

Preface

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Version 1.0

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Federal Communications Commission (FCC)

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

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

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

Preface

Declaration of Conformity

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

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

Canadian Department of Communications

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

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

About the Manual

The manual consists of the following:

Chapter 1

Introducing the Motherboard

Describes features of the motherboard.

Go to  page 1

Chapter 2

Installing the Motherboard

Describes installation of motherboard components.

Go to  page 7

Chapter 3

Using BIOS

Provides information on using the BIOS Setup Utility.

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Chapter 4

Using the Motherboard Software

Describes the motherboard software

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Multi-Language Translation

Chapter 1

Introducing the Motherboard

Introduction

Thank you for choosing the 651C-M mainboard. This micro-ATX mainboard comes with the high performance SiS651C Northbridge and SiS962L Southbridge chipsets. It accommodates Intel Pentium 4 processors with Hyper-Threading (HT) supported, which supports the frontside bus (FSB) speeds up to 533/400 MHz.

The SiS651C Northbridge provides a high performance 2D/3D Graphic Engine, Video Accelerator and Advanced Hardware Acceleration MPEG1/MPEG2 Video Decoder for the Intel Pentium 4 series based PC systems. Two DDR 184-pin unbuffered DIMM sockets are supported with maximum memory size up to 2GB. It offers bandwidth up to 2.7GB/s under DDR333, 2.1GB/s under DDR266 and 1.6GB/s under DDR200 to sustain the bandwidth demand from host processor, as well as the multi I/O masters and AGP masters.

The SiS962L Southbridge integrates one Universal Serial Bus 2.0 Host Controllers, audio controller with AC'97 2.2 compliant interface, Ethernet MAC controller with standard MII interface, three Universal Serial Bus 1.1 Host Controllers and the IDE Master/Slave controllers.

The mainboard has an advanced full set of I/O ports, such as dual channel IDE interfaces, a floppy controller, a high-speed serial port, a VGA port, an EPP/ECP capable bi-directional parallel port connector, four USB connector, and a PS/2 keyboard and mouse . One AGP slot, three PCI local bus slots and one communication and networking riser (CNR) slot provide expandability for add-on peripheral cards. This motherboard is designed in a micro-ATX form factor using a four-layer PCB and measures 244mm x 220mm.

Feature

Processor

651C-M uses a 478-pin socket that carries the following features:

- Supports P4 processors at 1.5GHz up to 3.2GHz
- Supports Hyper-Threading technology CPU
- Supports 533/400 MHz front side bus (FSB)

“Hyper-Threading” technology enables the operating system to think it’s hooked up to two threads to be run in parallel, both on separate “logical” processors within the same physical processor.

Chipset

The SiS651C Northbridge (NB) and SiS962L Southbridge (SB) chipset is based on an innovative and scalable architecture with proven reliability and performance.

- | | |
|---------------------|---|
| SiS651C (NB) | <ul style="list-style-type: none"> • Supports two DDR333/DDR266/200 DIMMs up to 2GB • Supports P4 series processors with FSB up to 533MHz • AGP v2.0 compliant with 4X transfer mode with Fast Write support • Supports Graphic Window Size from 4MBytes to 256Mbytes |
| SiS962L (SB) | <ul style="list-style-type: none"> • Compliant with PCI 2.2 specification at 33 MHz, supporting up to 6 PCI masters • Supports PIO mode 0,1,2,3,4 and Multiword DMA mode 0,1,2 and UltraDMA 133/100/66/33 • USB 2.0 Controller, supporting for 6 USB 2.0/1.1 ports • Integrated keyboard Controller with PS2 mouse and keyboard support |

Memory

- Supports DDR333/266/200 memory types
- Accommodates two unbuffered 2.5V 184-pin DDR SDRAM DIMM sockets
- A total maximum capacity 2 GB

AC'97 Audio CODEC

The AC'97 Audio CODEC is compliant with the AC'97 2.3 specification that provides 8bit/16bit mono/stereo PCM data format support. Features include support for 32-byte line-buffers for each SGD channel and digital S/PDIF IN/OUT.

