	
Resume by Alarm	[Disabled]	
x Date (of Month) Alarm	0	
x Time (hh:mm:ss) Alarm	0 0 0	
** Reload Global Timer Events **		
Primary IDE 0	[Disabled]	
Primary IDE 1	[Disabled]	

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

ACPI Suspend Type (S3(STR))

Use this item to define how your system suspends. In the default, S1(POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

Run VGABIOS if S3 Resume (Auto)

This item allows the system to initialize the VGA BIOS from S3 (Suspend to RAM) sleep state.

Video Off Method (DPMS)

This item defines how the video is powered down to save power. This item is set to DPMS (Display Power Management Software) by default.

Video Off In Suspend (Yes)

This option defines if the video is powered down when the system is put into suspend mode.

Suspend Type (Stop Grant)

If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.

MODEM Use IRQ (3)

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the motherboard Wake On Modem connector for this feature to work.

Suspend Mode (Disable)

The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Power Management event is detected. Options are from 1 Min to 1 Hour and Disable.

HDD Power Down (Disable)

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disable.

Soft-Off by PWR-BTTN (Instant-Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

Resume by PCI PME

This item specifies whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

Resume by Ring (Disabled)

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

Resume by USB (S3)

This option allows the activity of the USB devices (keyboard and mouse) to wake-up the system from S3 sleep state.

Resume by Alarm (Disabled)

When set to Enabled, additional fields become available and you can set the date (day of the month), hour, minute and second to turn on your system. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

PNP/PCI Configurations

This option configures how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the ISA and PCI buses on the Motherboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the motherboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:

Phoenix – AwardBIOS CMOS Setup Utility PnP/PCI Configurations		
Reset Configuration Data	[Disabled]	Item Help
Resources Controlled by	[Auto]	
x IRQ Resources	Press Enter	Menu Level ►
PCI/VGA Palette Snoop	[Disabled]	Default is Disabled.
Assign IRQ For USB	[Enabled]	Select Enabled to reset
INT Pin 1 Assignment	[Auto]	Extended System Con-
INT Pin 2 Assignment	[Auto]	figuration Data (ESCD)
INT Pin 3 Assignment	[Auto]	when you exit Setup if you
INT Pin 4 Assignment	[Auto]	have installed a new add-
INT Pin 5 Assignment	[Auto]	on and the system recon-
INT Pin 6 Assignment	[Auto]	figuration has caused
INT Pin 7 Assignment	[Auto]	such a serious conflict
INT Pin 8 Assignment	[Auto]	that the OS cannot boot

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

Reset Configuration Data (Disabled)

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

Resources Controlled By (Auto)

You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices, as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources and Memory Resources submenus.

In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

In the Memory Resources submenu, use the first item Reserved Memory Base to set the start address of the memory you want to reserve for the ISA expansion card. Use the second item Reserved Memory Length to set the amount of reserved memory. Press <Esc> to close the Memory Resources submenu.

PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

INT Pin1~8 Assignment (Auto)

Names the interrupt request (IRQ) line assigned to a device connected to the PCI interface on your system.

PC Health Status

On motherboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

Phoenix – AwardBIOS CMOS Setup Utility PC Health Status

Target Temperature	[Disabled]	Item Help
Shutdown Temperature	[Disabled]	
Current System Temperature		Menu Level ►
Current CPU Temperature		
SYS FAN Speed		
CPU FAN Speed		
PWR FAN Speed		
CPU Vcore		
1.50 V		
3.30 V		
5.00 V		
Battery Voltage		

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

Target Temperature (Disabled)

This item enables throttling when CPU targets the temperature.

Shutdown Temperature (Disabled)

Enables you to set the maximum temperature the system can reach before powering down.

System Component Characteristics

These items allow end users and technicians to monitor data provided by the BIOS on this motherboard. You cannot make changes to these fields.

- CPU Vcore (CPU core voltage)
- Voltage Battery (battery voltage)
- Current System Temp (degrees Fahrenheit and Celsius)
- Current CPU Temp (degrees Fahrenheit and Celsius)
- CPU fan speed (in RPMs)
- Chassis FAN Speed (in RPMs)
- Power FAN Speed (in RPMs)

Frequency Control

This item enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.

Phoenix – AwardBIOS CMOS Setup Utility Frequency Control

CPU Clock Ratio	[8 X]	Item Help
Spread Spectrum	[Enabled]	
Auto Detect PCI Clk	[Enabled]	
Async AGP/PCI CLK	[Sync]	
CPU Clock	[by keyin]	
		Menu Level ►

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

CPU Clock Ratio

Enables you to set the CPU clock. The CPU clock ratio times the CPU Clock should equal the core speed of the installed processor.

Example:

CPU Clock Ratio	8
CPU Clock	<u>x 100</u>
Installed CPU clock speed	800 MHz

Spread Spectrum (Enabled)

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

Auto Detect PCI Clk (Enabled)

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

Async AGP/PCI CLK (Sync)

This item allows you to select the fixed clock to generate the output to AGP/PCI frequency.

CPU Clock (100)

Use the CPU Host Clock to set the frontside bus frequency for the installed processor.

