

# Preface

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Version 1.0b

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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:

<b>Chapter 1</b> <b>Introducing the Motherboard</b>	Describes features of the motherboard, and provides a shipping checklist.  Go to ⇒ page 1
<b>Chapter 2</b> <b>Installing the Motherboard</b>	Describes installation of motherboard components.  Go to ⇒ page 8
<b>Chapter 3</b> <b>Using BIOS</b>	Provides information on using the BIOS Setup Utility.  Go to ⇒ page 26
<b>Chapter 4</b> <b>Using the Motherboard Software</b>	Describes the motherboard software.  Go to ⇒ page 52

## Features Translations

### Caractéristiques

<b>Processeur</b>	<p>M963G+ utilise un type de socket 478 broches de Pentium 4 présentant les caractéristiques suivantes:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400, 512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, HT supporté</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT supporté</li> </ul> <p>La technologie "Hyper-Threading" permet au système d'exploitation de penser qu'il est connecté à deux processeurs, permettant d'exécuter deux threads en parallèle, à la fois sur des processeurs 'logiques' dans le même processeur physique.</p>						
<b>Chipset</b>	<p>Les chipsets <b>SiS661FX</b> Northbridge (NB) et <b>SiS964 / 964L</b> Southbridge (SB) sont basés sur une architecture novatrice et dimensionnable avec une fiabilité et des performances prouvées.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Chipset</th> <th style="text-align: center;">Caractéristiques</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><b>SiS661FX NB</b></td> <td> <p>Supporte 12 transactions remarquables et une exécution hors norme</p> <p>Intègre le SiS MuTIOL 1G haut débit s'interconnectant au média d'E/S SiS964 MuTIOL 1G avec bus de données bidirectionnel pour réaliser une bande passante de 1Go/s en mode 133 MHz x 4.</p> <p>Intègre l'accélérateur 3D de haute qualité supportant Ultra-AGPII™ avec une bande passante jusqu'à 2.7 Go/s.</p> <p>CRT FIFOs intégrés pour supporter les modes graphiques à ultra haute résolution et diminuer l'état d'attente du CPU.</p> <p>Supporte l'accélération d'horloge automatique pour moteur 2D, moteur 3D.</p> </td> </tr> <tr> <td style="text-align: center;"><b>SiS964/ 964L SB</b></td> <td> <p>Entretien simultané pour tous les Périphériques DMA: Contrôleurs IDE Doubles, contrôleur SATA (<i>excepté pour SiS964L</i>), trois USB 2.0 HC, USB 1.1 HC, Contrôleur MAC LAN et Contrôleur DMA Audio/Modem.</p> <p>Conforme aux spécifications PCI 2.3.</p> <p>Conforme aux spécifications ATA 1.0 Série, supporte le mode d'économie d'énergie (SiS964 seulement).</p> <p>Conforme à AC'97 v2.3 supportant 6 Canaux de sorties audio et Modem V.90 HSP.</p> <p>Contrôleur USB 2.0 intégré avec quatre hubs racine et huit ports de fonction.</p> </td> </tr> </tbody> </table>	Chipset	Caractéristiques	<b>SiS661FX NB</b>	<p>Supporte 12 transactions remarquables et une exécution hors norme</p> <p>Intègre le SiS MuTIOL 1G haut débit s'interconnectant au média d'E/S SiS964 MuTIOL 1G avec bus de données bidirectionnel pour réaliser une bande passante de 1Go/s en mode 133 MHz x 4.</p> <p>Intègre l'accélérateur 3D de haute qualité supportant Ultra-AGPII™ avec une bande passante jusqu'à 2.7 Go/s.</p> <p>CRT FIFOs intégrés pour supporter les modes graphiques à ultra haute résolution et diminuer l'état d'attente du CPU.</p> <p>Supporte l'accélération d'horloge automatique pour moteur 2D, moteur 3D.</p>	<b>SiS964/ 964L SB</b>	<p>Entretien simultané pour tous les Périphériques DMA: Contrôleurs IDE Doubles, contrôleur SATA (<i>excepté pour SiS964L</i>), trois USB 2.0 HC, USB 1.1 HC, Contrôleur MAC LAN et Contrôleur DMA Audio/Modem.</p> <p>Conforme aux spécifications PCI 2.3.</p> <p>Conforme aux spécifications ATA 1.0 Série, supporte le mode d'économie d'énergie (SiS964 seulement).</p> <p>Conforme à AC'97 v2.3 supportant 6 Canaux de sorties audio et Modem V.90 HSP.</p> <p>Contrôleur USB 2.0 intégré avec quatre hubs racine et huit ports de fonction.</p>
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<b>Mémoire</b>	<ul style="list-style-type: none"> <li>• Supporte le module mémoire DDR SDRAM 400/333/266 MHz</li> <li>• Peut recevoir deux slots DIMM sans tampon DDR 184 broches</li> <li>• Chaque slot supporte jusqu'à 1 Go avec une capacité maximum totale de 2 Go</li> </ul>
<b>Graphiques</b>	<ul style="list-style-type: none"> <li>• M963G+ comprend un slot AGP 3.0 qui offre AGP 8X, huit fois la bande passante des spécifications AGP d'origine</li> <li>• L'AGP offre une augmentation significative des performances accompagnée d'améliorations des caractéristiques</li> <li>• L'interface représente l'évolution naturelle de l'AGP existante pour répondre à une demande toujours croissante d'interfaces graphiques en environnements de station de travail et de bureau</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• M963G+ supporte le CODEC audio AC'97 stéréo full-duplex 18 bits conforme aux spécifications AC'97 v2.3</li> <li>• Il est accompagné d'une vitesse d'échantillonnage indépendante et variable et d'une gestion d'alimentation avancée</li> <li>• Il incorpore la technologie de convertisseur propriétaire</li> <li>• Le circuit de l'interface numérique fonctionne à partir d'une alimentation en 3.3V et supporte une fonction de sortie SPDIF conforme AC'97 2.3 permettant une connexion facile à partir du PC sur d'autres produits électroniques</li> <li>• Il supporte quatre entrées stéréo de niveau de ligne analogique</li> </ul>
<b>Options d'Extensions</b>	<p>La carte mère est livrée avec les options d'extensions suivantes:</p> <ul style="list-style-type: none"> <li>• Un slot compatible AGP 3.0 avec vitesse 8x/4x</li> <li>• Trois slots conforme PCI v2.3 32 bits</li> <li>• Deux en-têtes demi-hauteur IDE de 40 broches supportant quatre canaux IDE</li> <li>• Une interface de lecteur de disquette</li> <li>• Deux connecteurs SATA à 7 broches</li> <li>• Un logement Communications Network Riser (CNR)</li> </ul> <p>La carte mère M963G+ supporte la maîtrise de bus Ultra DMA avec des vitesses de transfert de 133/100/66/33 Mo/sec.</p>
<b>LAN Interne (optionnel)</b>	<p>Le LAN interne offre les caractéristiques suivantes:</p> <ul style="list-style-type: none"> <li>• Supporte le fonctionnement en 10/100 Mbps</li> <li>• Supporte le fonctionnement en half/full duplex</li> <li>• Supporte la fonction Wake-On-LAN (WOL) -réveil par appel réseau et le réveil à distance</li> <li>• Supporte le mode de coupure d'alimentation</li> </ul>
<b>E/S Intégrées</b>	<p>La carte mère possède un jeu complet de ports d'E/S et de connecteurs:</p> <ul style="list-style-type: none"> <li>• Deux ports PS/2 pour souris et clavier</li> <li>• Un port série</li> <li>• Un port parallèle</li> <li>• Quatre ports USB</li> <li>• Un port LAN (optionnel)</li> <li>• Un port VGA</li> <li>• Prises audio pour microphone, ligne d'entrée et ligne de sortie</li> </ul>

**Microprogramme  
BIOS**

Cette carte mère utilise Award BIOS qui permet aux utilisateurs de configurer de nombreuses caractéristiques du système comprenant les suivantes:

- Gestion d'alimentation
- Alarmes de réveil
- Paramètres de CPU
- Synchronisation de CPU et de mémoire

Le microprogramme peut aussi être utilisé pour définir les paramètres pour les vitesses d'horloges de différents processeurs.



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

## Features

<b>Prozessor</b>	<p>Das M963G+ verwendet einen 478-Pin Sockel von Pentium 4 mit den folgenden Eigenschaften:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 Cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 Cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 Cache, HT unterstützt</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT unterstützt</li> </ul> <p>“Hyper-Threading“-Technologie läßt das Betriebssystem glauben, es sei an zwei Prozessoren angeschlossen, was zwei parallele Threads auf separaten 'logischen' Prozessoren im selben physischen Prozessor erlaubt.</p>						
<b>Chipsatz</b>	<p>Die Chipsätze <b>SiS661FX</b> Northbridge (NB) und <b>SiS964 / 964L</b> Southbridge (SB) basieren auf einer innovativen und skalierbaren Architektur mit bewiesener Zuverlässigkeit und Leistung.</p> <table border="1" data-bbox="602 720 1182 1507"> <thead> <tr> <th data-bbox="602 720 727 751">Chipsatz</th> <th data-bbox="735 720 1182 751">Features</th> </tr> </thead> <tbody> <tr> <td data-bbox="602 762 727 1182"><b>SiS661FX NB</b></td> <td data-bbox="735 762 1182 1182"> <p>Unterstützt 12 hervorragende Tätigkeiten und eine sehr gute Abfertigung.</p> <p>Anpassung des hochleistungsfähigen SiS MuTIOL 1G, welcher sich mit dem SiS964 MuTIOL 1G media I/O zusammenschliesst, mit zweiseitigem 16-Bit Data-Bus zur Erlangung von 1GB/s Bandbreite im 133 MHz x 4 Modus.</p> <p>Anpassungsfähigkeit des Hochleistungs-3D-Beschleunigers welcher Ultra-AGPII™ bis zu 2.7 GB/s Bandbreite unterstützt.</p> <p>Eingebaute CRT FIFOs zur Unterstützung von ultra hoher Graphikauflösung und reduziert die Wartezeit des CPU.</p> <p>Unterstützt die Auto-Clock Drosselung für 2D und 3D Motoren.</p> </td> </tr> <tr> <td data-bbox="602 1192 727 1507"><b>SiS964/ 964L SB</b></td> <td data-bbox="735 1192 1182 1507"> <p>Gleichzeitige Bedienung von allen! DMA Vorrichtungen: Dual IDE-Controller, SATA-Controller (<i>ausgenommen bei SiS964L</i>), drei USB 2.0 HC, USB 1.1 HC, LAN MAC Controller und Audio/Modem DMA-Controller.</p> <p>Gemäß Spezifikationen von PCI 2.3.</p> <p>Gemäß Serial ATA 1.0 Spezifikationen, unterstützt den Stromsparmmodus (nur SiS964).</p> <p>Gemäß AC'97 v2.3 welcher 6 Audio-Output-Kanäle und ein V.90 HSP-Modem unterstützt.</p> <p>Onboard-USB 2.0-Controller mit vier Root Hub und acht Port.</p> </td> </tr> </tbody> </table>	Chipsatz	Features	<b>SiS661FX NB</b>	<p>Unterstützt 12 hervorragende Tätigkeiten und eine sehr gute Abfertigung.</p> <p>Anpassung des hochleistungsfähigen SiS MuTIOL 1G, welcher sich mit dem SiS964 MuTIOL 1G media I/O zusammenschliesst, mit zweiseitigem 16-Bit Data-Bus zur Erlangung von 1GB/s Bandbreite im 133 MHz x 4 Modus.</p> <p>Anpassungsfähigkeit des Hochleistungs-3D-Beschleunigers welcher Ultra-AGPII™ bis zu 2.7 GB/s Bandbreite unterstützt.</p> <p>Eingebaute CRT FIFOs zur Unterstützung von ultra hoher Graphikauflösung und reduziert die Wartezeit des CPU.</p> <p>Unterstützt die Auto-Clock Drosselung für 2D und 3D Motoren.</p>	<b>SiS964/ 964L SB</b>	<p>Gleichzeitige Bedienung von allen! DMA Vorrichtungen: Dual IDE-Controller, SATA-Controller (<i>ausgenommen bei SiS964L</i>), drei USB 2.0 HC, USB 1.1 HC, LAN MAC Controller und Audio/Modem DMA-Controller.</p> <p>Gemäß Spezifikationen von PCI 2.3.</p> <p>Gemäß Serial ATA 1.0 Spezifikationen, unterstützt den Stromsparmmodus (nur SiS964).</p> <p>Gemäß AC'97 v2.3 welcher 6 Audio-Output-Kanäle und ein V.90 HSP-Modem unterstützt.</p> <p>Onboard-USB 2.0-Controller mit vier Root Hub und acht Port.</p>
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<b>Speicher</b>	<ul style="list-style-type: none"> <li>• Unterstützt DDR SDRAM bis zu 400 /333/266MHz Speichermodul</li> <li>• Anpassung von zwei DDR 184-Pin DIMM-Schlitzen, nicht gepuffert</li> <li>• Jeder Steckplatz unterstützt bis zu 1 GB mit einer maximalen Gesamtkapazität von bis zu 2 GB</li> </ul>						

<b>Graphik</b>	<ul style="list-style-type: none"> <li>• Das M963G+ verfügt über einen AGP 3.0-Steckplatz, der gegenüber der ursprünglichen AGP-Spezifikation über die achtfache Bandbreite verfügt</li> <li>• Die AGP verfügt über eine bedeutende Leistungssteigerung, zusammen mit Funktionsverbesserungen</li> <li>• Dieses Interface stellt die natürliche Evolution des bestehenden AGP dar, um den stetig anwachsenden Anforderungen an die Grafikschnittstellen innerhalb der Workstations und Desktop-Umgebungen gerecht zu werden</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• M963G+ unterstützt 18-Bit Stereo full-duplex AC'97 Audio CODEC, gemäß AC'97 v2.3 Spezifikationen</li> <li>• Es kommt mit einem unabhängigen, variablen Musterwert und fortgeschrittenem Power-Betrieb</li> <li>• Ausgestattet mit fabrikeigener Konvertertechnologie</li> <li>• Der digitale Schnittstellen-Kreislauf arbeitet mit einer 3.3V Stromzufuhr und unterstützt eine SPDIF-Out-Funktion, gemäß AC'97 2.3, was einen einfachen Anschluß des PC's an andere Elektronikprodukte erlaubt</li> <li>• Unterstützt vier analoge Line-level Stereo-Eingänge</li> </ul>
<b>Erweiterungsoptionen</b>	<p>Das motherboard bietet die folgenden Erweiterungsoptionen:</p> <ul style="list-style-type: none"> <li>• Einen AGP 3.0 Steckplatz, gemäß Sockel mit 8x/4x Geschwindigkeit</li> <li>• Drei 32-bit PCI-Steckplätze</li> <li>• Zwei 40-Pin IDE low profile-Stecker, die vier IDE-Kanäle unterstützen</li> <li>• Eine Schnittstelle für ein Floppydiskettenlaufwerk</li> <li>• Zwei 7-Pin SATA Anschlüsse</li> <li>• Einen Steckplatz für Communications Network Riser (CNR)</li> </ul> <p>Das M963G+ Motherboard unterstützt Ultra DMA Bus-Mastering mit Übertragungsraten von 133/100/66/33 MB/s.</p>
<b>Onboard-LAN (optional)</b>	<p>Das Onboard-LAN hat folgende Funktionen:</p> <ul style="list-style-type: none"> <li>• Unterstützt 10/100 Mbps Betrieb</li> <li>• Unterstützt half/full duplex Betrieb</li> <li>• Unterstützt Wake-On-LAN (WOL) Funktion und Remote Wake-up</li> <li>• Unterstützt Abschaltfunktion</li> </ul>
<b>Integrierte I/O</b>	<p>Das Motherboard verfügt über einen kompletten Satz von I/O-Schnittstellen und Anschlüssen:</p> <ul style="list-style-type: none"> <li>• Zwei PS/2-Schnittstellen für Maus und Tastatur</li> <li>• Eine serielle Schnittstelle</li> <li>• Eine parallele Schnittstelle</li> <li>• Vier USB-Schnittstellen</li> <li>• Eine LAN-Schnittstelle (optional)</li> <li>• Eine VGA-Schnittstelle</li> <li>• Audiobuchsen für Mikrofon, Line-in und Line-out</li> </ul>
<b>BIOS Firmware</b>	<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"> <li>• Energieverwaltung</li> <li>• Wake-up Alarm</li> <li>• CPU-Parameter</li> <li>• CPU- und Speichertiming</li> </ul> <p>Mit der Firmware können auch die Parameter für verschiedene Prozessortaktgeschwindigkeiten eingestellt werden</p>



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## Caratteristiche

<b>Processore</b>	<p>La M963G+ é dotata di un socket a 478 pin per il Pentium 4 caratterizzato da:</p> <ul style="list-style-type: none"> <li>• Willamette Intel Pentium 4: FSB400, cache L2 512K</li> <li>• Northwood Intel Pentium 4: FSB 400/533, cache L2 512K</li> <li>• Northwood Intel Pentium 4: FSB 533, cache L2 512K, supporto del HT</li> <li>• Northwood Intel Pentium 4: FSB 800, cache L2 512K, supporto del HT</li> </ul> <p>La tecnologia "Hyper-Threading" induce il sistema operativo a pensare di essere collegato a due processori, questo permette di eseguire due thread in parallelo, ambedue su processori "logicamente" separati all'interno dello stesso processore.</p>						
<b>Chipset</b>	<p>I chipset <b>SiS661FX</b> Northbridge (NB) e <b>SiS964 / 964L</b> Southbridge (SB) sono basati su un'architettura innovativa e scalabile di provata affidabilità e di eccellenti prestazioni.</p> <table border="1" data-bbox="602 695 1195 1457"> <thead> <tr> <th data-bbox="602 695 732 730">Chipset</th> <th data-bbox="732 695 1195 730">Caratteristiche</th> </tr> </thead> <tbody> <tr> <td data-bbox="602 730 732 1083"><b>SiS661FX NB</b></td> <td data-bbox="732 730 1195 1083"> <p>Supporto di 12 transazioni outstanding e "completion out-of-order".</p> <p>É dotato di interconnessioni SiS MuTIOL 1G media I/O con bus dati birezionali a 16 bit in grado di garantire velocità di trasferimento dati pari a 1GB/s nella modalità 133 MHz x 4.</p> <p>Supporto degli acceleratori 3D Ultra-AGPII™ con trasferimento dati fino a 2.7 GB/s.</p> <p>FIFO CRT integrate per il supporto di risoluzioni grafiche elevate e la riduzione dei wait-state della CPU.</p> <p>Supporto del "auto clock throttling" per i motori grafici 2D e 3D engine.</p> </td> </tr> <tr> <td data-bbox="602 1083 732 1457"><b>SiS964/964L SB</b></td> <td data-bbox="732 1083 1195 1457"> <p>Servizio simultaneo per tutte le periferiche DMA: Doppio controller IDE, controller SATA (ad eccezione del SiS964L), tre HC USB 2.0, HC USB 1.1, Controller MAC LAN e Controller DMA Audio/Modem.</p> <p>Conforme alle specifiche PCI 2.3.</p> <p>Conforme alle specifiche Serial ATA 1.0, supporto delle modalità di risparmio energetico (solo SiS964).</p> <p>Conforme alle specifiche AC'97 v2.3 con il supporto di 6 canali audio in uscita e HSP-Modem V.90.</p> <p>Controller USB 2.0 integrato dotato di quattro hub root e otto porte funzionanti.</p> </td> </tr> </tbody> </table>	Chipset	Caratteristiche	<b>SiS661FX NB</b>	<p>Supporto di 12 transazioni outstanding e "completion out-of-order".</p> <p>É dotato di interconnessioni SiS MuTIOL 1G media I/O con bus dati birezionali a 16 bit in grado di garantire velocità di trasferimento dati pari a 1GB/s nella modalità 133 MHz x 4.</p> <p>Supporto degli acceleratori 3D Ultra-AGPII™ con trasferimento dati fino a 2.7 GB/s.</p> <p>FIFO CRT integrate per il supporto di risoluzioni grafiche elevate e la riduzione dei wait-state della CPU.</p> <p>Supporto del "auto clock throttling" per i motori grafici 2D e 3D engine.</p>	<b>SiS964/964L SB</b>	<p>Servizio simultaneo per tutte le periferiche DMA: Doppio controller IDE, controller SATA (ad eccezione del SiS964L), tre HC USB 2.0, HC USB 1.1, Controller MAC LAN e Controller DMA Audio/Modem.</p> <p>Conforme alle specifiche PCI 2.3.</p> <p>Conforme alle specifiche Serial ATA 1.0, supporto delle modalità di risparmio energetico (solo SiS964).</p> <p>Conforme alle specifiche AC'97 v2.3 con il supporto di 6 canali audio in uscita e HSP-Modem V.90.</p> <p>Controller USB 2.0 integrato dotato di quattro hub root e otto porte funzionanti.</p>
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<b>Memoria</b>	<ul style="list-style-type: none"> <li>• Supporta un modulo di memoria SDRAM con DDR fino a 400/333/266 Mhz</li> <li>• Presenta due slot DDR a 184 pin unbuffered</li> <li>• Ciascun slot supporta fino a 1 GB per una capacità totale massima di 2 GB</li> </ul>						
<b>Grafica</b>	<ul style="list-style-type: none"> <li>• La M963G+ possiede uno slot AGP 3.0 in grado di garantire una larghezza di banda otto volte superiore rispetto a quella prevista dalle specifiche dello standard AGP originale</li> <li>• La tecnologia AGP offre un miglioramento marcato delle prestazioni assieme al miglioramento delle funzioni</li> <li>• Questa interfaccia rappresenta l'evoluzione naturale dell'interfaccia AGP esistente per soddisfare le richieste sempre maggiori poste alle interfacce grafiche negli ambienti desktop e workstation</li> </ul>						

<b>Audio</b>	<ul style="list-style-type: none"> <li>• La M963G+ supporta il codec AC'97 (18 bit stereo full duplex) conforme alla specifiche AC 97 2.3</li> <li>• È dotato delle funzioni di campionamento indipendente e variabile e di risparmio energetico avanzato</li> <li>• È stato implementato una tecnologia di conversione proprietaria</li> <li>• I circuiti dell'interfaccia digitale operato con una tensione pari a 3.3V e supportano la funzione SPDIF out (come indicato nelle specifiche AC'97 2.3) per facilitare la connessione del PC ad altri prodotti elettronici</li> <li>• È supporto di quattro entrate LINE STEREO analogiche</li> </ul>
<b>Opzioni di espansione</b>	<p>La scheda madre è dotata delle seguenti opzioni di espansione</p> <ul style="list-style-type: none"> <li>• Uno slot AGP 3.0 8x/4x</li> <li>• Tre slot PCI v2.3 a 32 bit</li> <li>• Due connettori IDE a 40 pin che supportano quattro canali IDE</li> <li>• Una interfaccia floppy disk</li> <li>• Due connettori SATA a 7 pin</li> <li>• Una slot Communications e Network Riser (CNR)</li> </ul> <p>La scheda M963G+ supporta il bus mastering Ultra DMA con transfer rate 133/100/66/33 MB/sec.</p>
<b>LAN Onboard (opzionale)</b>	<p>La scheda LAN integrata è dotata delle seguenti funzioni:</p> <ul style="list-style-type: none"> <li>• Supporto operazioni 10/100Mbps</li> <li>• Supporto operazioni half/full duplex</li> <li>• Supporto funzione WOL (Wake on Lan) e wake up remoto</li> <li>• Supporto modalità Power Down</li> </ul>
<b>I/O integrato</b>	<p>La scheda madre è dotata di un set completo di connettori e porte I/O:</p> <ul style="list-style-type: none"> <li>• Due porte PS/2 per mouse e tastiera</li> <li>• Una porta seriale</li> <li>• Una porta parallela</li> <li>• Quattro porte USB</li> <li>• Una porta LAN (opzionale)</li> <li>• Una porta VGA</li> <li>• Jack audio per microfono, linea d'ingresso e linea d'uscita</li> </ul>
<b>Firmware BIOS</b>	<p>Questa scheda madre adotta un BIOS Award che permette agli utenti di configurare le caratteristiche principali del sistema, inclusi:</p> <ul style="list-style-type: none"> <li>• Gestione energia</li> <li>• Allarmi wake up</li> <li>• Parametri CPU</li> <li>• Temporizzazione CPU e memoria</li> </ul> <p>Il firmware può anche essere usato per impostare i parametri per diverse velocità di clock.</p>



Alcune specifiche hardware e software potrebbero essere soggette a cambiamenti senza preavviso.