Introducing the Motherboard

Expansion Options

The motherboard comes with the following expansion options:

- Three 32-bit PCI slots
- One AGP slot
- Two IDE headers which support four IDE devices
- One floppy disk drive interface
- A Communications Networking Riser (CNR) slot
- A USB Card Reader Header

This motherboard supports Ultra DMA bus mastering with transfer rates of 133/100/66/33MB/s.

Onboard LAN (optional)

The onboard LAN provides the following features:

- Supports 10Mb/s and 100Mb/s N-Way Auto-negotiation operation
- Half and Full Duplex
- Supports MII interface to ethernet controller and configuration & status
- Meet all application IEEE 802.3, 10Base-T and 100Base-TX standards

Integrated I/O

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

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port (optional)
- Four USB ports
- One LAN port
- One VGA port
- Audio jacks for microphone, line-in and line-out

BIOS Firmware

The motherboard uses Award BIOS that enables users to configure many system features including the following:

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

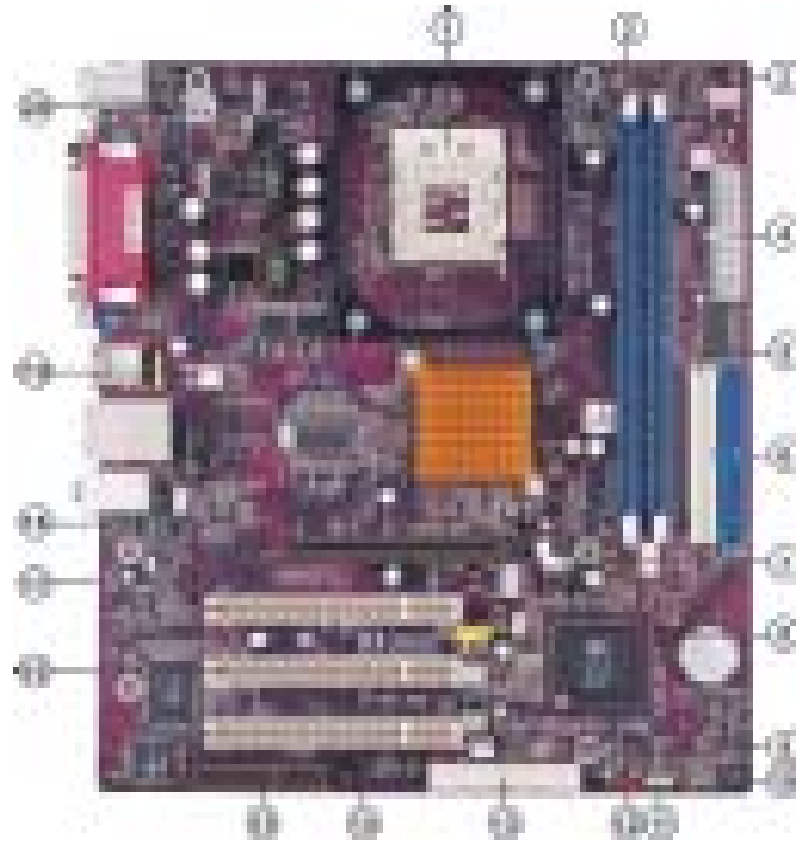
The firmware can also be used to set parameters for different processor clock speeds.



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

Introducing the Motherboard

Motherboard Components



Introducing the Motherboard

Table of Motherboard Components

LABEL	COMPONENT
1 CPU Socket	Socket 478 for Intel Pentium 4 processor
2 DIMM1~2	184-pin DDR SDRAM slots
3 CUFAN1	CPU cooling fan connector
4 ATX2	Standard 20-pin ATX power connector
5 IDE2	Secondary IDE connector
6 IDE1	Primary IDE connector
7 AGP1	Accelerated Graphics Port Slot
8 USB3	Front Panel USB header
9 CASFAN1	Case cooling fan connector
10 PANEL1	Front panel switch/LED header
11 SPK1	Speaker header
12 JP1	Clear CMOS jumper
13 FDD1	Floppy disk drive connector
14 JP2	BIOS flash protect jumper
15 CNR1	Communications Networking Riser slot
16 PCI1~3	3 PCI slots
17 CDIN1	CD-in connector
18 AUDIO1	Front panel MIC/Speaker Out header
19 USBCR1	USB Card Reader header
20 ATX12V	4-pin +12V power connector

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

Introducing the Motherboard

Memo

Introducing the Motherboard

Chapter 2

Installing the Motherboard

Safety Precautions

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

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, 651C-M supports one or two floppy diskette drives and four IDE drives. Make sure that your case has sufficient power and space for all 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 220 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

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

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

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



Do not over-tighten the screws as this can stress the motherboard.