Load Fail-Safe Defaults Option

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility:

Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The fail-safe defaults place no great demands on the system and are generally stable. If your system is not functioning correctly, try installing the fail-safe defaults as a first step in getting your system working properly again. If you only want to install fail-safe defaults for a specific option, select and display that option, and then press <F6>.

Load Optimized Defaults Option

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

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

PASSWORD DISABLED

If you have selected “**System**” in “Security Option” of “BIOS Features Setup” menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup.

If you have selected “**Setup**” at “Security Option” from “BIOS Features Setup” menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

Save & Exit Setup Option

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

Exit Without Saving

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 Exit Without Saving 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 "Exit Without Saving" item and press <Y> to discard any changes you have made.

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

Chapter 4

Using the Motherboard Software

About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software.

Note: Never try to install software from a folder that is not specified for use with your motherboard.

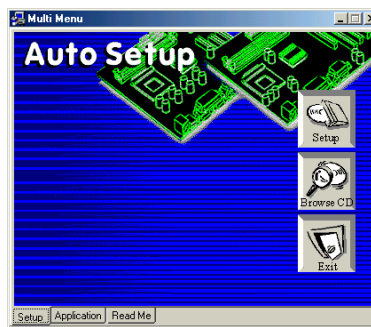
Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

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

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.

Note: If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to Utility Folder Installation Notes later in this chapter.

The support software CD-ROM disc loads automatically under Windows 98/ME/2000/XP. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.



Note: If the opening screen doesn't appear, double-click the file "setup.exe" in the root directory.

Setup Tab

Setup	Click the Setup button to run the software installation program. Select from the menu which software you want to install.
Browse CD	<p>The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.</p> <p>Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly.</p> <p>Some software is installed in separate folders for different operating systems, such as DOS, WIN NT, or WIN98/95. Always go to the correct folder for the kind of OS you are using.</p> <p>To install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.</p>
Exit	The Exit button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

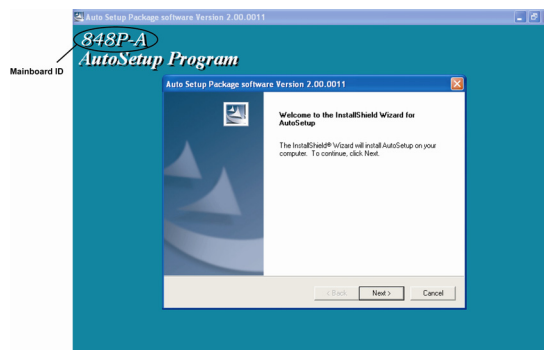
Read Me Tab

Displays the path for all software and drivers available on the CD.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

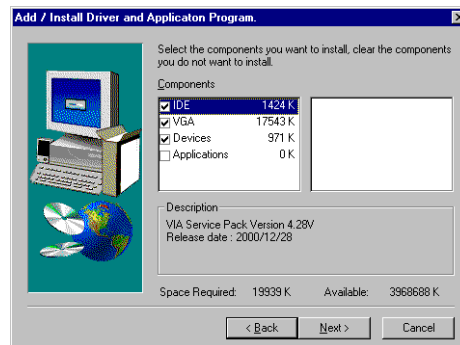
1. Click **Setup**. The installation program begins:



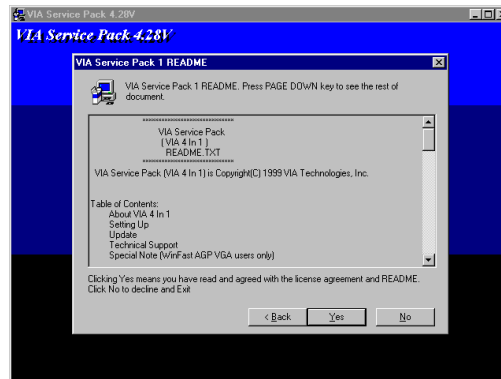
Note: The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

The motherboard identification is located in the upper left-hand corner.

2. Click **Next**. The following screen appears:



3. Check the box next to the items you want to install. The default options are recommended.
4. Click **Next** run the Installation Wizard. An item installation screen appears:



5. Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the on-screen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

Note: These software(s) are subject to change at anytime without prior notice.
Please refer to the support CD for available software.

AWARD Flash Memory Utility

This utility lets you erase the system BIOS stored on a Flash Memory chip on the motherboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, *Using BIOS* for more information.

WinFlash Utility

The Award WinFlash utility is a Windows version of the DOS Award BIOS flash writer utility. The utility enables you to flash the system BIOS stored on a Flash Memory chip on the motherboard while in a Windows environment. This utility is currently available for WINXP\ME\2000\98SE. To install the WinFlash utility, run WINFLASH.EXE from the following directory:
\\UTILITY\\WINFLASH 1.51

PC-CILLIN

The PC-CILLIN software program provides anti-virus protection for your system. This program is available for Windows 2000/ME/98SE/XP and Windows NT. Be sure to check the readme.txt and install the appropriate anti-virus software for your operating system.

We strongly recommend users to install this free anti-virus software to help protect your system against viruses.

This concludes Chapter 4.