## Características

<p><b>Procesador</b></p>	<p>M963G+ usa un tipo de zócalo de 478-pin de Pentium 4 que lleva las sigtes. características:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, HT soportado</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT soportado</li> </ul> <p>La tecnología "Hyper-Threading" habilita el sistema operativo para que piense como si estuviera conectado a dos procesadores, que permite dos hilos a correr en paralelo, ambos en procesadores "lógicos" dentro del mismo procesador físico.</p>						
<p><b>Chipset</b></p>	<p>Los chipsets Northbridge <b>SiS661FX</b> (NB) y Southbridge <b>SiS964 / 964L</b> (SB) están basados en una arquitectura innovadora y escalable con fiabilidad y rendimiento comprobados.</p> <table border="1" data-bbox="600 667 1182 1528"> <thead> <tr> <th data-bbox="600 667 738 699">Chipset</th> <th data-bbox="738 667 1182 699">Características</th> </tr> </thead> <tbody> <tr> <td data-bbox="600 705 738 1129"> <p><b>SiS661FX NB</b></p> </td> <td data-bbox="738 705 1182 1129"> <p>Soporta 12 transacciones sobresalientes y terminación fuera de pedido.</p> <p>Acomoda SiS MuTIOL 1G de alto rendimiento que interconecta al SiS964 MuTIOL 1G media I/O con bus de datos de 16-bit bidireccional para realizar ancho de banda de 1GB/s en modo 133 MHz x 4 mode.</p> <p>Acomoda acelerador 3D de alta calidad que soporta Ultra-AGP<sup>II</sup>™ hasta el ancho de banda de 2.7 GB/s.</p> <p>CRT FIFOs incorporados para soportar los modos de gráficas de ultra alta resolución y reduce el estado de espera de CPU.</p> <p>Soporta el empuje de auto-bloqueo para motor 2D y 3D.</p> </td> </tr> <tr> <td data-bbox="600 1136 738 1528"> <p><b>SiS964/ 964L SB</b></p> </td> <td data-bbox="738 1136 1182 1528"> <p>Servicio concurrente de todos los Dispositivos DMA: Controladores Dual IDE, controlador SATA (<i>excepto para SiS964L</i>), tres controladores USB 2.0 HC, USB 1.1 HC, LAN MAC y Controlador Sonido/Módem DMA.</p> <p>Conforme con la espec. PCI 2.3.</p> <p>Conforme con la espec. Serial ATA 1.0, soporta modo de ahorro de energía (SiS964 solamente).</p> <p>Conforme con AC'97 v2.3 que soporta 6 Canales de salidas de sonido y V.90 HSP-Modem.</p> <p>Controlador USB 2.0 integrado con tres hubs de raíz y ocho puertos de función.</p> </td> </tr> </tbody> </table>	Chipset	Características	<p><b>SiS661FX NB</b></p>	<p>Soporta 12 transacciones sobresalientes y terminación fuera de pedido.</p> <p>Acomoda SiS MuTIOL 1G de alto rendimiento que interconecta al SiS964 MuTIOL 1G media I/O con bus de datos de 16-bit bidireccional para realizar ancho de banda de 1GB/s en modo 133 MHz x 4 mode.</p> <p>Acomoda acelerador 3D de alta calidad que soporta Ultra-AGP<sup>II</sup>™ hasta el ancho de banda de 2.7 GB/s.</p> <p>CRT FIFOs incorporados para soportar los modos de gráficas de ultra alta resolución y reduce el estado de espera de CPU.</p> <p>Soporta el empuje de auto-bloqueo para motor 2D y 3D.</p>	<p><b>SiS964/ 964L SB</b></p>	<p>Servicio concurrente de todos los Dispositivos DMA: Controladores Dual IDE, controlador SATA (<i>excepto para SiS964L</i>), tres controladores USB 2.0 HC, USB 1.1 HC, LAN MAC y Controlador Sonido/Módem DMA.</p> <p>Conforme con la espec. PCI 2.3.</p> <p>Conforme con la espec. Serial ATA 1.0, soporta modo de ahorro de energía (SiS964 solamente).</p> <p>Conforme con AC'97 v2.3 que soporta 6 Canales de salidas de sonido y V.90 HSP-Modem.</p> <p>Controlador USB 2.0 integrado con tres hubs de raíz y ocho puertos de función.</p>
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<p><b>Memoria</b></p>	<ul style="list-style-type: none"> <li>• Soporta DDR hasta módulo de memoria 400 /333/266 MHz SDRAM</li> <li>• Acomoda dos ranuras DIMM de DDR 184-pin sin buffer</li> <li>• Each slot supports up to 1 GB with a total maximum capacity of 2 GB</li> </ul>						

<b>Gráficas</b>	<ul style="list-style-type: none"> <li>• M963G+ incluye una ranura AGP 3.0 que provee ocho tiempos de amplitud de la especificación original AGP</li> <li>• La AGP ofrece un aumento significativo en funcionamiento junto con características mejoradas</li> <li>• La interfaz representa la evolución natural de la ya existente AGP para hacer frente a las demandas siempre en aumento centradas en las interfaces de gráficos dentro de estaciones de trabajo y ámbitos de computadoras</li> </ul>
<b>Sonido</b>	<ul style="list-style-type: none"> <li>• M963G+ soporta CODEC de sonido full-duplex AC'97 de estéreo de 18-bit que se conforma con la espec. AC'97 v2.3</li> <li>• Viene con un índice de muestreo independiente y variable y administración de alimentación avanzada</li> <li>• Está incorporado con la tecnología de conversor propietario</li> <li>• El circuito de interfaz digital opera de un suministro de alimentación 3.3V y soporta una función SPDIF Out conforme con AC'97 2.3 que permite la conexión fácil del PC a otros productos electrónicos</li> <li>• Soporta cuatro salidas de estéreo a nivel de línea analógica</li> </ul>
<b>Opciones de Expansión</b>	<p>La placa principal viene con las sigtes. opciones de expansión:</p> <ul style="list-style-type: none"> <li>• Una ranura conforme con AGP 3.0 con la velocidad 8x/4x</li> <li>• Tres ranuras conforme con 32-bit PCI v2.3</li> <li>• Dos cabezales de perfil bajo 40-pin IDE que soporta cuatro canales IDE</li> <li>• Una interfaz de lector de floppy</li> <li>• Dos conectores 7-pin SATA</li> <li>• Una ranura de Communications Network Riser (CNR)</li> </ul> <p>La M963G+ soporta mastering de bus Ultra DMA con índices de transferencia de 133 / 100 / 66 / 33 MB/seg.</p>
<b>LAN abordo (optativo)</b>	<p>El LAN abordo provee las sigtes. características:</p> <ul style="list-style-type: none"> <li>• Soporta la operación 10/100 Mbps</li> <li>• Soporta la operación half/full duplex</li> <li>• Soporta la función Wake-On-LAN (WOL) y despertar remoto</li> <li>• Soporta el modo apagado</li> </ul>
<b>I/O Integrado</b>	<p>La placa principal tiene un juego completo de puertos y conectores I/O:</p> <ul style="list-style-type: none"> <li>• Dos puertos PS/2 para ratón y teclado</li> <li>• Un puertos seriales</li> <li>• Un puerto paralelo</li> <li>• Cuatro puertos USB</li> <li>• Un puerto LAN (optativo)</li> <li>• Un puerto VGA</li> <li>• Clavijas de sonido para micrófono, entrada y salida de línea</li> </ul>
<b>BIOS Firmware</b>	<p>La placa principal usa Award BIOS que habilita a los usuarios para que configuren muchas características del sistema incluyendo las siguientes:</p> <ul style="list-style-type: none"> <li>• Administración de alimentación</li> <li>• Alarmas despertadores</li> <li>• Parámetros de CPU</li> <li>• Cronometraje de CPU y de memoria</li> </ul> <p>También se puede usar el firmware para configurar los parámetros para diferentes velocidades de reloj del procesador.</p>



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

## Características

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<b>Conjunto de Chips</b>	<p>O conjunto de chips SiS661FX Northbridge (NB) e SiS964 / 964L Southbridge (SB) é baseado numa arquitectura inovadora e escalável com fiabilidade e performance provadas.</p> <table border="1" data-bbox="605 751 1177 1564"> <thead> <tr> <th data-bbox="605 751 727 808"><b>Conjunto de Chips</b></th> <th data-bbox="735 751 1177 808"><b>Características</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="605 814 727 1207"><b>SiS661FX NB</b></td> <td data-bbox="735 814 1177 1207"> <p>Suporta 12 transações em atraso e conclusão não possível.</p> <p>Acomoda interconexão SiS MuTIOL 1G de elevada produtividade para SiS964 MuTIOL 1G media I/O com bus de dados bi-direccional de 16 bits para executar largura de banda 1GB/s no modo 133 MHz x 4.</p> <p>Acomoda acelerador 3D de elevada qualidade que suporta Ultra-AGP II™ com largura de banda até 2.7 GB/s.</p> <p>FIFOs CRT integrado para suportar modos de gráficos de resolução ultra elevada e reduzir estado de espera do CPU.</p> <p>Suporta estrangulamento de auto-temporização para dispositivo 2D e 3D.</p> </td> </tr> <tr> <td data-bbox="605 1213 727 1564"><b>SiS964/964L SB</b></td> <td data-bbox="735 1213 1177 1564"> <p>Manutenção concorrente de todos os dispositivos DMA: Controladores Duplos IDE, controlador SATA (<i>excepto para SiS964L</i>), três USB 1.1 HC, USB 2.0 HC, Controlador LAN MAC e Controlador Áudio/Modem DMA</p> <p>Cumprir com a especificação PCI 2.3</p> <p>Cumprir com a especificação 1.0 ATA de série, suporta modo de poupança de energia (somente SiS964).</p> <p>Compatível com AC'97 v2.3 suportando 6 Canais de saídas áudio HSP-Modem V.90.</p> <p>Controlador USB 2.0 Integrado com quatro hubs de raiz e oito portas de função.</p> </td> </tr> </tbody> </table>	<b>Conjunto de Chips</b>	<b>Características</b>	<b>SiS661FX NB</b>	<p>Suporta 12 transações em atraso e conclusão não possível.</p> <p>Acomoda interconexão SiS MuTIOL 1G de elevada produtividade para SiS964 MuTIOL 1G media I/O com bus de dados bi-direccional de 16 bits para executar largura de banda 1GB/s no modo 133 MHz x 4.</p> <p>Acomoda acelerador 3D de elevada qualidade que suporta Ultra-AGP II™ com largura de banda até 2.7 GB/s.</p> <p>FIFOs CRT integrado para suportar modos de gráficos de resolução ultra elevada e reduzir estado de espera do CPU.</p> <p>Suporta estrangulamento de auto-temporização para dispositivo 2D e 3D.</p>	<b>SiS964/964L SB</b>	<p>Manutenção concorrente de todos os dispositivos DMA: Controladores Duplos IDE, controlador SATA (<i>excepto para SiS964L</i>), três USB 1.1 HC, USB 2.0 HC, Controlador LAN MAC e Controlador Áudio/Modem DMA</p> <p>Cumprir com a especificação PCI 2.3</p> <p>Cumprir com a especificação 1.0 ATA de série, suporta modo de poupança de energia (somente SiS964).</p> <p>Compatível com AC'97 v2.3 suportando 6 Canais de saídas áudio HSP-Modem V.90.</p> <p>Controlador USB 2.0 Integrado com quatro hubs de raiz e oito portas de função.</p>
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<b>Memória</b>	<ul style="list-style-type: none"> <li>• Suporta DDR até módulo de memória 400/333/266 MHz DDR SDRAM</li> <li>• Acomoda duas ranhuras DIMM sem buffers com 184 pinos DDR</li> <li>• Cada ranhura suporta até 1 GB com uma capacidade máxima de 2 GB</li> </ul>						

<b>Graphics</b>	<ul style="list-style-type: none"> <li>• O M963G+ inclui uma ranhura AGP 3.0 que fornece AGP 8X, oito vezes a largura de banda da especificação AGP original.</li> <li>• O AGP oferece um aumento significativo na performance juntamente com melhoramentos nas características</li> <li>• Este interface representa a evolução natural a partir do AGP existente de forma a satisfazer os pedidos cada vez mais incessantes pelos interfaces de gráficos nos ambientes da estação de trabalho e desktop</li> </ul>
<b>Áudio</b>	<ul style="list-style-type: none"> <li>• O M963G+ suporta CODEC áudio AC'97 duplex completo estéreo de 18 bits que cumpre com a especificação AC'97 v2.3.</li> <li>• Vem com uma taxa de amostragem variável e independente e gestão de potência avançada.</li> <li>• Vem incorporado com tecnologia de conversor com direitos de propriedade</li> <li>• O circuito de interface digital opera a partir de um fornecimento de energia 3.3V e suporta um AC'97 2.3 compatível com a função de saída SPDIF a qual permite uma ligação mais fácil a partir do PC para outros produtos electrónicos.</li> <li>• Suporta quatro entradas estéreo nível de linha analógicas.</li> </ul>
<b>Opções de Expansão</b>	<p>A motherboard é fornecida com as seguintes opções de expansão:</p> <ul style="list-style-type: none"> <li>• Uma ranhura AGP 3.0 compatível com velocidade 8x/4x</li> <li>• Três ranhuras compatíveis com PCI v2.3 de 32 bits</li> <li>• Dois colectores em caixa rebaixada IDE com 40 pinos que suportam quatro canais IDE</li> <li>• Um interface com drive de disco flexível</li> <li>• Dois conectores SATA de 7 pin</li> <li>• Uma ranhura de Aumento da Rede de Comunicações (CNR)</li> </ul> <p>A motherboard M963G+ suporta um domínio bus UltraDMA bus com taxas de Transferência de 133 / 100 / 66 / 33 MB/s.</p>
<b>Onboard LAN (opcional)</b>	<p>O controlador LAN onboard contém as seguintes características:</p> <ul style="list-style-type: none"> <li>• Suporta operação 10/100Mbps</li> <li>• Suporta operação de duplex pela metade/completo</li> <li>• Suporta função LAN de Despertar e despertar remoto</li> <li>• Suporta modo de baixa potência</li> </ul>
<b>I/O Integrado</b>	<p>A motherboard possui um conjunto completo de portas I/O e conectores:</p> <ul style="list-style-type: none"> <li>• Duas portas PS/2 para rato e teclado</li> <li>• Uma porta de série</li> <li>• Uma porta paralela</li> <li>• Quatro portas USB</li> <li>• Uma porta LAN (opcional)</li> <li>• Uma porta VGA</li> </ul> <p>Fichas áudio para microfone, entrada de linha e saída de linha</p>
<b>Microprogramação BIOS</b>	<p>Esta motherboard usa Award BIOS que permitem aos utilizadores configurar muitas características do sistema incluindo as seguintes:</p> <ul style="list-style-type: none"> <li>• Gestão de corrente</li> <li>• Alarmes de despertar</li> <li>• Parâmetros CPU</li> <li>• Temporização de memória e CPU</li> </ul> <p>A microprogramação poderá ser também usada para estabelecer parâmetros para diferentes velocidades de relógio do processador.</p>



Algumas especificações de hardware e itens de software poderão ser sujeitos a alterações sem aviso prévio.

## 仕様

<b>プロセッサ</b>	<p>M963G+ は、478 ピンソケットを搭載し、次の Pentium 4 プロセッサの取り付けが可能。</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400, 512K L2 キャッシュ</li> <li>• Intel Pentium 4 Northwood: FSB 400/533, 512K L2 キャッシュ</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 キャッシュ, HT 対応</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 キャッシュ, HT 対応</li> </ul> <p>ハイパースレッド (HT) 技術とは、オペレーション・システムに 2 つのプロセッサが存在すると認識させることで、実際には 2 つのスレッドを 1 つのプロセッサで同時に執行させ、平行利用を可能とする技術。</p>						
<b>チップセット</b>	<p><b>SiS661FX</b> Northbridge および <b>SiS964 / 964L</b> Southbridge チップセットを採用し、最新且つ拡張性あるアーキテクチャで、高い安定性およびパフォーマンスを提供。</p> <table border="1" data-bbox="597 800 1193 1650"> <thead> <tr> <th data-bbox="605 810 727 863">チップセット</th> <th data-bbox="735 810 1185 863">機能</th> </tr> </thead> <tbody> <tr> <td data-bbox="605 873 727 1283"> <b>SiS661FX NB</b> </td> <td data-bbox="735 873 1185 1283"> <p>12 つの未解決トランザクション (out-standing transaction) と乱終了 (out-of-order completion) を対応可能。</p> <p>搭載している高性能 SiS MuTIOL 1G は、双方 16 ビットバスで SiS964 MuTIOL 1G メディア I/O と相互に連結することにより、133 MHz x 4 モードで 1G/秒の帯域幅を実現。</p> <p>高品質 3D アクセラレータを搭載し、帯域幅が最大 2.7G/秒の Ultra-AGP II™ 仕様に準拠。</p> <p>内蔵の諸 CRT FIFO は、超高い解像度グラフィックモードを扱うことで、CPU 待ち状態を減少。</p> <p>2D エンジンと 3D エンジンの自動 clock throttling 機能をサポート。</p> </td> </tr> <tr> <td data-bbox="605 1293 727 1640"> <b>SiS964/964L SB</b> </td> <td data-bbox="735 1293 1185 1640"> <p>二重 IDE コントローラや、SATA コントローラ († SiS964L の場合除外)、3 つの USB 2.0 HC、USB 1.1 HC、LAN MAC コントローラ、オーディオ/モデム DMA コントローラなどの全ての DMA 装置の同時稼動を可能に。</p> <p>PCI 2.3 仕様に準拠。</p> <p>シリアル ATA 1.0 仕様に準拠し、省電力モード (SiS964 の場合のみ) をサポートします。</p> <p>AC'97 v2.3 に準拠し、6 チャンネルオーディオ出力と V.90 HSP モデムをサポート。</p> <p>内蔵の USB 2.0 コントローラで、4 つのルートハブと 8 つのポートを提供。</p> </td> </tr> </tbody> </table>	チップセット	機能	<b>SiS661FX NB</b>	<p>12 つの未解決トランザクション (out-standing transaction) と乱終了 (out-of-order completion) を対応可能。</p> <p>搭載している高性能 SiS MuTIOL 1G は、双方 16 ビットバスで SiS964 MuTIOL 1G メディア I/O と相互に連結することにより、133 MHz x 4 モードで 1G/秒の帯域幅を実現。</p> <p>高品質 3D アクセラレータを搭載し、帯域幅が最大 2.7G/秒の Ultra-AGP II™ 仕様に準拠。</p> <p>内蔵の諸 CRT FIFO は、超高い解像度グラフィックモードを扱うことで、CPU 待ち状態を減少。</p> <p>2D エンジンと 3D エンジンの自動 clock throttling 機能をサポート。</p>	<b>SiS964/964L SB</b>	<p>二重 IDE コントローラや、SATA コントローラ († SiS964L の場合除外)、3 つの USB 2.0 HC、USB 1.1 HC、LAN MAC コントローラ、オーディオ/モデム DMA コントローラなどの全ての DMA 装置の同時稼動を可能に。</p> <p>PCI 2.3 仕様に準拠。</p> <p>シリアル ATA 1.0 仕様に準拠し、省電力モード (SiS964 の場合のみ) をサポートします。</p> <p>AC'97 v2.3 に準拠し、6 チャンネルオーディオ出力と V.90 HSP モデムをサポート。</p> <p>内蔵の USB 2.0 コントローラで、4 つのルートハブと 8 つのポートを提供。</p>
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<b>メモリ</b>	<ul style="list-style-type: none"> <li>• 400/333/266 MHz DDR SDRAM までの DDR メモリモジュールに対応済み</li> <li>• 2 つ DDR 184 ピン非バッファ DIMM スロットを搭載</li> <li>• 各スロットに 1 GB までのメモリを装着可能で、合計 2 GB までのメモリをサポート</li> </ul>						