Checking Jumper Settings

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

Setting Jumpers

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

The illustrations 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**.



SHORT



OPEN

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





Installing the Motherboard

Checking Jumper Settings

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



Jumper Settings

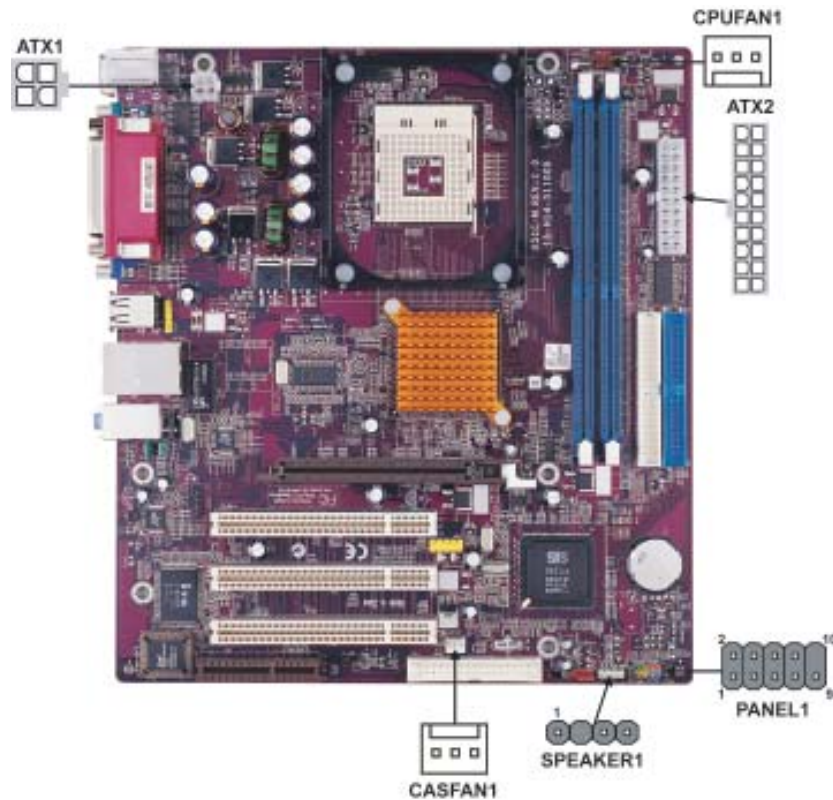
Jumper	Type	Description	Setting (default)
JP1	3-pin	CLEAR CMOS	1-2: Normal 2-3: Clear CMOS Before clearing the CMOS, make sure to turn the system off. 
JP2	3-pin	BIOS PROTECT	1-2: Write Enable 2-3: Write Disable 

Installing the Motherboard

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 **ATX12V**.



CPUFAN1/CASEFAN1: FAN Power Connectors

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

Installing the Motherboard

SPK1: Internal speaker

Pin	Signal Name
1	VCC
2	NC
3	Ground
4	Signal

ATX12V: ATX 12V Power Connector

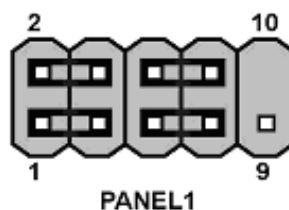
Pin	Signal Name
1	Ground
2	Ground
3	+12V
4	+12V

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

Front Panel Header

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

**Installing the Motherboard**

Pin	Signal Name	Function	Pin	Signal Name	Function
1	HD_LED_P	Hard disk LED(+)	2	FPPWR/SLP	*MSG LED(+)
3	HD_LED_N	Hard disk LED(-)	4	FP PWR/SLP	*MSG LED(-)
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

* MSG LED (dual color or single color)

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 pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

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

Installing Hardware

Installing the Processor



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

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

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

Installing the Motherboard

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.