グラフィック	<ul style="list-style-type: none"> <li>● M963G+の AGP スロットは、従来の AGP3.0 仕様の 8 倍のバンド幅を実現</li> <li>● AGP を導入することにより、優れた機能と共に、パフォーマンスの向上を実現</li> <li>● 既存の AGP 機能をさらに進化させ、AGP よりパワーアップしたパフォーマンスおよび機能を提供</li> </ul>
オーディオ	<ul style="list-style-type: none"> <li>● M963G+ には、18 ビットステレオ全二重 AC'97 オーディオ CODEC が導入済みで、AC'97 2.3 仕様に準拠</li> <li>● 独立可変のサンプリング機能とアドバンスパワーマネージャ機能を提供</li> <li>● 独自に開発した信号変換技術を導入</li> <li>● このデジタルインターフェース回路は 3.3V 動作可能で、AC'97 2.3 準拠の SPDIF 出力機能をサポートし、他の電子製品との接続を簡素化</li> <li>● アナログ式ラインレベルのステレオ入力を 4 つまで対応</li> </ul>
拡張オプション	<p>このメインボードの拡張オプションは次の通り：</p> <ul style="list-style-type: none"> <li>● AGP3.0 仕様スロット (8x/4x モード対応) が 1 つ</li> <li>● 32 ビット PCI スロットが 3 つ</li> <li>● 40 ピン IDE ロープロファイルヘッダー (4 つの IDE チャネルをサポート) が 2 つ</li> <li>● フロッピーディスクインターフェースが 1 つ</li> <li>● 7 ピン SATA コネクタが 2 つ</li> <li>● 通信ネットワークライザ (CNR) スロット</li> </ul> <p>M963G+は 133 / 100 / 66 / 33 MB/秒の転送レートで Ultra DMA バスマスタリングに対応。</p>
オンボード LAN (オプション)	<p>オンボード LAN 機能には、次の機能をサポート。</p> <ul style="list-style-type: none"> <li>● 10/100 Mbps 動作</li> <li>● 半/全二重動作</li> <li>● Wake-On-LAN (WOL) 機能とリモート wake-up 機能</li> <li>● パワーダウン・モード</li> </ul>
統合の入出力ポート	<p>このメインボードは次の様なフルセットの I/O ポートおよびコネクタを搭載。</p> <ul style="list-style-type: none"> <li>● マウスとキーボード用の PS/2 ポートが 2 つ</li> <li>● シリアルポートが 1 つ</li> <li>● パラレルポート が 1 つ</li> <li>● USB ポート が 4 つ</li> <li>● LAN ポート が 1 つ (オプション)</li> <li>● VGA ポート が 1 つ</li> <li>● マイクロフォンやラインイン、ラインアウト用のオーディオジャック</li> </ul>
BIOS ファームウェア	<p>本メインボードは次ぎ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：</p> <ul style="list-style-type: none"> <li>● 電源管理</li> <li>● Wake-up 警告</li> <li>● CPU パラメータ</li> <li>● CPU およびメモリのタイミング</li> </ul> <p>さらに、各種プロセッサクロック速度のパラメータの設定が可能。</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

<p><b>프로세서</b></p>	<p>M963G+ 은 다음 특징을 지닌 478 핀 소켓 타입 펜티엄 4 를 사용한다:</p> <ul style="list-style-type: none"> <li>• 인텔 펜티엄 4 Willamette: FSB400,512K L2 캐시</li> <li>• 인텔 펜티엄 4 Northwood: FSB 400/533,512K L2 캐시</li> <li>• 인텔 펜티엄 4 Northwood: FSB 533, 512K L2 cache, HT 지원</li> <li>• 인텔 펜티엄 4 Northwood: FSB 800, 512K L2 cache, HT 지원</li> </ul> <p>“ Hyper-Threading ” 기술은 운영체제를 두 개의 프로세서에 연결한 것처럼 두개의 트래드를 패러럴로 실행하여 같은 물리적 프로세서 안에서 각기 다른 “ 논리적 ” 프로세서를 실행할 수 있게 한다.</p>														
<p><b>칩셋</b></p>	<p><b>SiS661FX</b> Northbridge (NB) 와 <b>SiS964 / 964L</b> Southbridge (SB) 칩셋은혁신적이고 범위성을 지닌 아키텍처를 바탕으로 인정된 신뢰성과 성능을 지닌다.</p> <table border="1" data-bbox="597 741 1193 1570"> <thead> <tr> <th>칩셋</th> <th>특징</th> </tr> </thead> <tbody> <tr> <td rowspan="5"><b>SiS661FX NB</b></td> <td>12 개의 우수한 transactions 과 out-of-order completion 지원</td> </tr> <tr> <td>SiS964 MuTIOL 1G media I/O 에 높은 처리량을 지닌 SiS MuTIOL 1G 인터커넥션과쌍방향 16 비트 데이터 버스를 사용하여 133 MHz x 4 모드에서 1 GB/s 대역폭을 가능하게 한다.</td> </tr> <tr> <td>고 품질의 3D 가속기를 사용하여 Ultra-AGPII™ 에 최대 대역폭 2.7 GB/s 을 지원한다.</td> </tr> <tr> <td>내장 CRT FIFOs 는 초고 해상도 그래픽 모드를 지원하고 CPU 대기 시간을 줄인다.</td> </tr> <tr> <td>2D 엔진, 3D 엔진에 오토 클록 조절을 지원한다.</td> </tr> <tr> <td rowspan="5"><b>SiS964/964L SB</b></td> <td>모든 DMA 장치의 현재 서비스 : 듀얼 IDE 컨트롤러, SATA 컨트롤러 (<i>SiS964L 제외</i>), USB 2.0 HC 3 개, USB 1.1 HC, LAN MAC 컨트롤러 및 오디오/모뎀 DMA 컨트롤러.</td> </tr> <tr> <td>PCI 2.3 사양 호환.</td> </tr> <tr> <td>시리얼 ATA 1.0 사양 호환, 절전 모드 지원 (SiS964 의 경우).</td> </tr> <tr> <td>6 채널의 오디오 출력과 V.90 HSP-모뎀을 지원하는 AC' 97 v2.3 호환.</td> </tr> <tr> <td>4 개의 루트 허브와 8 개의 기능 포트를 지닌 통합 USB 2.0 컨트롤러.</td> </tr> </tbody> </table>	칩셋	특징	<b>SiS661FX NB</b>	12 개의 우수한 transactions 과 out-of-order completion 지원	SiS964 MuTIOL 1G media I/O 에 높은 처리량을 지닌 SiS MuTIOL 1G 인터커넥션과쌍방향 16 비트 데이터 버스를 사용하여 133 MHz x 4 모드에서 1 GB/s 대역폭을 가능하게 한다.	고 품질의 3D 가속기를 사용하여 Ultra-AGPII™ 에 최대 대역폭 2.7 GB/s 을 지원한다.	내장 CRT FIFOs 는 초고 해상도 그래픽 모드를 지원하고 CPU 대기 시간을 줄인다.	2D 엔진, 3D 엔진에 오토 클록 조절을 지원한다.	<b>SiS964/964L SB</b>	모든 DMA 장치의 현재 서비스 : 듀얼 IDE 컨트롤러, SATA 컨트롤러 ( <i>SiS964L 제외</i> ), USB 2.0 HC 3 개, USB 1.1 HC, LAN MAC 컨트롤러 및 오디오/모뎀 DMA 컨트롤러.	PCI 2.3 사양 호환.	시리얼 ATA 1.0 사양 호환, 절전 모드 지원 (SiS964 의 경우).	6 채널의 오디오 출력과 V.90 HSP-모뎀을 지원하는 AC' 97 v2.3 호환.	4 개의 루트 허브와 8 개의 기능 포트를 지닌 통합 USB 2.0 컨트롤러.
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<p><b>메모리</b></p>	<ul style="list-style-type: none"> <li>• DDR 400/333/266 MHz DDR SDRAM 메모리 모듈 지원</li> <li>• 2 개의 DDR 184 핀 un-buffered DIMM 슬롯 사용</li> <li>• 각 슬롯은 최대 1 GB 지원. 총 최대 용량은 2 GB</li> </ul>														
<p><b>AGP</b></p>	<ul style="list-style-type: none"> <li>• M963G+ 은 기존 AGP 사양의 8 배의 대역폭을 제공하는 AGP 3.0 슬롯을 포함한다</li> <li>• AGP 는 기능 강화와 함께 우수한 작업 능력을 제공한다</li> <li>• 이 인터페이스는 기존 AGP 의 자연적 진화로 워크스테이션과 데스크탑 환경에서 필요로 하는 그래픽 인터페이스를 제공한다</li> </ul>														

<b>오디오</b>	<ul style="list-style-type: none"> <li>• M963G+ 는 AC' 97 v2.3 사양과 호환하는 18 비트 스테레오 풀 듀플렉스 AC' 97 오디오 코덱을 지원한다</li> <li>• 독립적이고 다양한 샘플링 속도와 고급전원 기능이 있다</li> <li>• 적합한 컨버터 기술을 사용한다</li> <li>• 디지털 인터페이스 회로는 3.3V 파워 쉐플라이로 작동되며 AC'97 2.3 호환 SPDIF 출력 기능을 지원하여 PC 와 다른 전자 제품의 연결이 용이하다.</li> <li>• 4 개의 아날로그 라인 레벨 스테레오 입력을 지원한다</li> </ul>
<b>확장 옵션</b>	<p>이 메인보드는 다음과 같은 확장 옵션이 있다:</p> <ul style="list-style-type: none"> <li>• 8x/4x 속도의 AGP 3.0 호환 슬롯 1 개</li> <li>• 32 비트 PCI v2.3 호환 슬롯 3 개</li> <li>• 4 개의 IDE 채널을 지원하는 40 핀 IDE 로우 프로파일 헤더 2 개</li> <li>• 플로피 디스크 드라이브 인터페이스 1 개</li> <li>• 7 핀 SATA 커넥터 2 개</li> <li>• Communications Network Riser (CNR) 슬롯 1 개</li> </ul> <p>M963G+ 마더보드는 전송 속도 133 / 100 / 66 / 33 MB/sec 의 Ultra DMA bus mastering 을 지원한다.</p>
<b>보드 내장 LAN (선택 사항)</b>	<p>보드 내장 LAN 은 다음과 같은 기능을 제공한다:</p> <ul style="list-style-type: none"> <li>• 10/100 Mbps 오퍼레이션 지원</li> <li>• Half/full duplex 오퍼레이션 지원</li> <li>• Wake-On-LAN (WOL) 기능 및 원격 wake-up 지원</li> <li>• 파워 다운 모드 지원</li> </ul>
<b>통합 I/O</b>	<p>이 메인보드에는 풀 세트의 I/O 포트와 커넥터가 있다:</p> <ul style="list-style-type: none"> <li>• 마우스와 키보드용 PS/2 포트 2 개</li> <li>• 시리얼 포트 1 개</li> <li>• 패러럴 포트 1 개</li> <li>• USB 포트 4 개</li> <li>• LAN 포트 1 개 (선택 사항)</li> <li>• VGA 포트 1 개</li> <li>• 마이크용 오디오 잭, line-in 과 line-out</li> </ul>
<b>BIOS 펌웨어</b>	<p>본 메인보드는 Award BIOS 를 사용하여 사용자는 다음과 같은 시스템 기능을 구성할 수 있다:</p> <ul style="list-style-type: none"> <li>• 전원 관리</li> <li>• Wake-up 알람</li> <li>• CPU 파라미터</li> <li>• CPU 및 메모리 타이밍</li> </ul> <p>펌웨어는 다른 프로세서의 클럭 속도를 설정하는 데도 사용될 수 있다</p>



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

## 規格

<b>處理器</b>	<p>M963G+配備有一個 478 針插槽，供具有如下 Pentium 4 處理器進行安裝：</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 快取</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 快取</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 快取, 支援 HT</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 快取, 支援 HT</li> </ul> <p>利用“超執行緒(HT)”技術，可使作業系統在相當於裝上了兩具處理器的狀態下運作：利用一個“實體”處理器模擬出兩個獨立的”邏輯”處理器，同時執行兩個工作緒。</p>						
<b>晶片組</b>	<p><b>SiS661FX</b> 北橋及 <b>SiS964 / 964L</b> 南橋晶片組，採用了獨創且具有擴充功能的架構，能夠發揮最佳的穩定性及功能。</p> <table border="1" data-bbox="597 657 1192 1465"> <thead> <tr> <th data-bbox="605 657 727 695">晶片組</th> <th data-bbox="735 657 1183 695">特色</th> </tr> </thead> <tbody> <tr> <td data-bbox="605 705 727 1108"> <b>SiS661FX NB</b> </td> <td data-bbox="735 705 1183 1108"> <p>可處理 12 個未結束傳送(outstanding transactions) 和不按序完成執行(out-of-order completion)。</p> <p>配有高效能 SiS MuTIOL 1G，介以雙向 16 位元資料匯流排而與 SiS964 MuTIOL 1G media I/O 相連，在 133MHz × 4 模式下提供 1GB/秒的頻寬。</p> <p>配有高品質 3D 加速器，支援 Ultra-AGPII™ 高達 2.7 GB/秒之頻寬。</p> <p>內建有 CRT FIFO，可支援超高解析度，以減少 CPU 等待時間。</p> <p>支援 2D 及 3D 引擎的自動時脈減速(auto clock throttling)功能。</p> </td> </tr> <tr> <td data-bbox="605 1119 727 1465"> <b>SiS964/ 964L SB</b> </td> <td data-bbox="735 1119 1183 1465"> <p>同時對所有 DMA 裝置提供服務。這些裝置有雙 IDE 控制器、SATA 控制器 (SiS964L 時除外)、3 個 USB 2.0 HC、USB 1.1 HC、LAN MAC 控制器、及音訊/數據機 DMA 控制器。</p> <p>符合 PCI 2.3 規格。</p> <p>符合序列 ATA 1.0 規格，並支援省電模式 (僅適用於 SiS964)。</p> <p>符合 AC'97v2.3 規格，支援 6 聲道音訊輸出及 V.90 HSP 數據機。</p> <p>內建 USB2.0 控制器，提供 4 個集線器及 8 個連接埠。</p> </td> </tr> </tbody> </table>	晶片組	特色	<b>SiS661FX NB</b>	<p>可處理 12 個未結束傳送(outstanding transactions) 和不按序完成執行(out-of-order completion)。</p> <p>配有高效能 SiS MuTIOL 1G，介以雙向 16 位元資料匯流排而與 SiS964 MuTIOL 1G media I/O 相連，在 133MHz × 4 模式下提供 1GB/秒的頻寬。</p> <p>配有高品質 3D 加速器，支援 Ultra-AGPII™ 高達 2.7 GB/秒之頻寬。</p> <p>內建有 CRT FIFO，可支援超高解析度，以減少 CPU 等待時間。</p> <p>支援 2D 及 3D 引擎的自動時脈減速(auto clock throttling)功能。</p>	<b>SiS964/ 964L SB</b>	<p>同時對所有 DMA 裝置提供服務。這些裝置有雙 IDE 控制器、SATA 控制器 (SiS964L 時除外)、3 個 USB 2.0 HC、USB 1.1 HC、LAN MAC 控制器、及音訊/數據機 DMA 控制器。</p> <p>符合 PCI 2.3 規格。</p> <p>符合序列 ATA 1.0 規格，並支援省電模式 (僅適用於 SiS964)。</p> <p>符合 AC'97v2.3 規格，支援 6 聲道音訊輸出及 V.90 HSP 數據機。</p> <p>內建 USB2.0 控制器，提供 4 個集線器及 8 個連接埠。</p>
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<b>記憶體</b>	<ul style="list-style-type: none"> <li>• 支援 DDR 高達 400 /333/266 MHz 之 SDRAM 記憶體模組</li> <li>• 配備有 2 個 DDR 184 針無緩衝 DIMM 插槽</li> <li>• 各插槽可支援 1GB，亦即，共可支援高達 2 GB 的記憶體容量</li> </ul>						
<b>繪圖卡</b>	<ul style="list-style-type: none"> <li>• 本主機板 M963G+配備有一個 AGP 插槽，能夠支援為舊型 AGP 規格 8 倍之頻寬</li> <li>• 利用 AGP，不僅可使用各種增強功能，且可提升效能</li> <li>• 本介面係順應工作站與個人電腦環境中對圖形介面不斷升高之要求，由既有之 AGP 規格所發展出來的成果</li> </ul>						

<b>音效</b>	<ul style="list-style-type: none"> <li>• M963G+支援 18 位元立體聲全雙工 AC'97 音訊編解碼器，符合 AC' 97 2.3 規格</li> <li>• 具有獨立可變採樣功能及增強型電源管理功能</li> <li>• 採用獨創的信號轉換技術</li> <li>• 相關數位電路採 3.3V 規格，支援符合 AC'97 2.3 規格之 SPDIF 輸出功能，藉此可使電子產品能夠輕易地與電腦相連</li> <li>• 支援 4 個類比線級立體聲輸出</li> </ul>
<b>擴充選項</b>	<p>主機板機載有下列擴充選項功能:</p> <ul style="list-style-type: none"> <li>• 1 個 AGP 3.0 相容插槽(支援 8x/4x 模式)</li> <li>• 3 個 32 位元 PCI 插槽。</li> <li>• 2 個 40 針 IDE 低通接頭(支援 4 個 IDE 通路)</li> <li>• 1 個軟體機介面</li> <li>• 2 個 7 針 SATA 插頭</li> <li>• 1 個通訊網路附加卡(Communications Network Riser, CNR)插槽</li> </ul> <p>M963G+也支援 Ultra DMA 匯流排主控功能，可提供 133 / 100 / 66 / 33 MB/sec 之傳輸速率。</p>
<b>機載 LAN (選購)</b>	<p>機載 LAN 功能具有如下功能:</p> <ul style="list-style-type: none"> <li>• 支援 10/100 Mbps 連線</li> <li>• 支援半/全雙工</li> <li>• 支援 Wake-On-LAN (WOL)功能及遠端 wake-up 功能</li> <li>• 支援省電( power down)模式</li> </ul>
<b>整合的輸入出功能</b>	<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"> <li>• 2 個 PS/2 埠，分供滑鼠及鍵盤連接</li> <li>• 1 個串列埠</li> <li>• 1 個平行埠</li> <li>• 4 個 USB 埠</li> <li>• 1 個 LAN 埠(選購)</li> <li>• 1 個 VGA 埠</li> <li>• 麥克風、線級輸入(line-in)及線級輸出(line-out)音效端子</li> </ul>
<b>BIOS 韌體</b>	<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"> <li>• 電源管理</li> <li>• 喚醒警示</li> <li>• CPU 參數</li> <li>• CPU 及記憶體定時</li> </ul> <p>本 BIOS 也可用以設定各種有關處理器頻率的參數</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。

## 功能

<b>处理器</b>	<p>M963G+ 使用 478-pin 插座 Pentium 4 CPU, 此插座具有以下特点:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette:FSB400, 512K L2 二级缓存</li> <li>• Intel Pentium 4 Northwood:FSB 400/533, 512K 二级缓存</li> <li>• Intel Pentium 4 Northwood:FSB 533, 512K 二级缓存, 支持 HT</li> <li>• Intel Pentium 4 Northwood:FSB 800, 512K 二级缓存, 支持 HT</li> </ul> <p>“多线程”技术可以让操作系统认为自己连接了两个处理器, 允许两个线程并行运行, 每个线程位于同一处理器中的单独“逻辑”处理器中。</p>						
<b>芯片组</b>	<p><b>SiS661FX</b> 北桥 (NB) 和 <b>SiS964 / 964L</b> 南桥 (SB) 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。</p> <table border="1" data-bbox="597 716 1193 1457"> <thead> <tr> <th data-bbox="597 716 727 751">芯片组</th> <th data-bbox="732 716 1193 751">功能</th> </tr> </thead> <tbody> <tr> <td data-bbox="597 758 727 1094"> <b>SiS661FX NB</b> </td> <td data-bbox="732 758 1193 1094"> <p>支持 12 个未决处理和乱序完成。</p> <p>支持高吞吐量 SiS MuTIOL 1G 与 SiS964 MuTIOL 1G 媒体 I/O 互连 (带双向 16 位数据总线, 在 133 MHz x 4 模式下提供 1GB/s 带宽)。</p> <p>支持 Ultra-AGPII™ 带宽达 2.7 GB/s 的高质量 3D 加速器。</p> <p>内建 CRT FIFO, 支持超高分辨率图形模式并减少 CPU 等待。</p> <p>支持用于 2D 引擎和 3D 引擎的自动时钟节流。</p> </td> </tr> <tr> <td data-bbox="597 1100 727 1457"> <b>SiS964/ 964L SB</b> </td> <td data-bbox="732 1100 1193 1457"> <p>所有 DMA 设备的并发服务: 双 IDE 控制器、SATA 控制器 (SiS964L 除外)、3 个 USB 2.0 HC、USB 1.1 HC、LAN、MAC 控制器和音频/调制解调器 DMA 控制器。</p> <p>符合 PCI 2.3 规格。</p> <p>符合串行 ATA 1.0 规格, 支持节电模式 (仅 SiS964)。</p> <p>符合 AC' 97 v2.3 (支持 AC' 97 扬声器 6 通道输出) 标准和 V.90 HSP 标准。</p> <p>集成 USB 2.0 控制器, 带有 4 个 Root Hub 和 8 个功能端口。</p> </td> </tr> </tbody> </table>	芯片组	功能	<b>SiS661FX NB</b>	<p>支持 12 个未决处理和乱序完成。</p> <p>支持高吞吐量 SiS MuTIOL 1G 与 SiS964 MuTIOL 1G 媒体 I/O 互连 (带双向 16 位数据总线, 在 133 MHz x 4 模式下提供 1GB/s 带宽)。</p> <p>支持 Ultra-AGPII™ 带宽达 2.7 GB/s 的高质量 3D 加速器。</p> <p>内建 CRT FIFO, 支持超高分辨率图形模式并减少 CPU 等待。</p> <p>支持用于 2D 引擎和 3D 引擎的自动时钟节流。</p>	<b>SiS964/ 964L SB</b>	<p>所有 DMA 设备的并发服务: 双 IDE 控制器、SATA 控制器 (SiS964L 除外)、3 个 USB 2.0 HC、USB 1.1 HC、LAN、MAC 控制器和音频/调制解调器 DMA 控制器。</p> <p>符合 PCI 2.3 规格。</p> <p>符合串行 ATA 1.0 规格, 支持节电模式 (仅 SiS964)。</p> <p>符合 AC' 97 v2.3 (支持 AC' 97 扬声器 6 通道输出) 标准和 V.90 HSP 标准。</p> <p>集成 USB 2.0 控制器, 带有 4 个 Root Hub 和 8 个功能端口。</p>
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<b>内存</b>	<ul style="list-style-type: none"> <li>• 支持 DDR400 /333/266 MHz DDR SDRAM 内存模块</li> <li>• 支持 2 个 DDR 184-pin 非缓冲 DIMM 插槽</li> <li>• 每个插槽支持 1 GB, 总共最大可支持 2 GB</li> </ul>						
<b>图形</b>	<ul style="list-style-type: none"> <li>• M963G+ 包括一个 AGP 3.0 插槽, 可提供普通 AGP 规格 8 倍的带宽</li> <li>• AGP 在增强功能的同时极大地提高了其性能</li> <li>• 此接口反映了 AGP 的发展规律, 它进一步满足了在 workstation 和桌面环境中对图形接口的不断增长的要求</li> </ul>						

<b>音频</b>	<ul style="list-style-type: none"> <li>• M963G+ 支持 18 位立体声全双工 AC' 97 编解码器, 符合 AC' 97 v2.3 规格</li> <li>• 具有可调独立采样速率和高级电源管理功能</li> <li>• 与专有的转换器技术相结合</li> <li>• 数字接口电路可以在 5V 电源下工作, 并支持符合 AC' 97 2.3 规格的 SPDIF 输出功能, 此功能可以方便的将 PC 与其它电子产品连接在一起</li> <li>• 支持 4 路模拟线路级立体声输入</li> </ul>
<b>扩展选项</b>	<p>此主板提供如下扩展选项:</p> <ul style="list-style-type: none"> <li>• 1 个 8x/4x AGP 3.0 插槽</li> <li>• 3 个 32 位 PCI v2.3 扩展槽</li> <li>• 2 个 40-pin IDE 紧凑型接口, 支持 4 个 IDE 通道</li> <li>• 1 个软驱接口</li> <li>• 2 个 7-pin SATA 接口</li> <li>• 1 个通信网络转接 (CNR) 插槽</li> </ul> <p>M963G+ 主板支持 Ultra DMA 总线控制, 传输速率可达 133 / 100 / 66 / 33 MB/sec</p>
<b>Onboard LAN (可选)</b>	<p>板上集成的 LAN 提供以下功能:</p> <ul style="list-style-type: none"> <li>• 支持 10/100 Mbps 工作模式</li> <li>• 支持半双工/全双工工作</li> <li>• 支持 LAN 唤醒 (WOL) 功能和远程唤醒功能</li> <li>• 支持省电模式</li> </ul>
<b>集成 I/O</b>	<p>此主板具有完整的 I/O 端口和插孔:</p> <ul style="list-style-type: none"> <li>• 2 个用于连接鼠标和键盘的 PS/2 端口</li> <li>• 1 个串口</li> <li>• 1 个并口</li> <li>• 4 个 USB 端口</li> <li>• 1 个 LAN 端口 (可选)</li> <li>• 1 个 VGA 端口</li> <li>• 麦克风、线入和线出声音插孔</li> </ul>
<b>BIOS</b>	<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"> <li>• 电源管理</li> <li>• 唤醒报警</li> <li>• CPU 参数</li> <li>• CPU 和记忆定时</li> </ul> <p>还可用于设置不同处理器时钟速度的参数</p>



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## Характеристики

<p><b>Процессор</b></p>	<p>M963G+ использует 478-штырьковый сокет типа Pentium 4 и обладает следующими характеристиками :</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, поддержка HT</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, поддержка HT</li> </ul> <p>Технология “Hyper-Threading” «убеждает» операционную систему в том, что в машине имеется два процессора; это позволяет параллельно обслуживать два процесса, причем каждый из процессов обслуживается отдельным «логическим» процессором в пределах одного физического процессора.</p>														
<p><b>Чипсет</b></p>	<p>Чипсеты <b>SiS661FX</b> «Северный мост» (Northbridge, NB) и <b>SiS964 / 964L</b> «Южный мост» (Southbridge, SB) построены с использованием инновационной масштабируемой архитектуры, обеспечивающей высокую надежность и производительность.</p> <table border="1" data-bbox="602 743 1185 1709"> <thead> <tr> <th data-bbox="602 743 727 779"><u>Чипсет</u></th> <th data-bbox="727 743 1185 779"><u>Характеристики</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="602 779 727 1310" rowspan="5"> <p><b>SiS661FX NB</b></p> </td> <td data-bbox="727 779 1185 835"> <p>Поддерживает выполнение 12 очередных операций со внеочередным завершением.</p> </td> </tr> <tr> <td data-bbox="727 835 1185 1024"> <p>Размещает скоростное соединение SiS MuTIOL 1Г с SiS964 MuTIOL 1G медиальным выходом, с двусторонней 16 битной шиной данных, со скоростью передачи данных 1ГБ/с в режиме 133 МГц x 4.</p> </td> </tr> <tr> <td data-bbox="727 1024 1185 1129"> <p>Размещает акселератор высококачественной графики 3D, который поддерживает технологию Ultra-AGP II™ со скоростью передачи данных до 2.7 ГБ/с.</p> </td> </tr> <tr> <td data-bbox="727 1129 1185 1234"> <p>Встроенные CRT FIFO поддерживают режимы сверхвысокого графического разрешения и снижают время ожидания процессора.</p> </td> </tr> <tr> <td data-bbox="727 1234 1185 1310"> <p>Поддерживает модуляцию тактовой частоты для 2D и 3D графического процессора.</p> </td> </tr> <tr> <td data-bbox="602 1310 727 1709" rowspan="4"> <p><b>SiS964/ 964L SB</b></p> </td> <td data-bbox="727 1310 1185 1444"> <p>Параллельное обслуживание всех устройств DMA: двойного контроллера IDE, контроллера SATA (за исключением SiS964L), трех USB 1.1 HC, USB 2.0 HC, контроллера MAC и DMA-контроллера аудио/модема</p> </td> </tr> <tr> <td data-bbox="727 1444 1185 1472"> <p>Совместимо с PCI 2.3</p> </td> </tr> <tr> <td data-bbox="727 1472 1185 1549"> <p>Совместимость с Serial ATA 1.0, поддерживает режим энергосбережения (только SiS964).</p> </td> </tr> <tr> <td data-bbox="727 1549 1185 1633"> <p>Совместимость с AC'97 v2.3, поддерживает 6 – канальный аудиовыход и модем V.90 HSP</p> </td> </tr> <tr> <td data-bbox="727 1633 1185 1709"> <p>Встроенный контроллер USB 2.0 с четырьмя концентраторами и 8 функциональными портами.</p> </td> </tr> </tbody> </table>	<u>Чипсет</u>	<u>Характеристики</u>	<p><b>SiS661FX NB</b></p>	<p>Поддерживает выполнение 12 очередных операций со внеочередным завершением.</p>	<p>Размещает скоростное соединение SiS MuTIOL 1Г с SiS964 MuTIOL 1G медиальным выходом, с двусторонней 16 битной шиной данных, со скоростью передачи данных 1ГБ/с в режиме 133 МГц x 4.</p>	<p>Размещает акселератор высококачественной графики 3D, который поддерживает технологию Ultra-AGP II™ со скоростью передачи данных до 2.7 ГБ/с.</p>	<p>Встроенные CRT FIFO поддерживают режимы сверхвысокого графического разрешения и снижают время ожидания процессора.</p>	<p>Поддерживает модуляцию тактовой частоты для 2D и 3D графического процессора.</p>	<p><b>SiS964/ 964L SB</b></p>	<p>Параллельное обслуживание всех устройств DMA: двойного контроллера IDE, контроллера SATA (за исключением SiS964L), трех USB 1.1 HC, USB 2.0 HC, контроллера MAC и DMA-контроллера аудио/модема</p>	<p>Совместимо с PCI 2.3</p>	<p>Совместимость с Serial ATA 1.0, поддерживает режим энергосбережения (только SiS964).</p>	<p>Совместимость с AC'97 v2.3, поддерживает 6 – канальный аудиовыход и модем V.90 HSP</p>	<p>Встроенный контроллер USB 2.0 с четырьмя концентраторами и 8 функциональными портами.</p>
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<p><b>Память</b></p>	<ul style="list-style-type: none"> <li>• Поддержка до модулей памяти DDR SDRAM DDR400/333/266 МГц</li> <li>• Размещает два 184-штырьковых слота небуферируемой памяти DDR DIMM</li> <li>• Каждый слот поддерживает 1 ГБ памяти при максимальном объеме 2ГБ</li> </ul>														

<b>Графика</b>	<ul style="list-style-type: none"> <li>• M963G+ включает слот AGP 3.0 обеспечивающий 8-кратную скорость передачи данных в сравнении со стандартной спецификацией AGP.</li> <li>• AGP обеспечивает значительное повышение производительности по сравнению .</li> <li>• Этот интерфейс является естественным развитием существующего стандарта AGP, призванным удовлетворить возрастающие требования к графическим интерфейсам для рабочих станций и настольных компьютеров.</li> </ul>
<b>Аудио</b>	<ul style="list-style-type: none"> <li>• M963G+ поддерживает 18-битный стерео аудио CO-DEC AC'97 полный дуплекс, совместимый с AC'97 v2.3.</li> <li>• Выпускается с независимой и переменной частотой сэмпирования и расширенными возможностями управления питанием.</li> <li>• Включает опатентованную конвертерную технологию Цифровой интерфейс снабжен электропитанием 3.3V и поддерживает функцию SPDIF AC'97 вер. 2.3, обеспечивающее легкость подключения к компьютеру различных электронных приборов и устройств.</li> <li>• Поддерживает 4 аналоговых канала аудиовхода (стерео).</li> </ul>
<b>Возможности расширения</b>	<p>Существуют следующие опции расширения данной материнской платы:</p> <ul style="list-style-type: none"> <li>• Один слот AGP 3.0 со скоростью 8x/4x</li> <li>• Три <small>32-битных</small> слота PCI v2.3</li> <li>• Два 40-штырьковых разъема IDE с поддержкой четырех каналов IDE</li> <li>• Один разъем для накопителя на гибких дисках</li> <li>• Два разъема 7-pin SATA</li> <li>• Слот CNR (Communications Networking Riser)</li> </ul> <p><small>Плата M963G+ поддерживает технологию захвата управления шиной UltraDMA bus mastering со скоростью передачи данных 133 / 100 / 66 / 33 МБ/сек.</small></p>
<b>Встроенный сетевой адаптер LAN (опционально)</b>	<p>Встроенный сетевой адаптер LAN обладает следующими характеристиками:</p> <ul style="list-style-type: none"> <li>• Поддержка скорости операций 10/100Mbps</li> <li>• Поддержка режима половинный/полный дуплекс</li> <li>• Поддерживает функции Wake-On-LAN и remote wake-up</li> <li>• Поддерживает режим выключения жесткого диска</li> </ul>
<b>Интегрированный вход/выход</b>	<p>Плата снабжена полным набором портов входа/выхода и разъемов:</p> <ul style="list-style-type: none"> <li>• Два порта PS/2 для подключения мыши и клавиатуры</li> <li>• Один серийный порт</li> <li>• Один параллельный порт</li> <li>• Четыре порта USB</li> <li>• Один LAN порт (опционально)</li> <li>• Один VGA порт</li> <li>• Гнездо для подключения микрофона, гнезда аудио-входа и выхода</li> </ul>
<b>BIOS</b>	<p>Плата работает под Award BIOS, который позволяет пользователю конфигурировать различные характеристики системы:</p> <ul style="list-style-type: none"> <li>• Управление питанием</li> <li>• Сигналы пробуждения системы</li> <li>• Параметры CPU</li> <li>• Время доступа для CPU и памяти</li> </ul> <p>BIOS допускает также установку параметров для различных частот процессора</p>



Некоторые параметры платы и характеристики ее программного обеспечения могут быть изменены без предварительного уведомления.

## Cechy

<b>Procesor</b>	<p>Płyta główna M963G+ posiada gniazdo dla 478-nóżkowych procesorów typu Pentium 4, charakteryzuje się poniższymi właściwościami i obsługuje:</p> <ul style="list-style-type: none"> <li>• Procesor Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Procesor Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Procesor Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, z technologią HT</li> <li>• Procesor Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, z technologią HT</li> </ul> <p>Technologia "Hyper-Threading" powoduje, że system "myśli", że posiada dwa procesory i wykonuje równolegle dwa procesy; za wykonanie każdego procesu odpowiedzialny jest jeden z dwóch "logicznych" procesorów w ramach jednego fizycznego procesora</p>						
<b>Chipset</b>	<p>Mostek północny (NB) <b>SiS661FX</b> i mostek południowy (SB) <b>SiS964 / 964L</b> chipsetu oparty jest na nowatorskiej i skalowalnej architekturze o sprawdzonej niezawodności i funkcjonalności.</p> <table border="1" data-bbox="581 814 1179 1650"> <thead> <tr> <th data-bbox="581 814 716 848"><b>Chipset</b></th> <th data-bbox="716 814 1179 848"><b>Cechy</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="581 848 716 1276"><b>SiS661FX NB</b></td> <td data-bbox="716 848 1179 1276"> <p>Równolegle obsługuje 12 zaawansowanych procesów oraz posiada nie zawieszające ich uzupełnienie</p> <p>Przystosowana do wysokiej wydajności układu SiS MuTIOL 1G podłączonego do 1G We/Wy SiS964 MuTIOL obsługiwane przez 16 bitową szynę zdolną przesyłać 1GB/s w modzie 4 x 133 MHz.</p> <p>Przystosowana do wysokiej jakości przyspieszacza 3D, który obsługuje Ultra-AGPII™ o szybkości przesyłania do 2.7 GB/s.</p> <p>Wbudowany CRT FIFOs, aby zabezpieczyć tryb ultra wysokiej rozdzielczości graficznej i zredukować czas oczekiwania procesora.</p> <p>Obsługuje automatyczne dostosowanie zegara dla trybów 2D i 3D</p> </td> </tr> <tr> <td data-bbox="581 1276 716 1650"><b>SiS964/ 964L SB</b></td> <td data-bbox="716 1276 1179 1650"> <p>Jednoczesna obsługa wszystkich urządzeń DMA: dwukanałowego kontrolera IDE, kontrolera SATA (z wyjątkiem SiS964L), trzech USB 1.1 HC, USB 2.0 HC, kontrolera LAN MAC oraz DMA kontrolera Audio/Modemu.</p> <p>Zgodny ze specyfikacją PCI w wersji 2.3</p> <p>Zgodny ze specyfikacją kontrolera dysków Serial ATA 1.0, obsługuje tryb oszczędzania energii (tylko dla SiS964)</p> <p>Zgodny z AC'97 w wersji 2.3, obsługuje 6-kanalowe wyjście audio oraz modem V.90 HSP.</p> <p>Zintegrowany kontroler USB 2.0 z czterema koncentratorami i ośmioma gniazdami</p> </td> </tr> </tbody> </table>	<b>Chipset</b>	<b>Cechy</b>	<b>SiS661FX NB</b>	<p>Równolegle obsługuje 12 zaawansowanych procesów oraz posiada nie zawieszające ich uzupełnienie</p> <p>Przystosowana do wysokiej wydajności układu SiS MuTIOL 1G podłączonego do 1G We/Wy SiS964 MuTIOL obsługiwane przez 16 bitową szynę zdolną przesyłać 1GB/s w modzie 4 x 133 MHz.</p> <p>Przystosowana do wysokiej jakości przyspieszacza 3D, który obsługuje Ultra-AGPII™ o szybkości przesyłania do 2.7 GB/s.</p> <p>Wbudowany CRT FIFOs, aby zabezpieczyć tryb ultra wysokiej rozdzielczości graficznej i zredukować czas oczekiwania procesora.</p> <p>Obsługuje automatyczne dostosowanie zegara dla trybów 2D i 3D</p>	<b>SiS964/ 964L SB</b>	<p>Jednoczesna obsługa wszystkich urządzeń DMA: dwukanałowego kontrolera IDE, kontrolera SATA (z wyjątkiem SiS964L), trzech USB 1.1 HC, USB 2.0 HC, kontrolera LAN MAC oraz DMA kontrolera Audio/Modemu.</p> <p>Zgodny ze specyfikacją PCI w wersji 2.3</p> <p>Zgodny ze specyfikacją kontrolera dysków Serial ATA 1.0, obsługuje tryb oszczędzania energii (tylko dla SiS964)</p> <p>Zgodny z AC'97 w wersji 2.3, obsługuje 6-kanalowe wyjście audio oraz modem V.90 HSP.</p> <p>Zintegrowany kontroler USB 2.0 z czterema koncentratorami i ośmioma gniazdami</p>
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<b>SiS661FX NB</b>	<p>Równolegle obsługuje 12 zaawansowanych procesów oraz posiada nie zawieszające ich uzupełnienie</p> <p>Przystosowana do wysokiej wydajności układu SiS MuTIOL 1G podłączonego do 1G We/Wy SiS964 MuTIOL obsługiwane przez 16 bitową szynę zdolną przesyłać 1GB/s w modzie 4 x 133 MHz.</p> <p>Przystosowana do wysokiej jakości przyspieszacza 3D, który obsługuje Ultra-AGPII™ o szybkości przesyłania do 2.7 GB/s.</p> <p>Wbudowany CRT FIFOs, aby zabezpieczyć tryb ultra wysokiej rozdzielczości graficznej i zredukować czas oczekiwania procesora.</p> <p>Obsługuje automatyczne dostosowanie zegara dla trybów 2D i 3D</p>						
<b>SiS964/ 964L SB</b>	<p>Jednoczesna obsługa wszystkich urządzeń DMA: dwukanałowego kontrolera IDE, kontrolera SATA (z wyjątkiem SiS964L), trzech USB 1.1 HC, USB 2.0 HC, kontrolera LAN MAC oraz DMA kontrolera Audio/Modemu.</p> <p>Zgodny ze specyfikacją PCI w wersji 2.3</p> <p>Zgodny ze specyfikacją kontrolera dysków Serial ATA 1.0, obsługuje tryb oszczędzania energii (tylko dla SiS964)</p> <p>Zgodny z AC'97 w wersji 2.3, obsługuje 6-kanalowe wyjście audio oraz modem V.90 HSP.</p> <p>Zintegrowany kontroler USB 2.0 z czterema koncentratorami i ośmioma gniazdami</p>						
<b>Pamięć</b>	<ul style="list-style-type: none"> <li>• Obsługuje moduły pamięci DDR SDRAM o częstotliwościach DDR400/333/266 MHz</li> <li>• Zawiera dwa gniazda DIMM dla 184-nóżkowej niebuforowanej pamięci DDR</li> <li>• Każde złącze obsługuje do 1 GB pamięci, maksymalnie 2 GB</li> </ul>						

<b>Grafika</b>	<ul style="list-style-type: none"> <li>• M963G+ zawiera gniazdo AGP 3.0, które charakteryzuje się szybkością 8X, tzn. osiem razy większą szybkością przesyłu niż przewiduje oryginalna specyfikacja AGP.</li> <li>• AGP zapewnia znaczny wzrost funkcjonalności z możliwością równoległego wykorzystania</li> <li>• Ten interfejs stanowi naturalną ewolucję istniejącego standardu AGP w celu zapewnienia rosnących potrzeb w stosunku do sterowników graficznych stacji roboczych i komputerów biurowych.</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• M963G+ obsługuje 18-bitowe AC'97 audio CODEC stereo full-duplex, które jest zgodne ze specyfikacją AC'97 w wersji 2.3</li> <li>• Zawiera niezależną, zmienną częstotliwość próbkowania oraz zaawansowany układ zarządzania energią</li> <li>• Zaopatrzony we własną technologię konwerterową</li> <li>• Interfejsu cyfrowy jest zasilany 3.3V i zgodny z AC'97 w wersji 2.3, posiada też funkcję SPDIF, która pozwala podłączać w łatwy sposób inne urządzenia elektroniczne.</li> <li>• Obsługuje cztery analogowe linie wejściowe stereo.</li> </ul>
<b>Możliwości rozbudowy</b>	<p>Płyta główna wyposażona jest w następujące gniazda:</p> <ul style="list-style-type: none"> <li>• Jedno gniazdo zgodne z AGP 3.0 o szybkości 8x/4x</li> <li>• Trzy 32-bitowych gniazda zgodnych z PCI w wersji 2.3</li> <li>• Dwa 40-nóżkowe niskoprofilowe złącza IDE, które obsługują cztery kanały IDE.</li> <li>• Jedno złącze obsługujące stacje dyskietyk</li> <li>• Dwa 7-nóżkowe złącza SATA</li> <li>• Gniazdo CNR (Communications Networking Riser)</li> </ul> <p>Płyta główna M963G+ obsługuje szynę UltraDMA z szybkością transferu 133 / 100 / 66 / 33 MB/s.</p>
<b>Zintegrowana obsługa sieci LAN (opcjonalnie)</b>	<p>Zintegrowana obsługa sieci LAN posiada następujące właściwości:</p> <ul style="list-style-type: none"> <li>• Obsługuje operacje z szybkością 10/100Mbps</li> <li>• Obsługuje tryby half/full duplex</li> <li>• Obsługuje funkcję Wake-On-LAN i zdalnie sterowane wake-up (uruchamianie komputera)</li> <li>• Obsługuje tryb wyłączenia zasilania dysku twardego.</li> </ul>
<b>Zintegrowane We/Wy</b>	<p>Płyta główna wyposażona jest w pełny zestaw gniazd i złączy We/Wy:</p> <ul style="list-style-type: none"> <li>• Dwa gniazda PS/2 dla myszy i klawiatury</li> <li>• Jedno gniazdo szeregowo</li> <li>• Jedno gniazdo równoległe</li> <li>• Cztery gniazda USB</li> <li>• Jedno gniazdo LAN (opcjonalnie)</li> <li>• Jedno gniazdo VGA</li> <li>• Gniazdo wejściowe mikrofonowe, gniazdo wejściowe i wyjściowe dźwięku (audio)</li> </ul>
<b>Firmowy BIOS</b>	<p>Płyta główna wyposażona jest w BIOS firmy Award, który pozwala użytkownikowi konfigurować wiele cech systemu włączając w to następujące właściwości:</p> <ul style="list-style-type: none"> <li>• Zarządzanie poborem mocy</li> <li>• Alarmy typu Wake-up</li> <li>• Parametry pracy procesora</li> <li>• Ustalenia szybkości pracy procesora i pamięci</li> </ul> <p>BIOS może być używany do ustalania parametrów wpływających na szybkości pracy zegara procesora.</p>



Niektóre parametry dotyczące płyty i jej oprogramowania mogą ulec zmianie bez uprzedniego powiadomienia.