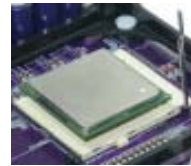
Warning: Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.

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.

- 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 pin hold noticeably missing). Align and insert the CPU correctly.
- 3 Press the lever down and apply thermal grease on top of the CPU.
- 4 Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
- 5 Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPUFAN connector. This completes the installation.



Installing the Motherboard

Installing Memory Modules

651C-M accommodates two 184-pin 2.5V unbuffered Double Data Rate (DDR) SDRAM (Synchronous Dynamic Random Access Memory) memory modules. 651C-M can support DDR333/DDR266/DDR200 memory types and its total maximum memory size is 2 GB.

DDR SDRAM memory module table

Memory module	Memory Bus
DDR200	100MHz
DDR266	133MHz
DDR333	166MHz



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

Installation Procedure

Refer to the following to install the memory modules.

- 1 This motherboard supports unbuffered DDR SDRAM only.
- 2 Push the latches on each side of the DIMM slot down.
- 3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
- 4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
- 5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
- 6 Install any remaining DIMM modules.



Installing the Motherboard

Installing a Hard Disk Drive/CD-ROM

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

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.



You must orient the cable connector so that the pin1 (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 Connector

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.

About UltraDMA

This motherboard supports UltraDMA 133/100/66. UDMA is a technology that accelerates the performance of devices in the IDE channel. To maximize performance, install IDE devices that support UDMA and use 80-pin IDE cables that support UDMA 133/100/66.

Installing the Motherboard

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 4X AGP specification. It is AGP 2.0 compliant.

PCI Slot This motherboard 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 v2.2 compliant.

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



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.

Installing the Motherboard

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.

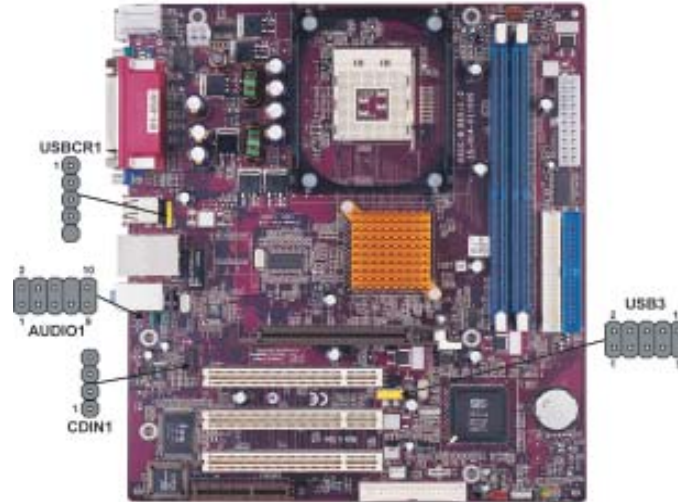


For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Installing the Motherboard

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 +5V 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
8	Key	No Pin
9	AUD_F_L	Left Channel Audio signal to Front Panel
10	AUD_RET_L	Left Channel Audio signal to Return from Front Panel

CD-in: CD Audio Input header

Pin	Signal Name	Function
1	CD in_L	CD In left channel
2	GND	Ground
3	GND	Ground
4	CD in_R	CD In right channel

Installing the Motherboard

USB3: Front Panel USB header

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	USBPWR	Front Panel USB Power
2	USBPWR	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	Overcurrent signal



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.

USBCR1: USB Card Reader connector

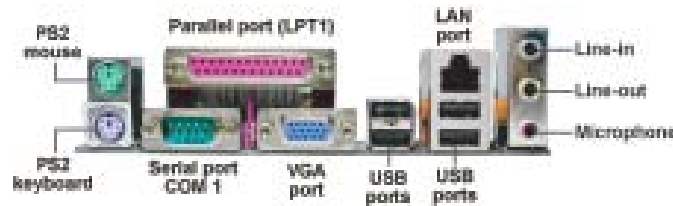
This connector is for connecting internal USB card reader. You can use a card reader to read or transfer files and digital images to your computer.