## Vlastnosti

<p><b>Procesor</b></p>	<p>Základní deska M963G+ využívá 478kolíkovou patici pro procesory Pentium 4 a vyznačuje se následujícími vlastnostmi:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400, s vyrovnávací pamětí L2 512 K</li> <li>• Intel Pentium 4 Northwood: FSB 400/533, s vyrovnávací pamětí L2 512 K</li> <li>• Intel Pentium 4 Northwood: FSB 533, s vyrovnávací pamětí L2 512 K a podporou HT</li> <li>• Intel Pentium 4 Northwood: FSB 800, s vyrovnávací pamětí L2 512 K a podporou HT</li> </ul> <p>Technologie „Hyper-Threading“ umožňuje operačnímu systému pracovat tak, jako by byl připojen ke dvěma procesorům, protože je možné pracovat se dvěma toky programového kódu (vlákny) paralelně najednou, přičemž jsou k dispozici samostatné „logické“ procesory umístěné v rámci jednoho fyzického procesoru.</p>						
<p><b>Čipová sada</b></p>	<p>Čipy northbridge (NB) <b>SiS661FX</b> a southbridge (SB) <b>SiS964 / 964L</b> jsou založeny na inovativní a škálovatelné architektuře s ověřenou spolehlivostí a výkonností.</p> <table border="1" data-bbox="597 793 1187 1621"> <thead> <tr> <th data-bbox="597 793 727 846">Čipová sada</th> <th data-bbox="727 793 1187 846">Vlastnosti</th> </tr> </thead> <tbody> <tr> <td data-bbox="597 846 727 1245"> <p><b>SiS661FX NB</b></p> </td> <td data-bbox="727 846 1187 1245"> <p>Podpora 12 nevyřešených transakcí a nedokončených funkcí.</p> <p>Podpora vysoké průchodnosti SiS MuTIOL 1G s propojením na mediální vstup/výstup SiS964 MuTIOL 1G s obousměrnou 16bitovou datovou sběrnici k zajištění šířky pásma 1 GB/s na frekvenci 133 MHz x 4.</p> <p>Nabízí vysoce kvalitní 3D akcelerátor s podporou Ultra-AGPII™ se šířkou pásma až 2,7 GB/s.</p> <p>Vestavěné CRT FIFO s podporou velmi vysokého rozlišení grafických režimů a snížení vyčkávací doby CPU.</p> <p>Podpora automatické regulace taktovací frekvence pro 2D jádro a 3D jádro.</p> </td> </tr> <tr> <td data-bbox="597 1245 727 1621"> <p><b>SiS964/ 964L SB</b></p> </td> <td data-bbox="727 1245 1187 1621"> <p>Současná obsluha všech zařízení DMA: Dvojitý řadič IDE, řadič SATA (<i>kromě SiS964L</i>), tři rozhraní USB 1.1 HC, USB 2.0 HC, řadič LAN MAC a DMA řadič zvuku/modemu</p> <p>Splňuje požadavky standardu PCI 2.3</p> <p>Splňuje požadavky standardu Serial ATA 1.0, podporuje režim řízení spotřeby energie (pouze SiS964)</p> <p>Splňuje požadavky standardu AC'97 v2.3 s podporou 6kanálového zvuku a modemu V.90 HSP</p> <p>Integrovaný řadič USB 2.0 se čtyřmi kořenovými rozbočovači a osmi funkčními porty.</p> </td> </tr> </tbody> </table>	Čipová sada	Vlastnosti	<p><b>SiS661FX NB</b></p>	<p>Podpora 12 nevyřešených transakcí a nedokončených funkcí.</p> <p>Podpora vysoké průchodnosti SiS MuTIOL 1G s propojením na mediální vstup/výstup SiS964 MuTIOL 1G s obousměrnou 16bitovou datovou sběrnici k zajištění šířky pásma 1 GB/s na frekvenci 133 MHz x 4.</p> <p>Nabízí vysoce kvalitní 3D akcelerátor s podporou Ultra-AGPII™ se šířkou pásma až 2,7 GB/s.</p> <p>Vestavěné CRT FIFO s podporou velmi vysokého rozlišení grafických režimů a snížení vyčkávací doby CPU.</p> <p>Podpora automatické regulace taktovací frekvence pro 2D jádro a 3D jádro.</p>	<p><b>SiS964/ 964L SB</b></p>	<p>Současná obsluha všech zařízení DMA: Dvojitý řadič IDE, řadič SATA (<i>kromě SiS964L</i>), tři rozhraní USB 1.1 HC, USB 2.0 HC, řadič LAN MAC a DMA řadič zvuku/modemu</p> <p>Splňuje požadavky standardu PCI 2.3</p> <p>Splňuje požadavky standardu Serial ATA 1.0, podporuje režim řízení spotřeby energie (pouze SiS964)</p> <p>Splňuje požadavky standardu AC'97 v2.3 s podporou 6kanálového zvuku a modemu V.90 HSP</p> <p>Integrovaný řadič USB 2.0 se čtyřmi kořenovými rozbočovači a osmi funkčními porty.</p>
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<p><b>Paměť</b></p>	<ul style="list-style-type: none"> <li>• Podpora paměťových modulů DDR SDRAM až do frekvence DDR 400/333/266 MHz</li> <li>• Systém je vybaven dvěma 184kolíkovými sloty pro paměťové moduly DDR DIMM bez vyrovnávací paměti</li> <li>• Každá patice podporuje kapacitu 1 GB s celkovou maximální hodnotou 2 GB</li> </ul>						

<b>Grafika</b>	<ul style="list-style-type: none"> <li>• Základní deska M963G+ je vybavena sběrnicí AGP 3.0, která poskytuje až osminásobnou šířku pásma, ve srovnání s původní specifikací AGP.</li> <li>• Sběrnice AGP nabízí ve srovnání významné zvýšení výkonnosti, společně s funkčními vylepšeními.</li> <li>• Toto rozhraní představuje přirozený vývoj stávající sběrnice AGP, který splňuje zvyšující se požadavky na grafická rozhraní v pracovních stanicích a stolních počítačích.</li> </ul>
<b>Zvukový</b>	<ul style="list-style-type: none"> <li>• M963G+ podporuje 18bitový, plně duplexní stereo zvukový kodek AC'97, který splňuje požadavky specifikace AC'97 v2.3</li> <li>• Využívá nezávislou a proměnnou vzorkovací frekvenci a pokročilé řízení spotřeby.</li> <li>• Je vybavena firemní technologií převodníku.</li> <li>• Obvod digitálního rozhraní pracuje s napájením 3,3 V a podporuje funkci výstupu SPDIF, splňující požadavky standardu AC'97 2.3, umožňující snadné spojení PC s externími elektronickými zařízeními.</li> <li>• Podporuje čtyři analogové stereo vstupy na linkové úrovni.</li> </ul>
<b>Možnosti rozšíření</b>	<p>Základní deska je dodávána s následujícími možnostmi rozšíření</p> <ul style="list-style-type: none"> <li>• Jeden slot standardu AGP 3.0 s 8x/4x rychlostí</li> <li>• Tři 32bitové patice PCI v2.3</li> <li>• Dva nízkoprofilové 40kolíkové konektory IDE podporující připojení čtyř zařízení standardu IDE</li> <li>• Jedno rozhraní pro disketovou mechaniku</li> <li>• Dva 7kolíkové konektory SATA</li> <li>• Slot CNR (Communications Networking Riser)</li> </ul> <p>Základní deska M963G+ podporuje sběrnici Ultra DMA s penosovými rychlostmi 133 / 100 / 66 / 33 MB/s.</p>
<b>Vestavěné síťové rozhraní LAN (volitelně)</b>	<p>Vestavěné síťové rozhraní LAN nabízí následující možnosti:</p> <ul style="list-style-type: none"> <li>• Podpora provozu 10/100 Mbps</li> <li>• Podpora plného/polovičnického duplexního provozu</li> <li>• Podporuje funkci Wake-on-LAN (WOL) a vzdálené aktivace</li> <li>• Podpora režimu vypínání</li> </ul>
<b>Integrovaný vstup/výstup</b>	<p>Základní deska je vybavena kompletní sadou vstupních portů a konektorů I/O:</p> <ul style="list-style-type: none"> <li>• Dva porty PS/2 pro myš a klávesnici</li> <li>• Jeden sériový port</li> <li>• Jeden paralelní port</li> <li>• Čtyři porty USB</li> <li>• Jeden LAN port (volitelně)</li> <li>• Jeden VGA port</li> <li>• Zvukové konektory pro mikrofon, zvukový vstup a výstup</li> </ul>
<b>Firmware BIOS</b>	<p>Základní deska používá BIOS společnosti Award, který uživatelům umožňuje nakonfigurovat mnoho systémových vlastností, včetně následujících:</p> <ul style="list-style-type: none"> <li>• Řízení spotřeby</li> <li>• Alarmy při spouštění systému</li> <li>• Parametry CPU</li> <li>• Časování CPU a paměti</li> </ul> <p>Firmware může být rovněž použit k nastavení parametrů pro různé taktovací frekvence procesoru.</p>



Některé technické parametry hardware a software se mohou měnit bez předchozího upozornění.

## Caracteristici

<b>Procesorul</b>	<p>M963G+ funcționează cu unități centrale Pentium 4 cu soclu de 478, având următoarele caracteristici:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, suport HT</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, suport HT</li> </ul> <p>Tehnologia „Hyper-Threading” permite sistemului de operare să funcționeze ca și cum ar exista două procesoare, putând fi rulate în paralel două fire, fiecare pe câte un procesor „logic” separat, aflate pe același procesor fizic.</p>						
<b>Setul de chipuri</b>	<p>Seturile de chipuri <b>SiS661FX</b> Northbridge (NB) și <b>SiS964 / 964L</b> Southbridge (SB) se bazează pe o arhitectură inovatoare și scalabilă, care s-a impus deja prin fiabilitate și performanță.</p> <table border="1" data-bbox="602 695 1187 1507"> <thead> <tr> <th data-bbox="602 695 704 751">Setul de chipuri</th> <th data-bbox="704 695 1187 751">Caracteristici</th> </tr> </thead> <tbody> <tr> <td data-bbox="602 751 704 1150"><b>SiS661 FX NB</b></td> <td data-bbox="704 751 1187 1150"> <p>Suportă 12 tranzacții nesoluționate și finalizarea remedierii defecțiunilor.</p> <p>Dispune de SiS MuTIOL 1G cu randament ridicat de interconectare cu suporturi I/O SiS964 MuTIOL 1G cu bus de date bidirecțional de 16 biți, pentru a asigura o lățime de bandă de 1 GB/s în modul 133 MHz x 4.</p> <p>Este dotată cu un accelerator 3D de înaltă calitate care suportă Ultra AGPII™ cu lățime de bandă de până la 2,7 GB/s.</p> <p>Unități FIFO CRT încorporate pentru a suporta moduri grafice de rezoluție foarte mare și pentru a reduce timpii de așteptare ai unităților centrale.</p> <p>Suportă accelerare automată a frecvenței pentru motorul 2D, motorul 3D.</p> </td> </tr> <tr> <td data-bbox="602 1150 704 1507"><b>SiS964/ 964L SB</b></td> <td data-bbox="704 1150 1187 1507"> <p>Deservire concurentă a tuturor unităților DMA: controlere IDE duale, controler SATA (cu excepția SiS964L), trei controlere USB 1.1 HC, USB 2.0 HC, LAN MAC și un controler DMA Audio/Modem</p> <p>Compatibilă cu specificația PCI 2.3</p> <p>Compatibilă cu specificația Serial ATA 1.0, suportând modul de funcționare economicos (numai SiS964).</p> <p>Compatibilă cu AC'97, versiunea 2.3, suportând 6 canale pentru ieșiri audio și modem HSP V.90.</p> <p>Controler USB 2.0 integrat cu patru hub-uri centrale și opt porturi funcționale.</p> </td> </tr> </tbody> </table>	Setul de chipuri	Caracteristici	<b>SiS661 FX NB</b>	<p>Suportă 12 tranzacții nesoluționate și finalizarea remedierii defecțiunilor.</p> <p>Dispune de SiS MuTIOL 1G cu randament ridicat de interconectare cu suporturi I/O SiS964 MuTIOL 1G cu bus de date bidirecțional de 16 biți, pentru a asigura o lățime de bandă de 1 GB/s în modul 133 MHz x 4.</p> <p>Este dotată cu un accelerator 3D de înaltă calitate care suportă Ultra AGPII™ cu lățime de bandă de până la 2,7 GB/s.</p> <p>Unități FIFO CRT încorporate pentru a suporta moduri grafice de rezoluție foarte mare și pentru a reduce timpii de așteptare ai unităților centrale.</p> <p>Suportă accelerare automată a frecvenței pentru motorul 2D, motorul 3D.</p>	<b>SiS964/ 964L SB</b>	<p>Deservire concurentă a tuturor unităților DMA: controlere IDE duale, controler SATA (cu excepția SiS964L), trei controlere USB 1.1 HC, USB 2.0 HC, LAN MAC și un controler DMA Audio/Modem</p> <p>Compatibilă cu specificația PCI 2.3</p> <p>Compatibilă cu specificația Serial ATA 1.0, suportând modul de funcționare economicos (numai SiS964).</p> <p>Compatibilă cu AC'97, versiunea 2.3, suportând 6 canale pentru ieșiri audio și modem HSP V.90.</p> <p>Controler USB 2.0 integrat cu patru hub-uri centrale și opt porturi funcționale.</p>
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<b>SiS964/ 964L SB</b>	<p>Deservire concurentă a tuturor unităților DMA: controlere IDE duale, controler SATA (cu excepția SiS964L), trei controlere USB 1.1 HC, USB 2.0 HC, LAN MAC și un controler DMA Audio/Modem</p> <p>Compatibilă cu specificația PCI 2.3</p> <p>Compatibilă cu specificația Serial ATA 1.0, suportând modul de funcționare economicos (numai SiS964).</p> <p>Compatibilă cu AC'97, versiunea 2.3, suportând 6 canale pentru ieșiri audio și modem HSP V.90.</p> <p>Controler USB 2.0 integrat cu patru hub-uri centrale și opt porturi funcționale.</p>						
<b>Memoria</b>	<ul style="list-style-type: none"> <li>• Suportă module de memorie DDR SDRAM DDR de până la 400/333/266 MHz</li> <li>• Funcționează cu două sloturi DIMM DDR fără zonă tampon, cu 184 ace</li> <li>• Fiecare slot suportă un modul de cel mult 1 GB, capacitatea maximă totală fiind de 2 GB.</li> </ul>						
<b>Grafică</b>	<ul style="list-style-type: none"> <li>• M963G+ include un slot AGP 3.0 care oferă AGP 8X, cu o lățime de bandă de opt ori mai mare decât specificația originală AGP.</li> <li>• AGP contribuie la creșterea semnificativă a performanțelor, incluzând și îmbunătățiri ale funcțiilor .</li> <li>• Această interfață reprezintă evoluția naturală a portului AGP existent, determinată de pretențiile din ce în ce mai ridicate față de interfețele grafice utilizate de mediile cu stații de lucru și de calculatoarele individuale.</li> </ul>						

<b>Audio</b>	<ul style="list-style-type: none"> <li>• M963G+ suportă CODEC audio AC'97 stereo cu duplex complet de 18 biți, compatibil cu specificația AC'97, versiunea 2.3.</li> <li>• Include viteze de eșantionare independente și variabile, precum și gestionarea avansată a energiei.</li> <li>• Este dotat cu o tehnologie de conversie de concepție proprie</li> <li>• Circuitul digital de interfață necesită o alimentare cu energie de 3,3 V și suportă funcția SPDIF de ieșire, compatibilă cu AC'97, specificația 2.3, ceea ce facilitează conectarea calculatorului la alte produse electronice.</li> <li>• Suportă patru intrări stereo analoge.</li> </ul>
<b>Opțiuni de extindere</b>	<p>Placa de bază este dotată următoarele posibilități de extindere:</p> <ul style="list-style-type: none"> <li>• Un slot compatibil cu AGP, versiunea 3.0, cu viteze de 8x/4x</li> <li>• Trei sloturi de 32 biți compatibile PCI, versiunea 2.3</li> <li>• Două interfețe IDE cu 40 ace, cu profil plat care poate deservi patru canale IDE</li> <li>• O interfață pentru unitate floppy</li> <li>• Dou conectoare SATA 7</li> <li>• Un slot pentru conectare la rețele de comunicații (CNR)</li> </ul> <p>Placa de bază M963G+ suportă bus mastering UltraDMA cu viteze de transfer de 133 / 100 / 66 / 33 MB/sec.</p>
<b>Onboard LAN (optional)</b>	<p>Onboard LAN are următoarele caracteristici:</p> <ul style="list-style-type: none"> <li>• Suport pentru regim de funcționare de 10/100 Mbps</li> <li>• Suport pentru funcționare în regim semi-duplex și duplex complet</li> <li>• Suport funcia Wake-On-LAN i trezirea de la distan</li> <li>• Suportă modul auto-oprire</li> </ul>
<b>I/O integrată</b>	<p>Placa de bază este dotată cu un set complet de porturi și conectoare I/O:</p> <ul style="list-style-type: none"> <li>• Două porturi PS/2, pentru mouse și tastatură</li> <li>• Un port serial</li> <li>• Un port paralel</li> <li>• Patru porturi USB</li> <li>• Un port LAN (opțional)</li> <li>• Un port LAN</li> <li>• Mufe audio pentru microfon, intrare și ieșire audio</li> </ul>
<b>Firmware BIOS</b>	<p>Placa de bază utilizează Award BIOS, care permite utilizatorului să configureze mai mulți parametri ai sistemului, cum ar fi:</p> <ul style="list-style-type: none"> <li>• Gestionarea energiei</li> <li>• Alarame de trezire</li> <li>• Parametri CPU</li> <li>• Temporizare CPU și memorie</li> </ul> <p>Acest firmware poate fi utilizat și pentru a seta parametrii diferitelor frecvențe de comandă ale procesorului.</p>



Anumite specificații hardware și elemente de software pot fi modificate fără înștiințare prealabilă.

## Спецификация

<b>Процесор</b>	<p>M963G+ използва 478-pin сокет за процесори Pentium 4:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, HT supported</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT supported</li> </ul> <p>Технологията "Hyper-Threading" позволява да се "излъже" операционната система, че работи на два процесора, което дава възможност за паралелното изпълнение на две задачи на два отделни "логически" процесора в един и същ физически процесор.</p>						
<b>Чипсет</b>	<p>Чипсетът със северен мост(NB) <b>SiS661FX</b> и южен мост(SB) <b>SiS964 / 964L</b> е изграден на базата на оригинална архитектура с възможност за надстройка с доказана надеждност и производителност..</p> <table border="1" data-bbox="597 718 1182 1549"> <thead> <tr> <th data-bbox="604 726 727 751">Чипсет</th> <th data-bbox="734 726 1175 751">Спецификация</th> </tr> </thead> <tbody> <tr> <td data-bbox="604 760 727 1129"> <b>SiS661FX NB</b> </td> <td data-bbox="734 760 1175 1129"> <p>Поддръжка на 12 неизпълнени транзакции и out-of-order completion.</p> <p>Високоскоростен интерфейс SiS MuTIOL 1G за връзка с южния мост SiS964 с двупосочна 16 битова шина за данни и скорост 1GB/s в режим 133 MHz x 4.</p> <p>Висококачествен 3D ускорител с поддръжка на Ultra-AGP II™ до 2.7 GB/s.</p> <p>Вграден CRT FIFOs за поддръжка на графични режими с свръх висока разделителна способност и за намаляване на изчакването на процесора.</p> <p>Поддръжка автоматично дроселиране на часовника за 2D и 3D ядрата</p> </td> </tr> <tr> <td data-bbox="604 1138 727 1541"> <b>SiS964/ 964L SB</b> </td> <td data-bbox="734 1138 1175 1541"> <p>Равностойно обслужване на всички DMA устройства: два IDE контролера, SATA контролер (с изключение на SiS964L), три USB 1.1 колектора, колектор USB 2.0, LAN MAC контролер Audio/Modem DMA контролер</p> <p>Съвместимост със спецификацията PCI 2.3</p> <p>Съвместимост със спецификацията Serial ATA 1.0 с поддръжка на режим на спестяване на захранването (само при SiS964).</p> <p>Съвместимост със спецификацията AC'97 v2.3 с поддръжка на 6-канално аудио и модем V.90 HSP.</p> <p>Интегриран USB 2.0 контролер с четири колектора и осем функционални USB порта.</p> </td> </tr> </tbody> </table>	Чипсет	Спецификация	<b>SiS661FX NB</b>	<p>Поддръжка на 12 неизпълнени транзакции и out-of-order completion.</p> <p>Високоскоростен интерфейс SiS MuTIOL 1G за връзка с южния мост SiS964 с двупосочна 16 битова шина за данни и скорост 1GB/s в режим 133 MHz x 4.</p> <p>Висококачествен 3D ускорител с поддръжка на Ultra-AGP II™ до 2.7 GB/s.</p> <p>Вграден CRT FIFOs за поддръжка на графични режими с свръх висока разделителна способност и за намаляване на изчакването на процесора.</p> <p>Поддръжка автоматично дроселиране на часовника за 2D и 3D ядрата</p>	<b>SiS964/ 964L SB</b>	<p>Равностойно обслужване на всички DMA устройства: два IDE контролера, SATA контролер (с изключение на SiS964L), три USB 1.1 колектора, колектор USB 2.0, LAN MAC контролер Audio/Modem DMA контролер</p> <p>Съвместимост със спецификацията PCI 2.3</p> <p>Съвместимост със спецификацията Serial ATA 1.0 с поддръжка на режим на спестяване на захранването (само при SiS964).</p> <p>Съвместимост със спецификацията AC'97 v2.3 с поддръжка на 6-канално аудио и модем V.90 HSP.</p> <p>Интегриран USB 2.0 контролер с четири колектора и осем функционални USB порта.</p>
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<b>Памет</b>	<ul style="list-style-type: none"> <li>• Поддръжка на модули за памет SDRAM 400/333/266 MHz DDR</li> <li>• Два слота DDR 184-pin небуферизирана DIMM</li> <li>• Всеки слот поддържа памет до 1 GB с общ максимален капацитет 2 GB</li> </ul>						

<b>Графичен чип</b>	<ul style="list-style-type: none"> <li>• M963G+ включва слот AGP 3.0 с поддръжка на AGP 8X или осем пъти по-висока скорост от стандартната спецификация AGP.</li> <li>• Спецификацията AGP обезпечава значително повишаване на производителността и подобряване на характеристиките в сравнение .</li> <li>• Този интерфейс представлява естествена еволюция на съществуващия AGP с цел посрещане на нарастващите изисквания към графичните интерфейси в работните станции и настолните компютри.</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• M963G+ поддържа аудио КОДЕК 18-bit stereo full-duplex AC'97 съвместим със спецификацията AC'97 v2.3.</li> <li>• Контролерът поддържа независими изменяеми честоти и съвременно управление на захранването.</li> <li>• Включена собствена конверторна технология</li> <li>• Цифровият интерфейс работи със захранване 5V/3.3V и поддържа функцията SPDIF out, съвместима с AC'97 2.3, която позволява лесна връзка между компютъра и други електронни устройства.</li> <li>• Поддръжка на четири аналогови линейни стерео входа.</li> </ul>
<b>Възможности за разширяване</b>	<p>Дънната платка има следните разширителни възможности:</p> <ul style="list-style-type: none"> <li>• Един слот съвместим с AGP 3.0 със скорост 8x/4x</li> <li>• три слот 32-bit PCI v2.3</li> <li>• Два нископрофилни 40-pin IDE колектора с поддръжка на четири IDE канала</li> <li>• един конектор за флопидисково устройство</li> <li>• два 7-цифтови SATA конектора</li> <li>• Слот за Communications Network Riser (CNR)</li> </ul> <p>Дънната платка M963G+ поддържа шина UltraDMA 133 / 100 / 66 / 33 MB/s .</p>
<b>Интегриран мрежов контролер (опция)</b>	<p>Спецификация на интегрирания мрежов контролер:</p> <ul style="list-style-type: none"> <li>• поддръжка на 10/100 Mbps operation</li> <li>• поддръжка на half и full duplex</li> <li>• поддръжка на функция за "събуждане" Wake-On-LAN и дистанционен wake-up</li> <li>• Поддръжка на режим "power down"</li> </ul>
<b>Интегриран Вход/Изход контролер</b>	<p>Дънната платка има пълен набор от I/O портове и конектори:</p> <ul style="list-style-type: none"> <li>• два PS/2 порта за мишка и клавиатура</li> <li>• един сериен порт</li> <li>• един паралелен порт</li> <li>• четири USB порта</li> <li>• един LAN порт (опция)</li> <li>• един VGA порт</li> <li>• Аудио жакове за микрофон, линеен вход и линеен изход</li> </ul>
<b>BIOS Firmware</b>	<p>Дънната платка използва Award BIOS с възможност за различни системни настройки, включително</p> <ul style="list-style-type: none"> <li>• управление на захранването</li> <li>• Wake-up аларми</li> <li>• параметри на процесора</li> <li>• синхронизиране на процесора и паметта</li> </ul> <p>настройка на скоростта на часовника на процесора</p>



Хардуерните и софтуерни спецификации и параметри могат да бъдат изменени без предупреждение

## Jellemző

<b>Processzor</b>	<p>A M963G+ egy 478 tűs foglalatú Pentium 4 processzorral működik, amely a következő jellemzőkkel bír:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, HT támogatásával</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT támogatásával</li> </ul> <p>A „Hyper-Threading” technológia által az operációs rendszer úgy működik, mintha két processzorral rendelkezne, ami két szál párhuzamos futását teszi lehetővé két független, ugyanazon fizikai processzoron található „logikai” processzoron.</p>						
<b>Lapkakészlet</b>	<p>A <b>SiS661FX</b> Northbridge (NB) és <b>SiS964 / 964L</b> Southbridge (SB) lapkakészletek egy új és méretezhető, nagy megbízhatóságú és teljesítőképességű architektúrára épülnek.</p> <table border="1" data-bbox="602 720 1182 1602"> <thead> <tr> <th data-bbox="602 720 727 779"><u>Lapkakészlet</u></th> <th data-bbox="727 720 1182 779"><u>Jellemző</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="602 779 727 1203"><b>SiS661FX NB</b></td> <td data-bbox="727 779 1182 1203"> <p>12 elintézetlen műveletet és hibajavítás befejezését támogatja.</p> <p>Nagy teljesítményű SiS MuTIOL 1G, amely a SiS964 MuTIOL 1G I/O hordozóhoz egy kétirányú, 16 bites adatbusszal csatlakozik, 1 GB/s sávszélesség elérésére 133 MHz x 4 módban.</p> <p>Csúcsminőségű 3D gyorsító, amely maximum 2,7 GB/s sávszélességű Ultra AGP II<sup>TM</sup> támogatására.</p> <p>Beépített CRT FIFO egységek rendkívül nagy felbontású grafikus módok támogatására és a központi egység várakozási idejének csökkentésére.</p> <p>Ütemfrekvencia-növelés 2D motorok, 3D motorok számára.</p> </td> </tr> <tr> <td data-bbox="602 1203 727 1602"><b>SiS 964/ 964L SB</b></td> <td data-bbox="727 1203 1182 1602"> <p>Az összes DMA eszköz egyidejű kiszolgálása: Duál IDE vezérlők, egy SATA vezérlő (a SiS964L kivételével), három USB 1.1 HC, USB 2.0 HC, LAN MAC vezérlő, valamint Audio/Modem DMA vezérlő</p> <p>Kompatibilis a PCI 2.3-as specifikációjával</p> <p>Kompatibilis a soros ATA 1.0 specifikációval, az energiatakarékos üzemmódot is támogatja (csak SiS964).</p> <p>Kompatibilis az AC'97 2.3-as verziójával, amely 6 csatornás audio kimenetet és V.90 HSP modemet támogat</p> <p>Beépített USB 2.0 vezérlő, amely négy alaphub-bal és nyolc funkcionális porttal rendelkezik.</p> </td> </tr> </tbody> </table>	<u>Lapkakészlet</u>	<u>Jellemző</u>	<b>SiS661FX NB</b>	<p>12 elintézetlen műveletet és hibajavítás befejezését támogatja.</p> <p>Nagy teljesítményű SiS MuTIOL 1G, amely a SiS964 MuTIOL 1G I/O hordozóhoz egy kétirányú, 16 bites adatbusszal csatlakozik, 1 GB/s sávszélesség elérésére 133 MHz x 4 módban.</p> <p>Csúcsminőségű 3D gyorsító, amely maximum 2,7 GB/s sávszélességű Ultra AGP II<sup>TM</sup> támogatására.</p> <p>Beépített CRT FIFO egységek rendkívül nagy felbontású grafikus módok támogatására és a központi egység várakozási idejének csökkentésére.</p> <p>Ütemfrekvencia-növelés 2D motorok, 3D motorok számára.</p>	<b>SiS 964/ 964L SB</b>	<p>Az összes DMA eszköz egyidejű kiszolgálása: Duál IDE vezérlők, egy SATA vezérlő (a SiS964L kivételével), három USB 1.1 HC, USB 2.0 HC, LAN MAC vezérlő, valamint Audio/Modem DMA vezérlő</p> <p>Kompatibilis a PCI 2.3-as specifikációjával</p> <p>Kompatibilis a soros ATA 1.0 specifikációval, az energiatakarékos üzemmódot is támogatja (csak SiS964).</p> <p>Kompatibilis az AC'97 2.3-as verziójával, amely 6 csatornás audio kimenetet és V.90 HSP modemet támogat</p> <p>Beépített USB 2.0 vezérlő, amely négy alaphub-bal és nyolc funkcionális porttal rendelkezik.</p>
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<b>SiS 964/ 964L SB</b>	<p>Az összes DMA eszköz egyidejű kiszolgálása: Duál IDE vezérlők, egy SATA vezérlő (a SiS964L kivételével), három USB 1.1 HC, USB 2.0 HC, LAN MAC vezérlő, valamint Audio/Modem DMA vezérlő</p> <p>Kompatibilis a PCI 2.3-as specifikációjával</p> <p>Kompatibilis a soros ATA 1.0 specifikációval, az energiatakarékos üzemmódot is támogatja (csak SiS964).</p> <p>Kompatibilis az AC'97 2.3-as verziójával, amely 6 csatornás audio kimenetet és V.90 HSP modemet támogat</p> <p>Beépített USB 2.0 vezérlő, amely négy alaphub-bal és nyolc funkcionális porttal rendelkezik.</p>						
<b>Memória</b>	<ul style="list-style-type: none"> <li>• Max. DDR400/333/266 MHz-es DDR SDRAM memóriamodulokkal működik</li> <li>• Két 184 tűs puffer nélküli DDR DIMM foglalattal rendelkezik</li> <li>• Mindegyik foglalatba max. 1 GB memória helyezhető, az összkapacitás max. 2 GB</li> </ul>						

<b>Grafika</b>	<ul style="list-style-type: none"> <li>• A M963G+ egy olyan AGP 3.0 foglalatot tartalmaz, amely az eredeti AGP specifikáció sávszélességének nyolcszorosát biztosító 8-szoros AGP-vel rendelkezik.</li> <li>• Az AGP verziója a teljesítmény jelentős növekedéséhez járul hozzá, jellemzőinek feljavítása mellett.</li> <li>• Ez az interfész a meglévő AGP természetes fejlődését jelenti, ami a grafikus interfészek iránti egyre növekvő igények következménye, mind egyéni számítógépes, mind munkaállomási környezetben.</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• A M963G+ 18 bites sztereo teljes duplex AC'97 audio CODEC-et támogatja, amely az AC'97 2.3-as verziójával kompatibilis.</li> <li>• Független és változó mintavételezési sebességgel és fejlett energiagazdálkodással rendelkezik.</li> <li>• Saját fejlesztésű konverziós technológiával rendelkezik</li> <li>• A digitális illesztőáramkör 3,3 V-os tápforrást igényel, és támogatja az AC'97 2.3 specifikációval kompatibilis SPDIF kimeneti funkciót, amely megkönnyíti a számítógép és más elektronikai cikkek összekapcsolását.</li> <li>• Négy analóg sztereo bemenetet támogat.</li> </ul>
<b>Bővítési lehetőségek</b>	<p>Az alaplap a következő bővítési lehetőségekkel rendelkezik:</p> <ul style="list-style-type: none"> <li>• Az AGP 3.0 verzióval kompatibilis foglalat, 8-szoros/4-szeres sebességgel</li> <li>• Három 32 bites, a PCI 2.3-as változatával kompatibilis foglalat</li> <li>• Két 40 tűs lapos IDE foglalat, amelyek négy IDE egységet képesek kiszolgálni</li> <li>• Egy hajlékonylemez meghajtó interfész</li> <li>• Négy 7 tűs SATA csatlakozó</li> <li>• Egy CNR (Kommunikációs hálózat felszálló) foglalat</li> </ul> <p>A M963G+ alaplap támogatja az UltraDMA bus mastering megoldást, 133 / 100 / 66 / 33 MB/s sebességen .</p>
<b>Alaplapon levő LAN (választható)</b>	<p>Az alaplapon levő LAN jellemzői:</p> <ul style="list-style-type: none"> <li>• 10/100 Mbps üzemmód támogatása</li> <li>• Fél, illetve teljes duplex üzemmód támogatása</li> <li>• Támogatja a Wake-On-LAN funkciót és a távoli ébresztést</li> <li>• A kikapcsolási módot támogatja</li> </ul>
<b>Beépített I/O</b>	<p>Az alaplapot az I/O portok és csatlakozók teljes készletével szerelték fel:</p> <ul style="list-style-type: none"> <li>• Két PS/2 port az egér és a billentyűzet számára</li> <li>• Egy soros port</li> <li>• Egy párhuzamos port</li> <li>• Négy USB port (USB 2.0)</li> <li>• Egy LAN port (választható)</li> <li>• Egy VGA port</li> <li>• Audio csatlakozók mikrofón, bemenet és kimenet számára</li> </ul>
<b>BIOS Firmware</b>	<p>Az alaplapon levő Award BIOS segítségével a felhasználó a rendszer sok paraméterét állíthatja be, például:</p> <ul style="list-style-type: none"> <li>• Energiagazdálkodás</li> <li>• Ébresztési riasztások</li> <li>• CPU paraméterek</li> <li>• CPU és memória időzítés</li> </ul> <p>A firmware segítségével a processzor órajel-frekvenciáinak paramétereit is beállíthatják.</p>



Bizonyos hardverjellemzők és szoftverelemek előzetes bejelentés nélkül módosulhatnak.

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## *Chapter 1*

# Introducing the Motherboard

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### Introduction

Thank you for choosing M963G+ motherboard of great performance and with enhanced function. M963G+ motherboard carries a Micro ATX form factor of 244 x 230 mm. M963G+ supports Socket 478 Pentium 4 processors with system data transfer rate up to 800 MHz and "Hyper-Threading" technology for high-end business or personal desktop markets.

M963G+ incorporates chipset of SiS661FX Northbridge and SiS964 / 964L Southbridge.

SiS661FX contains a DRAM controller that supports up to two un-buffered DIMM DDR400 and 32Mb, 64Mb, 128Mb, 256Mb, 512Mb, 1Gb SDRAM technology with page size from 2 KB up to 32 KB. Its AGP controller is AGP 3.0 compliant and supports AGP 8X / 4X interface with fast write transaction. It accommodates high throughput SiS MuTIOL 1G interconnecting to SiS964 / SiS964L MuTIOL 1G media I/O with bi-directional 16 bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode. Its high quality 3D accelerator supports Ultra-AGP II™ up to 2.7GB/s bandwidth.

SiS964 / 964L supports Hi-Precision Event Timer (HPET) for Microsoft Windows with multiple DMA bus architecture that supports isochronous request and continuous packet transmission. It implements an EHCI compliant interface that provides 480Mb/s bandwidth for eight USB 2.0 ports, integrates AC'97 v2.3 compliant audio controller that features a 6-channels of audio speaker out and HSP v.90 modem support. The Southbridge integrates a Serial ATA host controller that is SATA v1.0 compliant, supporting Ultra DMA 150 (SiS964 only). SiS964/964L provide dual independent IDE channels and each of them support PIO mode 0,1,2,3,4 and multiword DMA mode 0,1,2 and Ultra DMA 33 / 66 / 100 / 133.

There is an advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, COM1, LPT1, VGA1, and four USB ports, one optional LAN port, and audio jacks for microphone, line-in, and line-out. Additional I/O ports include two rear USB connectors and one rear RJ45 connector W/O two status LED.

Featuring good stability and performance, and the advanced SiS chipset, the M963G+ is an excellent Pentium 4 DDR motherboard for the ideal solution for any home or workstation PC.

## Features

<b>Processor</b>	<p>M963G+ uses a 478-pin socket type of Pentium 4 that carries the following features:</p> <ul style="list-style-type: none"> <li>• Intel Pentium 4 Willamette: FSB400,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 400/533,512K L2 cache</li> <li>• Intel Pentium 4 Northwood: FSB 533, 512K L2 cache, HT supported</li> <li>• Intel Pentium 4 Northwood: FSB 800, 512K L2 cache, HT supported</li> </ul> <p>“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate ‘logical’ processors within the same physical processor.</p>														
<b>Chipset</b>	<p>The <b>SiS661FX</b> Northbridge (NB) and <b>SiS964 / 964L</b> Southbridge (SB) chipset are based on an innovative and scalable architecture with proven reliability and performance.</p> <table border="1" data-bbox="630 810 1177 1549"> <thead> <tr> <th data-bbox="630 810 748 842">Chipset</th> <th data-bbox="756 810 1177 842">Features</th> </tr> </thead> <tbody> <tr> <td data-bbox="630 852 748 1213" rowspan="5"> <b>SiS661FX NB</b> </td> <td data-bbox="756 852 1177 894">Supports 12 outstanding transactions and out-of-order completion.</td> </tr> <tr> <td data-bbox="756 905 1177 1020">Accommodates high throughput SiS MuTIOL 1G interconnecting to SiS964 MuTIOL 1G media I/O with bi-directional 16 bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode.</td> </tr> <tr> <td data-bbox="756 1031 1177 1094">Accommodates high quality 3D accelerator that supports Ultra-AGP™ up to 2.7 GB/s bandwidth.</td> </tr> <tr> <td data-bbox="756 1104 1177 1167">Built-in CRT FIFOs to support ultra high resolution graphics modes and reduce CPU wait-state.</td> </tr> <tr> <td data-bbox="756 1178 1177 1213">Supports auto clock throttling for 2D engine, 3D engine.</td> </tr> <tr> <td data-bbox="630 1224 748 1549" rowspan="5"> <b>SiS964/ 964L SB</b> </td> <td data-bbox="756 1224 1177 1339">Concurrent servicing of all DMA Devices: Dual IDE Controllers, SATA controller (<i>except for SiS964L</i>), three USB 2.0 HC, USB 1.1 HC, LAN MAC Controller and Audio/Modem DMA Controller.</td> </tr> <tr> <td data-bbox="756 1350 1177 1371">Compliant with PCI 2.3 specification.</td> </tr> <tr> <td data-bbox="756 1381 1177 1423">Compliant with Serial ATA 1.0 specification, supports power saving mode (SiS964 only).</td> </tr> <tr> <td data-bbox="756 1434 1177 1497">Compliant with AC'97 v2.3 supporting 6 Channels of audio outputs and V.90 HSP-Modem.</td> </tr> <tr> <td data-bbox="756 1507 1177 1549">Integrated USB 2.0 Controller with four root hubs and eight function ports.</td> </tr> </tbody> </table>	Chipset	Features	<b>SiS661FX NB</b>	Supports 12 outstanding transactions and out-of-order completion.	Accommodates high throughput SiS MuTIOL 1G interconnecting to SiS964 MuTIOL 1G media I/O with bi-directional 16 bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode.	Accommodates high quality 3D accelerator that supports Ultra-AGP™ up to 2.7 GB/s bandwidth.	Built-in CRT FIFOs to support ultra high resolution graphics modes and reduce CPU wait-state.	Supports auto clock throttling for 2D engine, 3D engine.	<b>SiS964/ 964L SB</b>	Concurrent servicing of all DMA Devices: Dual IDE Controllers, SATA controller ( <i>except for SiS964L</i> ), three USB 2.0 HC, USB 1.1 HC, LAN MAC Controller and Audio/Modem DMA Controller.	Compliant with PCI 2.3 specification.	Compliant with Serial ATA 1.0 specification, supports power saving mode (SiS964 only).	Compliant with AC'97 v2.3 supporting 6 Channels of audio outputs and V.90 HSP-Modem.	Integrated USB 2.0 Controller with four root hubs and eight function ports.
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	Integrated USB 2.0 Controller with four root hubs and eight function ports.														
<b>Memory</b>	<ul style="list-style-type: none"> <li>• Supports DDR400/333/266 MHz DDR SDRAM memory module</li> <li>• Accommodates two DDR 184-pin un-buffered DIMM slots</li> <li>• Each slot supports up to 1 GB with a total maximum capacity of 2 GB</li> </ul>														

<b>Graphics</b>	<ul style="list-style-type: none"> <li>• M963G+ includes an AGP 3.0 slot that provides AGP 8X, eight times the bandwidth of the original AGP specification.</li> <li>• The AGP offers a significant increase in performance along with feature enhancements.</li> <li>• The interface represents the natural evolution from the existing AGP to meet the ever-increasing demands placed on the graphic interfaces within the workstation and desktop environments.</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• M963G+ supports 18-bit stereo full-duplex AC'97 audio CODEC that is compliant with AC'97 v2.3 specification.</li> <li>• It comes with independent and variable sampling rate and advanced power management.</li> <li>• It is incorporated with proprietary converter technology</li> <li>• The digital interface circuitry operates from a 3.3V power supply and supports an AC'97 2.3 compliant SPDIF out function that allows easy connection from the PC to other electronic products.</li> <li>• It supports four analog line-level stereo inputs.</li> </ul>
<b>Expansion Options</b>	<p>The motherboard comes with the following expansion options:</p> <ul style="list-style-type: none"> <li>• One AGP 3.0 compliant slot with 8x/4x speed</li> <li>• Three 32-bit PCI v2.3 compliant slots</li> <li>• Two 40-pin IDE low profile headers that support four IDE channels</li> <li>• One floppy disk drive interface</li> <li>• Two 7-pin SATA connector</li> <li>• A Communications Networking Riser (CNR) slot</li> </ul> <p>The M963G+ motherboard supports Ultra DMA bus mastering with transfer rates of 133 / 100 / 66 / 33 MB/sec.</p>
<b>Onboard LAN (optional)</b>	<p>The onboard LAN provides the following features:</p> <ul style="list-style-type: none"> <li>• Supports 10/100 Mbps operation</li> <li>• Supports half/full duplex operation</li> <li>• Supports Wake-On-LAN (WOL) function and remote wake-up</li> <li>• Supports power down mode</li> </ul>
<b>Integrated I/O</b>	<p>The motherboard has a full set of I/O ports and connectors:</p> <ul style="list-style-type: none"> <li>• Two PS/2 ports for mouse and keyboard</li> <li>• One serial port</li> <li>• One parallel port</li> <li>• Four USB ports</li> <li>• One LAN port (optional)</li> <li>• One VGA port</li> <li>• Audio jacks for microphone, line-in and line-out</li> </ul>

<b>BIOS Firmware</b>	This motherboard uses Award BIOS that enables users to configure many system features including the following: <ul data-bbox="597 464 862 562" style="list-style-type: none"><li>• Power management</li><li>• Wake-up alarms</li><li>• CPU parameters</li><li>• CPU and memory timing</li></ul> The firmware can also be used to set parameters for different processor clock speeds.
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Some hardware specifications and software items are subject to change without prior notice.

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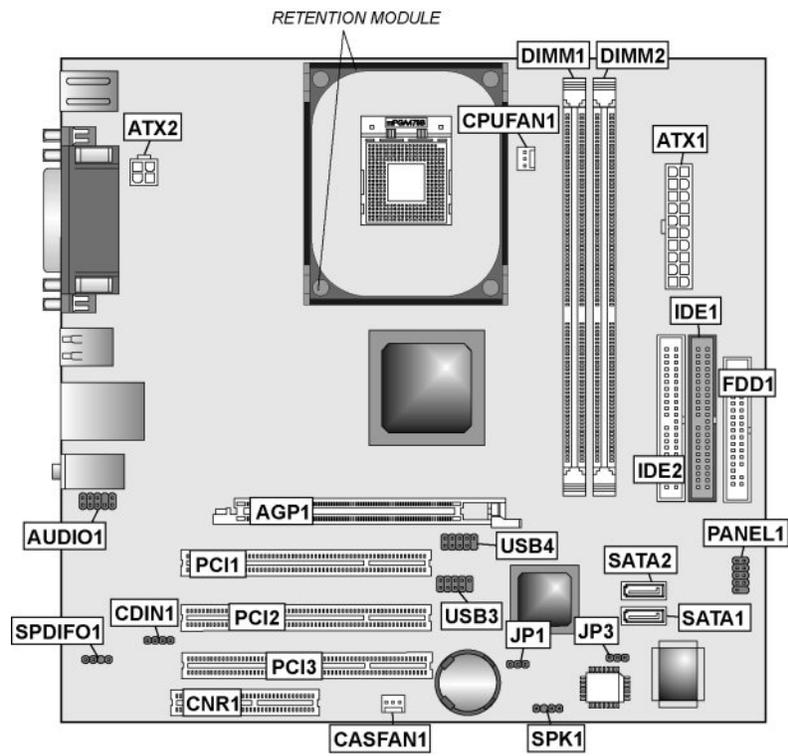
## **Choosing a Computer Case**

There are many types of computer cases on the market. The motherboard complies with the specifications for the Micro ATX system case. First, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, M963G+ supports one or two floppy diskette drives and four enhanced IDE drives. Make sure 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 carries a Micro ATX form factor of 244 x 230 mm. Choose a case that accommodates this form factor.

## Motherboard Components



## Table of Motherboard Components

Label	Component
AGP1	Accelerated Graphics Port slot
ATX1	Standard 20-pin ATX power connector
ATX2	Auxiliary 4-pin power connector
AUDIO1	Front panel audio header
CASFAN1	Case fan connector
CDIN1	CD-in connector
CNR1	Communications Networking Riser slot
CPUFAN1	CPU cooling fan connector
CPU Socket	mPGA478 socket for Pentium 4 CPUs
DIMM1 ~ DIMM2	184-pin DDR SDRAM slots
FDD1	Floppy diskette drive connector
IDE1	Primary IDE channel
IDE2	Secondary IDE channel
JP1	Clear CMOS jumper
JP3	BIOS Protect jumper
PANEL1	Front Panel switch/LED header
PCI1 ~ PCI3	32-bit add-on card slots
SATA1 ~ SATA2	Serial ATA connectors
SPK1	Speaker header
SPDIFO1	SPDIF out header
USB3 ~ USB4	Front Panel USB headers

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

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## *Chapter 2*

# Installing the Motherboard

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### **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:

<b>Locating Motherboard Components</b>	Go to page 6
<b>Installing the Motherboard in a Case</b>	Go to page 9
<b>Setting Jumpers</b>	Go to page 9
<b>Connecting Case Components</b>	Go to page 11
<b>Installing the Processor</b>	Go to page 14
<b>Installing Memory</b>	Go to page 17
<b>Installing an HDD/CD-ROM/SATA Hard Drive</b>	Go to page 19
<b>Installing an FDD</b>	Go to page 21
<b>Installing Add-on Cards</b>	Go to page 22
<b>Connecting Options</b>	Go to page 23
<b>Connecting Peripheral (I/O) Devices</b>	Go to page 25

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## Installing the Motherboard in a Case

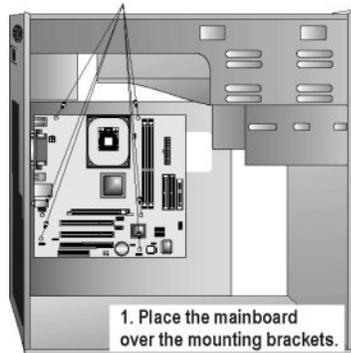
Refer to the following illustration and instructions for installing the motherboard in a case:

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

**Note:** Do not over-tighten 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.

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## Checking Jumper Settings

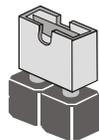
This section explains how to set jumpers for correct configuration of the motherboard.