Pin	Signal Name	Function
1	USBVCC2	+5V dual
2	USB2-	Data signal port 2-
3	USB2+	Data signal port 2+
4	GND	Ground
5	Key	No pin

Installing the Motherboard

Connecting I/O Devices

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



- PS2 Mouse** Use the upper PS/2 port to connect a PS/2 pointing device.
- PS2 Keyboard** Use the lower PS/2 port to connect a PS/2 keyboard.
- Parallel Port (LPT1)** Use LPT1 to connect printers or other parallel communications devices.
- Serial Port (COM1)** Use the COM port to connect serial devices such as mice or fax/modems.
- VGA Port** Connect your monitor to the VGA port
- LAN Port (optional)** Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
- USB Ports** Use the USB ports to connect USB devices.
- Audio Ports** Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

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

Installing the Motherboard

Chapter 3

Using BIOS

About the Setup Utility

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

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

The BIOS Setup Utility enables you to configure:

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

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

This chapter provides explanations for Setup Utility options.

The Standard Configuration

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

This Setup Utility should be used:

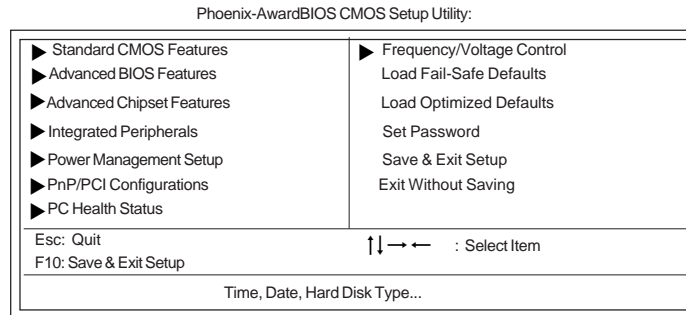
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security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

Entering the Setup Utility

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

Press DEL to enter SETUP

Pressing the delete key accesses the BIOS Setup Utility:

***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

Using BIOS

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 ►.

Using BIOS

Standard CMOS Features

This option displays basic information about your system.

Phoenix-AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Feb 25 2004	Item Help
Time (hh:mm:ss)	9 : 33 : 26	Menu Level ▶
▶ IDE Channel 0 Master		Change the day, month, year and century
▶ IDE Channel 0 Slave		
▶ IDE Channel 1 Master		
▶ 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	65535K	
Total Memory	1024K	

↑↓ ← → : 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.

Phoenix-AwardBIOS CMOS Setup Utility
IDE Channel 0 Maser

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Channel 0 Master	[Auto]	Menu Level ▶▶
Access Mode	[Auto]	To auto-detect the HDD's size, head... on this channel
Capacity	0MB	
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.



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.

Using BIOS

IDE Channel 0/1 Master/Slave/ IDE Drive(Auto)

Leave this item at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below. Please noted that if you choose IDE Channel 2/3 Master, the item may change to Extended IDE Drive.

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.



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 (Auto)

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. If you choose IDE Channel 2/3 Master, the item only have Large and Auto.

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.

Press <Esc> to return to AwardBIOS CMOS Setup Utility page.

Advanced BIOS Features

This option defines advanced information about your system.

Phoenix-AwardBIOS CMOS Setup Utility
Advanced BIOS Features

▶ CPU Feature	[Press Enter]	Item Help
▶ Hard Disk Boot Priority	[Press Enter]	
CPU L1 & L2 Cache	[Enabled]	Menu Level ▶
CPU L3 Cache	[Enabled]	
Hyper-Threading Technology	[Enabled]	
CPU L2 Cache ECC Checking	[Enabled]	
Quick Power On Self Test	[Enabled]	
First Boot Device	[Floppy]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[CDROM]	
Boot Other Device	[Enabled]	
Swap Floppy Drive	[Disabled]	
Boot Up Floppy Seek	[Disabled]	
Boot Up NumLock Status	[On]	
Gate A20 Option	[Fast]	
Typematic Rate Setting	[Disabled]	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	[Setup]	

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

▶ CPU Feature (Press Enter)

Users please note that this function is only available for Prescott CPUs. Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility
CPU Feature

Thermal Management	[Thermal Monitor 1]	Item Help
TM2 Bus Ratio	[0 X]	
TM2 Bus VID	[0.8375V]	
Limit CPUID MaxVal	[Disabled]	
		Menu Level ▶▶▶
		Thermal Monitor 1 (On die throttling)
		Thermal Monitor 2 Ratio & VID transition