### Setting Jumpers

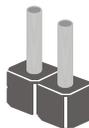
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

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.

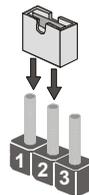
This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



Short

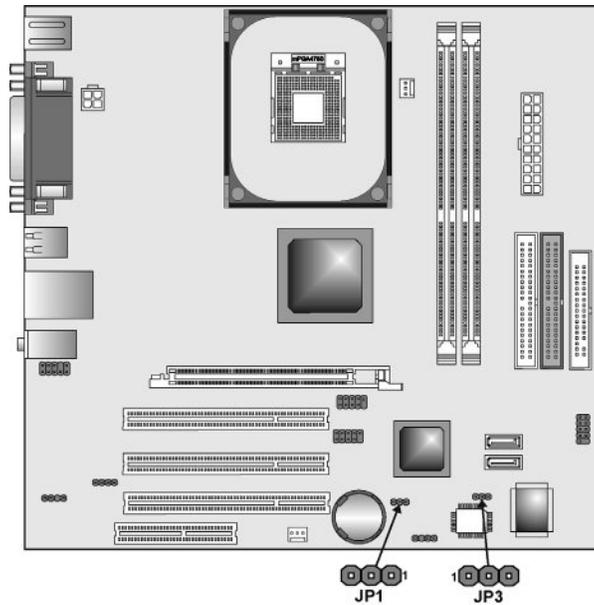


Open



## Checking Jumper Settings

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



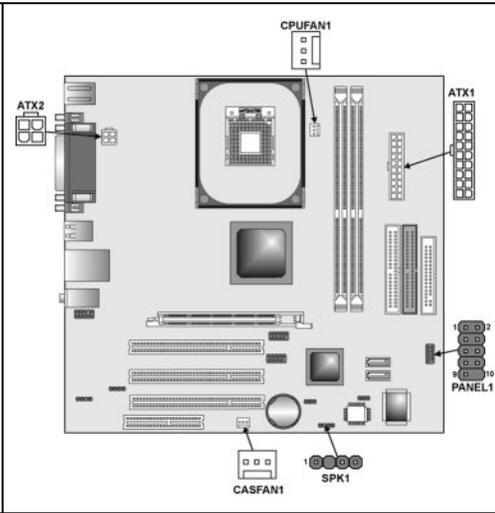
## Jumper Settings

Jumper	Type	Description	Setting (default)	
JP1	3-pin	CLEAR CMOS	1-2: NORMAL 2-3: CLEAR Before clearing the CMOS, make sure to turn off the system	 <b>JP1</b>
JP3	3-pin	BIOS PROTECT	1-2: WRITE ENABLE 2-3: WRITE DISABLE	 <b>JP3</b>

## 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. Connect the case cooling fan connector to **CASFAN1**.
3. Connect the case speaker cable to **SPK1**.
4. Connect the case switches and indicator LEDs to the **PANEL1**.
5. Connect the standard power supply connector to **ATX1**.
6. Connect the auxiliary case power supply connector to **ATX2**.



### CPUFAN1 / CASFAN1: 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	VCC
2	Key
3	NC
4	Signal

**ATX1: ATX 20-pin Power Connector**

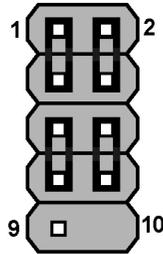
Pin	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS ON#
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWRGD	18	- 5V
9	+5VSB	19	+5V
10	+12V	20	+5V

**ATX2: ATX 12V Power Connector**

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

## Front Panel Header

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



PANEL1

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 de-bounce 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

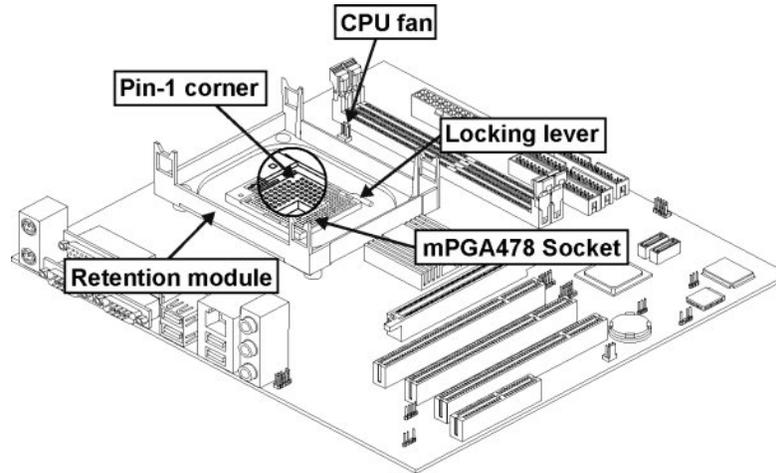
This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock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

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

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

## CPU Installation Procedure

The following illustration shows CPU installation components:



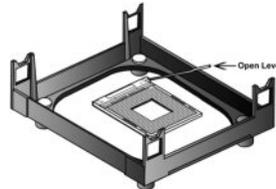
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**Note:** The pin-1 corner is marked with an arrow ▼

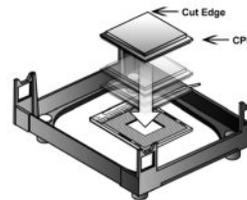
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Follow these instructions to install the Retention Module and CPU:

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.



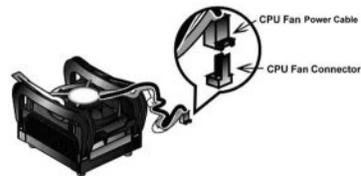
4. Apply thermal grease on top of the CPU.

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

M963G+ accommodates two 184-pin 2.5V un-buffered Double Data Rate (DDR) SDRAM (Synchronous Dynamic Random Access Memory) memory modules. DDR SDRAM doubles the data transfer rate up to 3200/2700/2100/1600 MBps. M963G+ can support DDR400 / DDR333 / DDR266 memory modules and allow to maximum memory size 2 GB.

### DDR SDRAM memory module table:

Memory module	Memory Bus
DDR266	133 MHz
DDR333	166 MHz
DDR400	200 MHz

The motherboard accommodates two memory modules. You must install at least one module in any of the two slots. Each module can be installed with 128 MB to 1 GB of memory; total memory capacity is 2 GB.



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

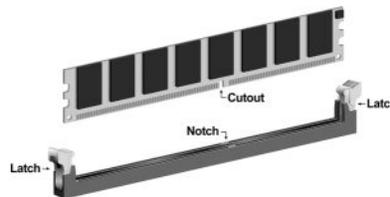
Refer to the following to install the memory modules.

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

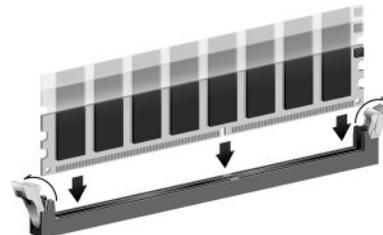


2. Push the latches on each side of the DIMM slot down.

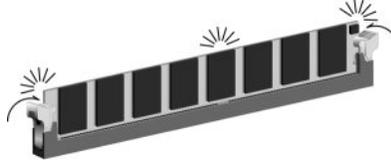
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.



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.

**Table A: DDR (memory module) QVL (Qualified Vendor List)**

The following DDR400 memory modules have been tested and qualified for use with this motherboard.

Size	Vendor	Module Name
<b>128MB</b>	<b>Samsung</b>	M368L1713DTM-CC4
	<b>Micron</b>	MT8VDDT1664AG-403B2
	<b>Nanya</b>	NT128D64SH4B1G-5
	<b>Infineon</b>	HYS64D16301GU-5-B
	<b>Nanya</b>	NT128D64SH4B1G-5T
<b>256MB</b>	<b>Samsung</b>	M368L3223DTM-CC4
	<b>Nanya</b>	NT256D64S88B1G-5
	<b>Micron</b>	MT16VDDT3264AG-403B2
	<b>Infineon</b>	HYS64D32300GU-5-B
	<b>Micron</b>	MT8VDDT3264AG-40BC4
	<b>Nanya</b>	NT256D64S88B1G-5T
	<b>Infineon</b>	HYS64D32300HU-5-C
<b>512MB</b>	<b>Samsung</b>	M368L6423DTM-CC4
	<b>Nanya</b>	NT512D64S8HB1G-5
	<b>Micron</b>	MT16VDDT6464AG-40BC4
	<b>Nanya</b>	NT512D64S8HB1G-5T
	<b>Samsung</b>	M368L6423ETM-CC4
	<b>Infineon</b>	HYS64D64320HU-5-C

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

This section describes how to install IDE devices such as a hard disk 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.

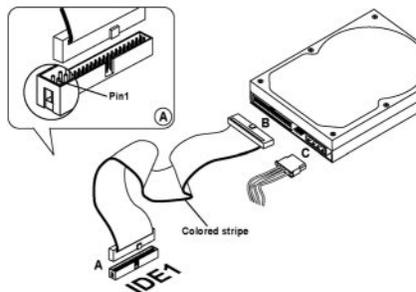
If you want to install more than two IDE devices, get a second IDE cable and you can add two more devices to the secondary IDE channel.



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.

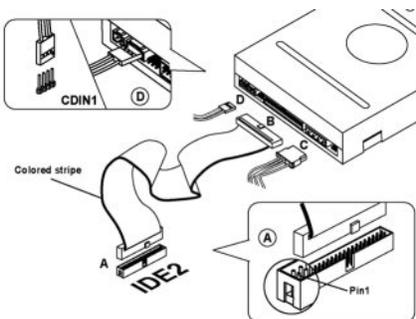
#### IDE1: Primary IDE Connector

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 enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. 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.

#### CDIN1

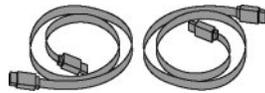
Pin	Function
1	Left CD-in signal
2	Ground
3	Ground
4	Right CD-in signal

### 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 24) and follow the illustration below to install the SATA hard drives.

### Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that 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.



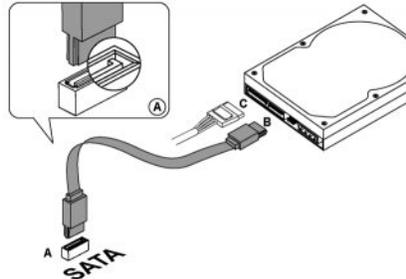
**SATA cable (optional)**



**SATA power cable (optional)**

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.




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

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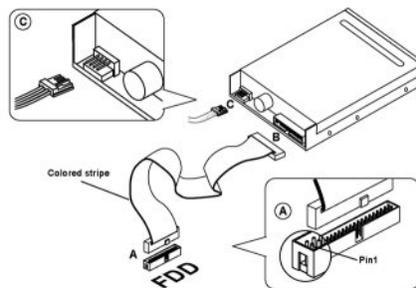
## Installing a Floppy Diskette Drive

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.

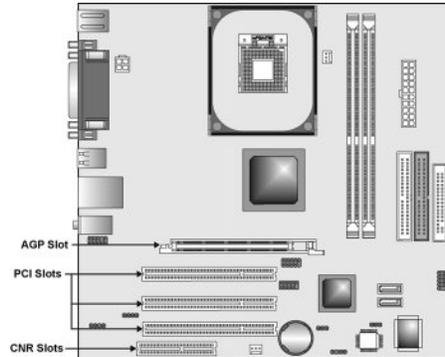
### FDD1: Floppy Disk Connector

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 on 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 that performs tasks that are not part of the basic system.



**AGP Slot** The AGP slot is used to install a graphics adapter that supports the 8x/4x AGP specification. It is AGP 3.0 compliant.

**PCI Slots** M963G+ is equipped with three standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

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

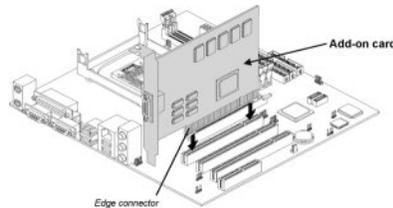
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**Note:** Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

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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.

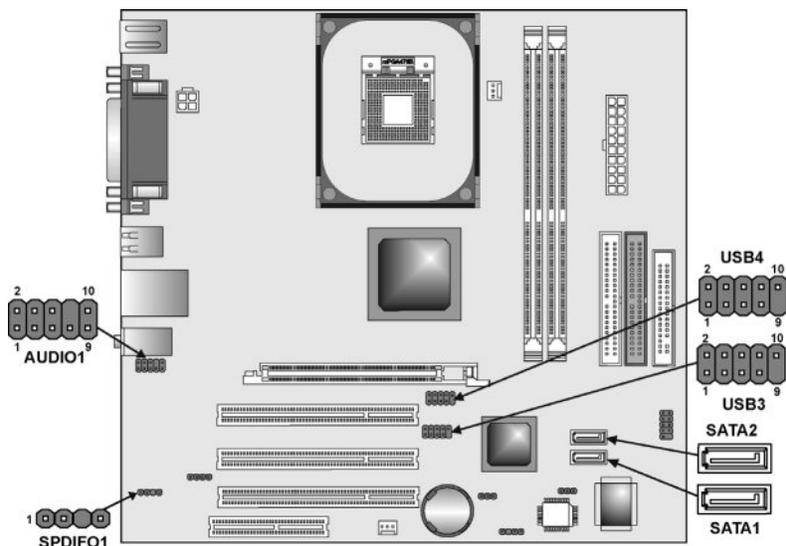
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**Note:** For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

---

## 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_F_R	Right Channel Audio signal to Front Panel
6	AUD_RET_R	Right Channel Audio signal to Return from Front Panel
7	REVD	Reserved for future use to control Head-phone Amplifier
8	KEY	No Pin
9	AUD_F_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal Return from Front Panel

## SPDIF01: SPDIF out header

You can purchase an optional 24-bit digital audio extension bracket from a third-party vendor. You can use the audio RCA jacks to connect to digital audio devices. If your CD-ROM/DVD drive has digital audio output, you can connect it the SPDIF connector.

Pin	Signal Name	Function
1	SPDIF	SPDIF digital output
2	+5VA	5V analog Power
3	NC	Not connected
4	GND	Ground

## SATA1 / SATA2: Serial ATA connectors

These connectors are use 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	-	-

## USB3 / USB4: Front Panel USB headers

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 connector to connect the front-mounted ports to the motherboard.

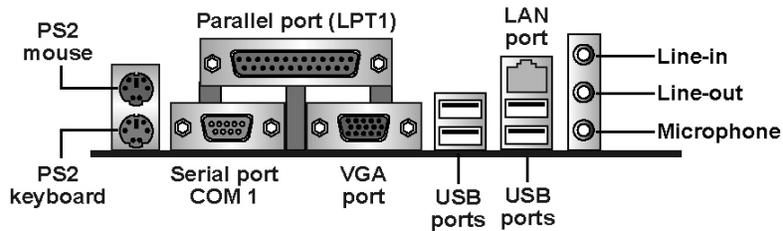
Pin	Signal Name	Function
1	USBPWR0	Front Panel USB Power
2	USBPWR1	Front Panel USB Power
3	USB_FP_P0-	USB Port 0 Negative Signal
4	USB_FP_P1-	USB Port 1 Negative Signal
5	USB_FP_P0+	USB Port 0 Positive Signal
6	USB_FP_P1+	USB Port 1 Positive Signal
7	GND	Ground
8	GND	Ground
9	KEY	No pin
10	USB_FP_OC0	Over-current signal

**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.

---

## Connecting I/O Devices

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



<b>PS2 Mouse</b>	Use the upper PS/2 port to connect a PS/2 pointing device.
<b>PS2 Keyboard</b>	Use the lower PS/2 port to connect a PS/2 keyboard.
<b>LPT1/Parallel Port</b>	Use LPT1 to connect printers or other parallel communications devices.
<b>COM1/Serial Port</b>	Use the COM ports to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1/3.
<b>VGA Port</b>	Connect your monitor to the VGA port.
<b>LAN Port (optional)</b>	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
<b>USB Ports</b>	Use the USB ports to connect USB devices.
<b>Audio Ports</b>	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.

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

## *Chapter 3*

# Using BIOS

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### **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:

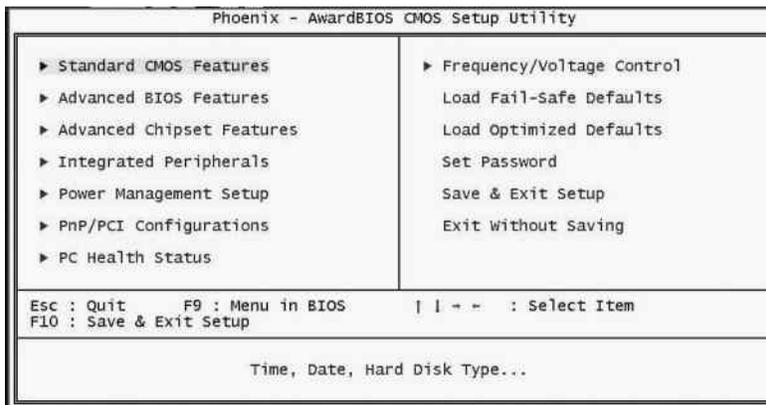
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security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



## 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		
		Item Help
Date (mm:dd:yy)	Mon, Sep 8 2003	
Time (hh:mm:ss)	12 : 29 : 33	
► IDE Channel 0 Master	[ None ]	Menu Level ►
► IDE Channel 0 Slave		
► IDE Channel 1 Master		Change the day, month, year and century
► IDE Channel 1 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	65472K	
Total Memory	1024K	
[1--: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		Item Help
IDE Channel 0 Master		
IDE HDD Auto-Detection	[Press Enter]	
IDE Channel 0 Master Access Mode	[Auto]	Menu Level ▶▶
Capacity	0 MB	To auto-detect the HDD's size, head... on this channel
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**

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)**

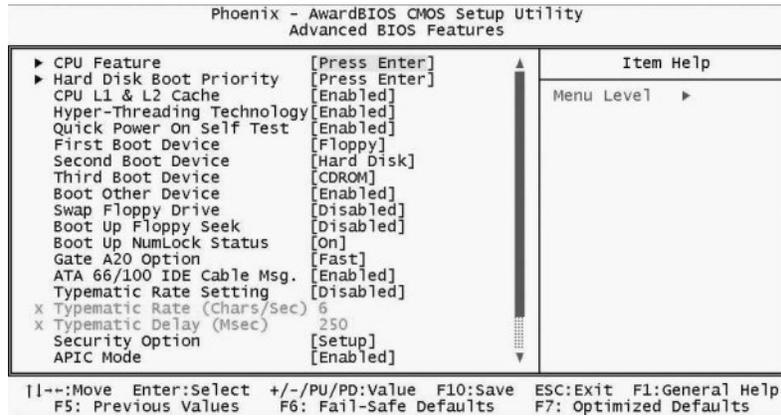
This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

**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.

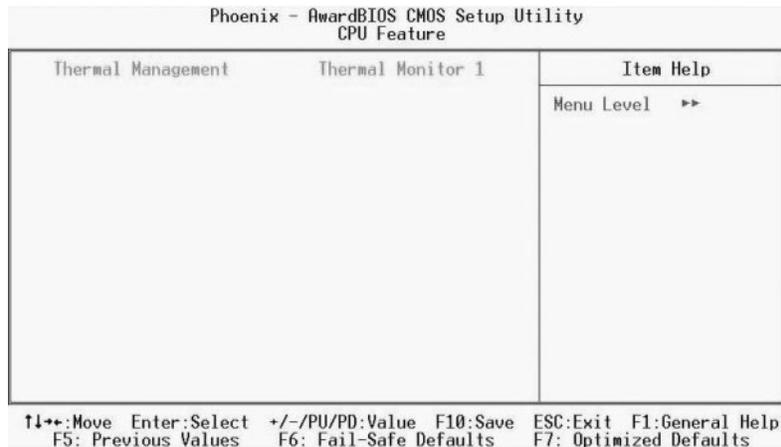
## Advanced BIOS Features

This option defines advanced information about your system.



### ▶ CPU Feature (Press Enter)

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

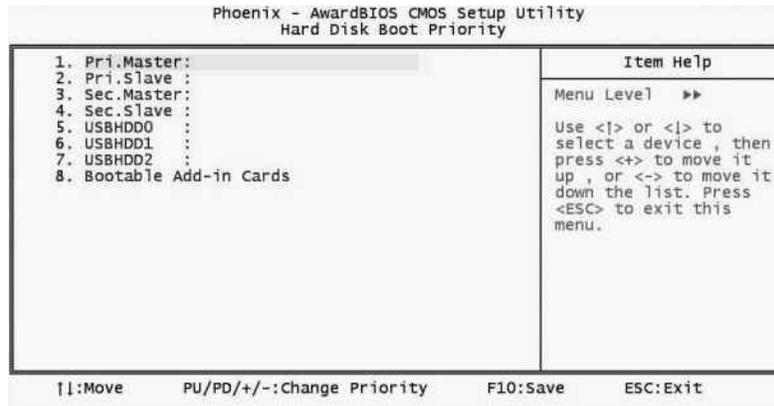


### **Thermal Management (Thermal Monitor 1)**

This item displays CPU's temperature and enables you to set a safe temperature to Prescott CPU.

► **Hard Disk Boot Priority (Press Enter)**

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



**CPU L1 and L2 Cache (Enabled)**

All processors that can be installed in this motherboard use internal level 1 (L1) and external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

**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/CDROM)**

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.

**ATA 66/100 IDE Cable Msg. (Enabled)**

This item enables or disables the display of the ATA 66/100 Cable MSG.

**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 (Enabled)**

This item allows you to enable or disable the APIC (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

**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.

The disk drive software monitors the internal performance of the motors, media, heads, and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software, through the Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.

**Video BIOS Shadow (Enabled)**

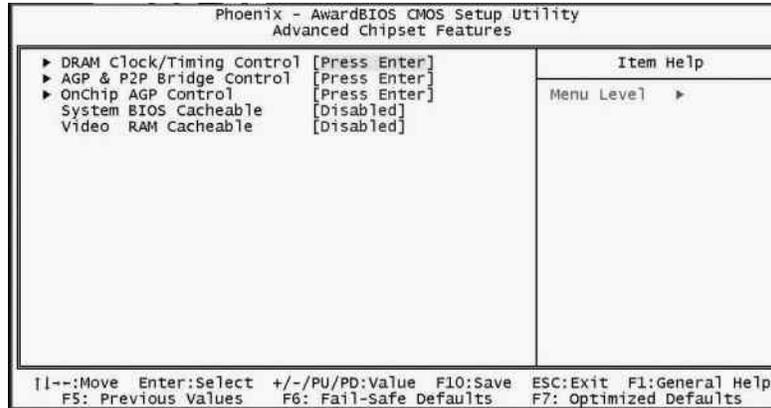
This item determines whether the BIOS will be copied to RAM for faster execution.

**Small Logo (EPA) Show (Disabled)**

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

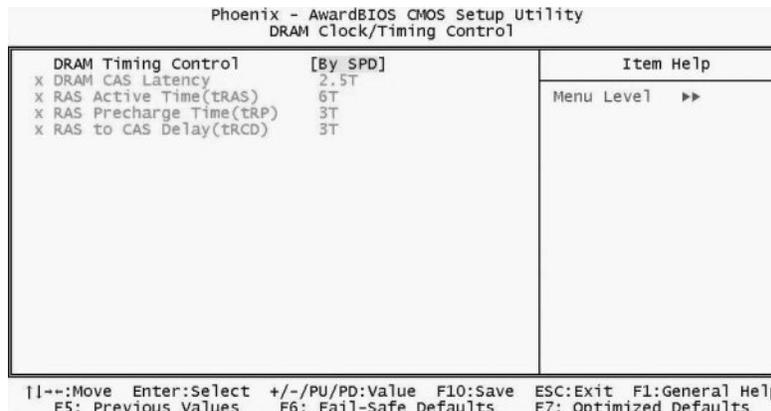
## Advanced Chipset Features

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.



### ▶ DRAM Clock/Timing Control (Press Enter)

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



### DRAM Timing Control (By SPD)

Enables you to select the CAS latency time in HCLKs of 2, 2.5, or 3. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

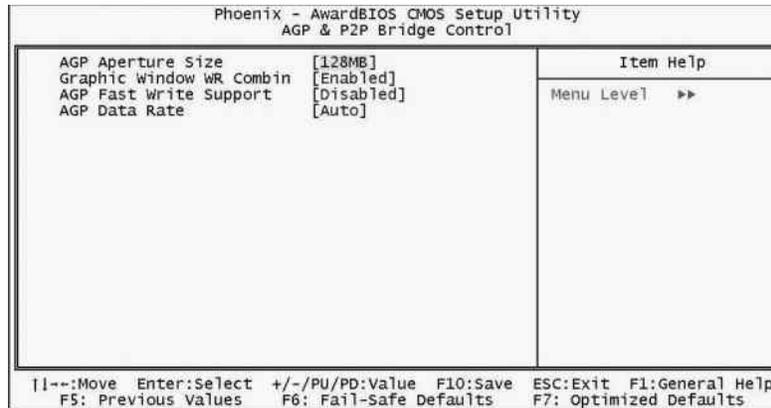
- **DRAM CAS Latency (2.5T)** : This item controls the timing delay (in clock cycles) before the DRAM starts a read command after receiving it.

- **RAS Active Time (tRAS) (6T)** : This item allows you to set the amount of time a RAS can be kept open for multiple accesses. High figures will improve performance.
- **RAS Precharge Time (tRP) (3T)**: This is the duration of the time interval during which the Row Address Strobe signal to a DRAM is held low during normal Read and Write Cycles. This is the minimum interval between completing one read or write and starting another from the same (non-page mode) DRAM. Techniques such as memory interleaving, or use of Page Mode DRAM are often used to avoid this delay. Some chipsets require this parameter in order to set up the memory configuration properly. The RAS Precharge value is typically about the same as the RAM Access (data read/write) time.
- **RAS to CAS Delay (tRCD) (3T)**: This is the amount of time a CAS is performed after a RAS. The lower the better, but some DRAM does not support low figures.

Press <Esc> to return to the Advanced Chipset Features screen.

► **AGP & P2P Bridge Control (Press Enter)**

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



**AGP Aperture Size (128MB)**

This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

**Graphic Window WR Combin (Enabled)**

This item determines whether the graphic windows base address is valid or not.

**AGP Fast Write Support (Disabled)**

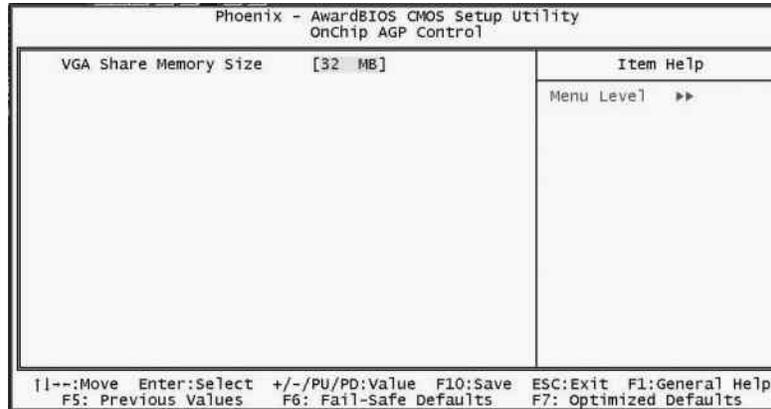
This item enables and disables AGP Fast Write Support.

**AGP Data Rate (Auto)**

This item allows you to control AGP card data transfer rate.

Press <Esc> to return to the Advanced Chipset Features screen.

► **OnChip AGP Control (Press Enter)**



**VGA Share Memory Size (32 MB)**

This item shows the VGA memory size borrowed from main memory capacity. In this case, 32MB is borrowed, which in the meanwhile the same the main memory loses.

Press <Esc> to return to the Advanced Chipset Features screen.

**System BIOS Cacheable (Disabled)**

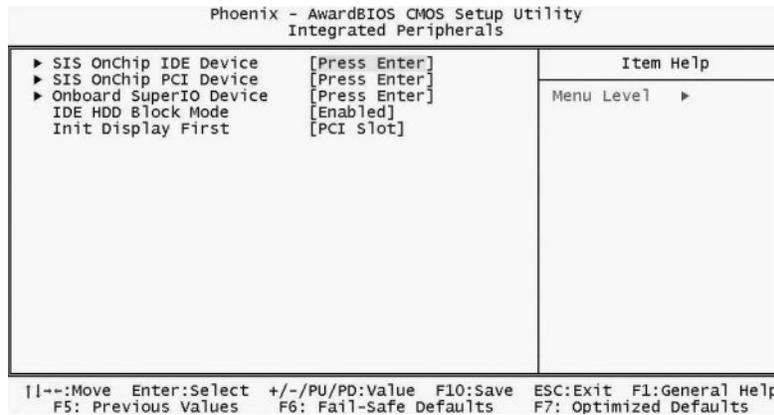
This item allows the system to be cached in memory for faster execution. Enable this item for better performance.

**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.

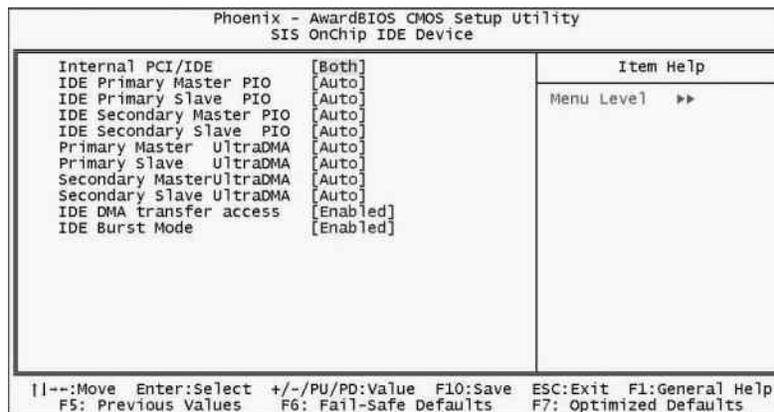
## Integrated Peripherals

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



### ▶ SIS OnChip IDE Device (Press Enter)

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



#### **Internal PCI/IDE (Both)**

Use these items to enable or disable the internal PCI IDE channels that are integrated on the motherboard.

#### **IDE Primary/Secondary Master/Slave PIO (Auto)**

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

#### **IDE Master/Slave Drive PIO (Auto)**

This option allows you to set the PIO (Programmed Input/Output) mode for the two IDE devices (Master and Slave drives) attached to a particular IDE channel. Normally you should leave it as Auto and let the BIOS auto-detect the IDE drive's PIO mode. You should only set it manually for the following reasons:

- If the BIOS cannot detect the correct PIO mode
- If you want to try to run the IDE device with a higher PIO mode that it was designed for
- If you have over-clocked the PCI bus and one or more of your IDE devices cannot function properly (you can correct the problem by using a slower PIO mode)

---

**Note:** Over-clocking the PIO transfer rate can cause loss of data.

---

#### **Primary/Secondary Master/Slave Drive UltraDMA (Auto)**

This option allows you to enable or disable UltraDMA support (if available) for the two IDE devices (Master and Slave drives) attached to that particular IDE channel. Normally, you should leave it as Auto and let the BIOS auto-detect if the drive supports UltraDMA. If it does, the proper UltraDMA transfer mode will be enabled for that drive, allowing it to burst data at up to 100MB/s. You should only disable it for troubleshooting purposes.

---

**Note:** Setting this to Auto does not enable the UltraDMA or any of the slower DMA mode for IDE devices that do not support UltraDMA. Also, in order for any of those DMA modes to work (including UltraDMA modes), you will have to enable DMA transfer via the OS.

---

#### **IDE DMA Transfer Access (Enabled)**

This item allows you to enable the transfer access of the IDE DMA.

#### **IDE Burst Mode (Enabled)**

This option, when enabled will instruct the system to send every write transaction to the write buffer. Burstable transactions then burst onto the PCI bus and nonburstable transactions do not.

Press <Esc> to return to the Integrated Peripherals screen.

► **SIS OnChip PCI Device (Press Enter)**

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

Phoenix - AwardBIOS CMOS Setup Utility	
SIS OnChip PCI Device	
SIS USB Controller	[Enabled]
USB Ports Number	[6 Ports]
USB 2.0 Supports	[Enabled]
USB Legacy Support	[Enabled]
USB Mouse Support	[Disabled]
SIS AC97 AUDIO	[Enabled]
SIS S/W Modem	[Enabled]
SIS 10/100M ETHERNET	[Enabled]
Onboard LAN Boot ROM	[Disabled]
Sis Serial ATA Controller	[Enabled]
Sis Serial ATA Mode	[IDE]

Item Help
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

**SIS USB Controller (Enabled)**

This item enables the USB controller. Leave this at the default “Enabled” if you want to connect USB devices to your computer.

**USB Ports Number (6 Ports)**

This item enables you to determine the number of USB ports.

**USB 2.0 Support (Enabled)**

Enable this item if your system supports USB 2.0

**USB Legacy Support (Enabled)**

This item allows the BIOS to interact with a USB keyboard or mouse to work with MS-DOS based utilities and non-Windows modes.

**USB Mouse Support (Disabled)**

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

**SIS AC97 AUDIO (Enabled)**

This option allows you to control the onboard AC97 audio. Disable this item if you are going to install a PCI audio add-on card.

**SIS S/W Modem (Enabled)**

This option allows you to control the onboard S/W modem. Disable this item if you are going to install an external modem.

**SIS 10/100M ETHERNET (Enabled)**

This option allows you to control the onboard LAN.

**Onboard LAN Boot ROM (Disabled)**

Use this item to enable and disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

**SIS Serial ATA Controller (Enabled)**

This item allows you to control the SiS Serial ATA controller.

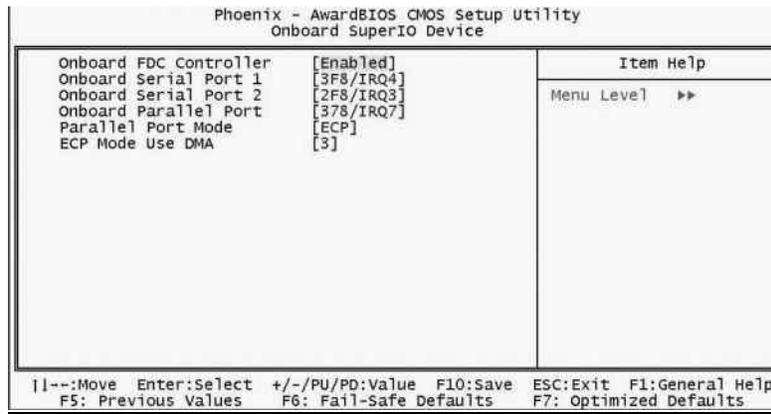
**SIS Serial ATA Mode (IDE)**

This item allows you to change SiS Serial ATA mode.

Press <Esc> to return to the Integrated Peripherals screen.

► **Onboard SuperIO Device (Press Enter)**

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



**Onboard FDC Controller (Enabled)**

This option enables the onboard floppy disk drive controller.

**Onboard Serial Port 1 (3F8/IRQ4)**

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 1 (COM1).

**Onboard Serial Port 2 (2F8/IRQ3)**

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 2 (COM2).

**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.

Press <Esc> to return to the Integrated Peripherals screen.

**IDE HDD Block Mode (Enabled)**

Enable this field if your IDE hard drive supports block mode. Block mode enables BIOS to automatically detect the optimal number of block read and writes per sector that the drive can support. It also improves the speed of access to IDE devices.

**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.

## Power Management Setup Option

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.

### Power Management Timeouts

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.

### Wake Up Calls

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		
		Item Help
Suspend Mode	[Disabled]	
Video Off Option	[Susp,Stby -> Off]	
Video Off Method	[DPMS Supported]	Menu Level ▶
MODEM Use IRQ	[AUTO]	
HDD Off After	[Disabled]	
Power Button Override	[Instant Off]	
Power On After Power Fail	[Always Off]	
▶ PM Wake Up Events	[Press Enter]	
Delay Prior to Thermal	[None]	

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

#### Suspend Mode (Disabled)

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.

#### Video Off Option (Susp, Stby --> Off)

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

#### Video Off Method (DPMS Supported)

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

### MODEM Use IRQ (AUTO)

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.

### HDD Off After (Disabled)

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.

### Power Button Override (Instant Off)

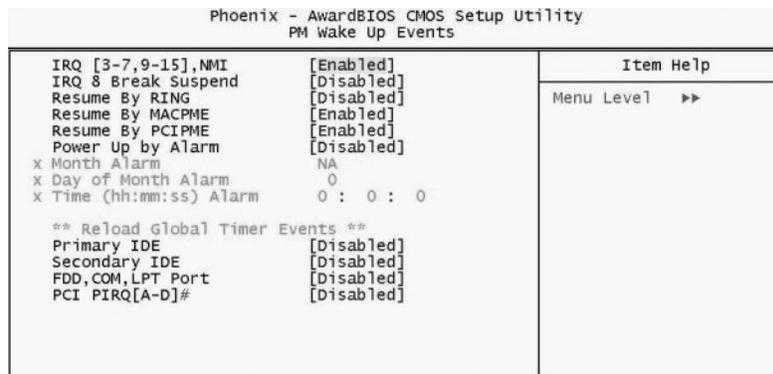
Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to 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.

### Power On After Power Fail (Always Off)

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

### ► PM Wake Up Events (Press Enter)

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



This item opens a submenu that enables you to set events that will resume the system from a power saving mode.

### IRQ [3-7, 9-15], NMI (Enabled)

This option determines whether any activity for IRQ 3-7/9-15 will cause the system to wake from a power saving mode.

### IRQ 8 Break Suspend (Disabled)

Determines whether the system will monitor IRQ 8 activity and wake the system from a power saving mode when IRQ 8 is activated.

**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 MACPME (Enabled)**

Use this item to enable MAC activity to wakeup the system from a power saving mode.

**Resume by PCI PME (Enabled)**

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.

**Power Up by Alarm (Disabled)**

When set to Enabled, the following three fields become available: Month Alarm, Day of Month Alarm, and Time Alarm Upon arrival of the alarm time, it will instruct the system to wake up.

When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

**\*\* Reload Global Timer Events \*\***

These fields determine which events waken the system from power saving mode.

**Primary/Secondary IDE (Disabled)**

When this item is enabled, the system power will resume the system from a power saving mode if there is any activity on primary or secondary IDE channels 0 or 1.

**FDD, COM, LPT Port (Disabled)**

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, serial ports, or the parallel port.

**PCI PIRQ[A-D]# (Disabled)**

When this item is enabled, any activity from one of the listed devices wakes up the system.

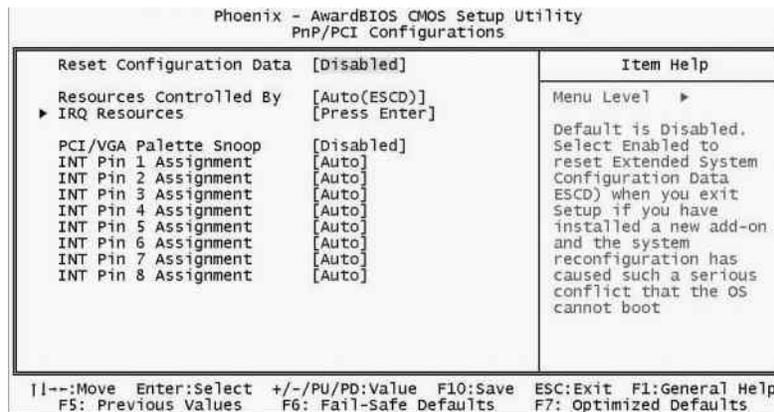
Press <Esc> to return to the Power Management Setup screen.

**Delay Prior to Thermal (None)**

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

## PNP/PCI Configurations

These options configure 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:



### Reset Configuration Data (Disabled)

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

### Resources Controlled By (Auto(ESCD))

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 submenu.

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.

### PCI/VGA Palette Snoop (Disabled)

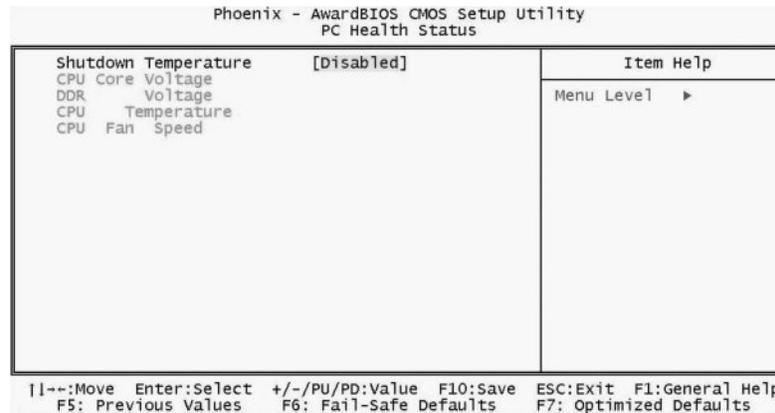
This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

### INT Pin 1-8 Assignment (Auto)

Identifies the interrupt request (IRQ) line assigned to a device connected to the PCI interface of 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.



### Shutdown Temperature (Disabled)

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

### System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields.

- CPU Core Voltage
- DDR Voltage
- CPU Temperature
- CPU Fan Speed

## Frequency/Voltage 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		Item Help
Frequency/Voltage Control		
CPU Clock Ratio	[ 0 X ]	
Auto Detect DIMM/PCI Clk	[Enabled]	
Spread Spectrum	[Enabled]	
Clock Control By	[Auto]	Menu Level ▶
x Async AGP/PCI/SRC Clk	Disabled	
x CPU Frequency	100	
x CPU:DRAM Frequency Ratio	SPD	
DRAM Frequency		

||--: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 ( 0 X )

Use the CPU Host/SDRAM/PCI Clock to set the frontside bus frequency for the installed processor (usually 133 MHz, 100 MHz or 66 MHz). Then use *CPU Clock Ratio Jumpless* to set a multiple. The multiple times the frontside bus must equal the core speed of the installed processor e.g.,  $3.5 \text{ (multiple)} \times 100 \text{ MHz (frontside bus)} = 350 \text{ MHz (installed processor clock speed)}$ .

### Auto Detect DIMM/PCI Clk (Enabled)

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

### Spread Spectrum (Enabled)

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

### Clock Control By (Auto)

This item allows you to set the CPU frequency.

- **Async AGP/PCI/SRC Clk** :This item allows you to set the your AGP/PCI/SRC clock in asynchronous status.
- **CPU Frequency (100)**: This item allows you to set the CPU frequency.
- **CPU: DRAM Frequency Ratio**: This item controls the ratio of the CPU FSB clock and DRAM Frequency to enable the CPU and DRAM to run at different frequency combination.

### DRAM Frequency

This item displays the memory (DRAM) frequency. This is a display-only item.

## 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 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.

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

## Using the Motherboard Software

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### 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.

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**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.

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### 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.

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**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.

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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.



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

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## Setup Tab

<b>Setup</b>	Click the <b>Setup</b> button to run the software installation program. Select from the menu which software you want to install.
<b>Browse CD</b>	<p>The <b>Browse CD</b> 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>
<b>Exit</b>	The <b>Exit</b> button closes the Auto Setup window.

## Application Tab

Lists the software utilities that are available on the CD.

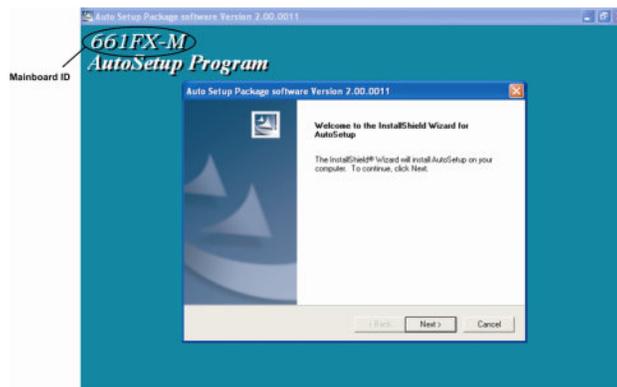
## Read Me Tab

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:



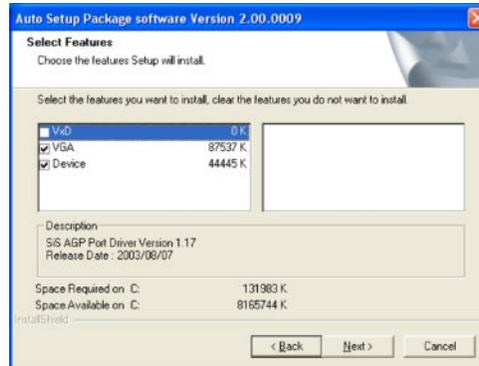
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**Note:** The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

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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.

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## 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.

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## 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.

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

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This concludes Chapter 4.