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

Thermal Management (Thermal Monitor 1)

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

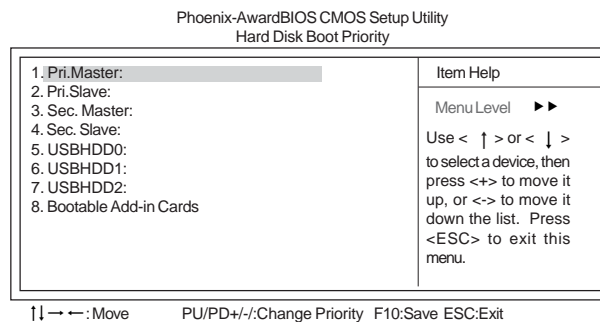
Limit CPUID MaxVal (Disabled)

This item can support Prescott CPUs for old OS. Users please note that under NT 4.0, it must be set "Enabled", while under WinXP, it must be set "Disabled".

Using BIOS

► Hard Disk Boot Priority (Press Enter)

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



CPU L1&L2 Cache (Enabled)

All processors that can be installed in this mainboard 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.

CPU L3 Cache (Enabled)

This item is only available when processors support L3. Some high-end processors support L3. If the CPU do support L3, you may set this item to enable or disable. 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.

CPU L2 Cache ECC Checking (Enabled)

The item enables or disables ECC (Error Correction Code) error checking on the CPU cache memory. We recommend that you leave this item at the default value.

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.

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.

MPS Version Control For OS (1.4)

The BIOS supports versions 1.1 and 1.4 of the Intel multiprocessor specification. Select the version supported by the operation system running on the computer.

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.

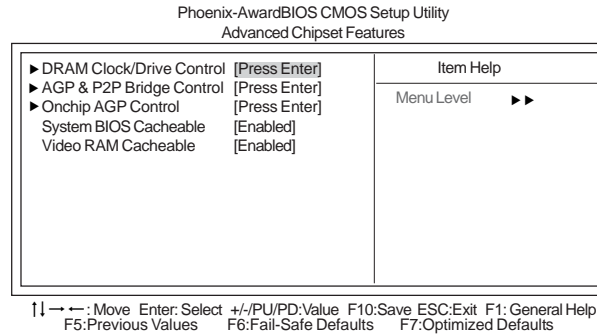
Video BIOS Shadow (Enabled)

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

Press <Esc> to return to Advanced BIOS Features screen.

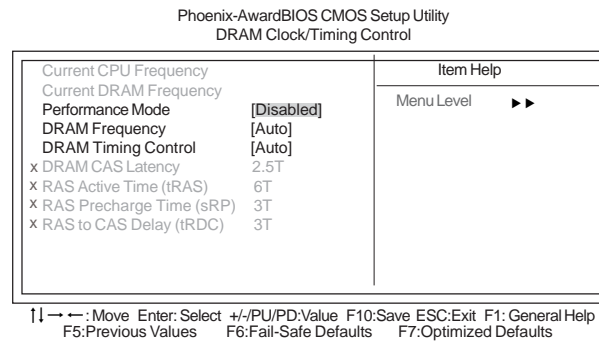
Advanced Chipset Features

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/Drive Control (Press Enter)

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



Current CPU Frequency/Current DRAM Frequency

These two items show the CPU and DRAM frequency.

Performance Mode (Disabled)

This item allows to enhanced system performance.

DRAM Frequency (Auto)

This item determines frequency of SDRAM memory. Users are recommended to keep the default value.

DRAM Timing Control (Auto)

Enables you to select the CAS latency 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.

Using BIOS

- **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. This lower the better, but some DRAM does not support low figures.

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

▶AGP & P2P Bridge Control (Press Enter)

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

Phoenix-AwardBIOS CMOS Setup Utility
AGP & P2P Bridge Control

AGP Aperture Size	[128M]	Item Help
Graphic Windows WR Combin	[Disabled]	
AGP Fast Write Support	[Enabled]	
AGP Data Rate	[Auto]	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

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 (Disabled)

Use this item to enable or disable CPU support for WR Combin feature.

AGP Fast Write Support (Enabled)

This item lets you enable or disable the caching of display data for the video memory of the processor.

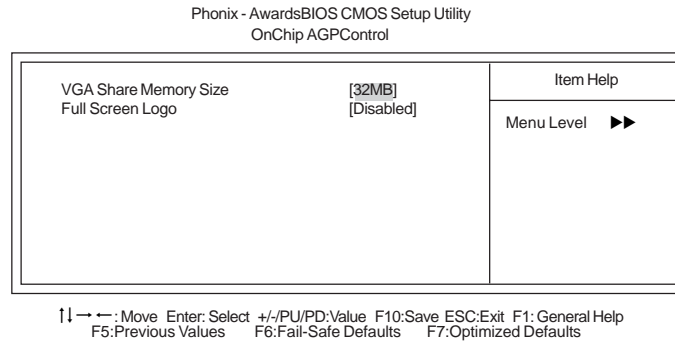
AGP Data Rate (Auto)

This item allows users to set the AGP Data Rate by, Auto, 1X, 2X, 4X, or 8X, depending on what speed the AGP card supports.

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

► OnChip AGP Control

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



VGA Share Memory Size (32MB)

This item allows you to select the shared memory size for VGA usage.

Full Screen Logo (Disabled)

When enabled, this will show a full screen company logo on the boot up screen. Select disabled when you want to show POST messages during boot up.

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

System BIOS Cacheable (Enabled)

This feature is only valid when the system BIOS is shadowed. It enables or disables the caching of the system BIOS ROM at **F0000h-FFFFh** via the L2 cache. This greatly speeds up accesses to the system BIOS.

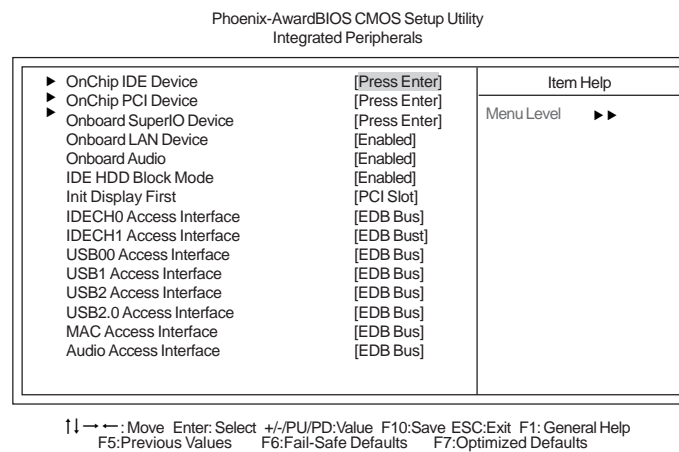
Video RAM Cacheable (Enabled)

This feature enables or disables the caching of the video RAM at **A0000h-AFFFFh** via the L2 cache.

Press <Esc> to return to AwardBIOS CMOS Setup Utility screen.

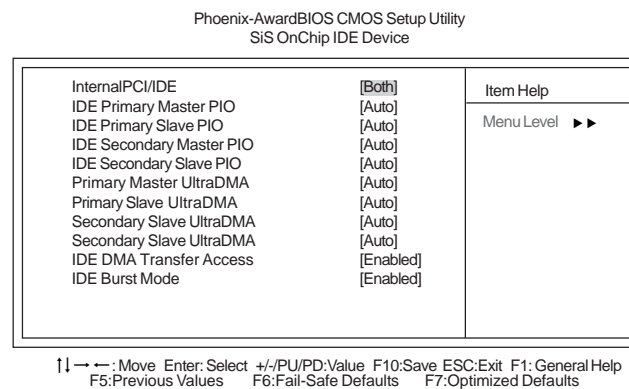
Integrated Peripherals

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



▶ 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 mainboard.

IDE Primary/Secondary Master/Slave PIO (Auto)

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

IDE Primary/Secondary Master/Slave UltraDMA (Auto)

This mainboard supports UltraDMA technology, which provides faster access to IDE devices. If you install a device that supports UltraDMA, change the item on this list to Auto. You may have to install the UltraDMA driver supplied with this mainboard in order to use an UltraDMA device.

Using BIOS

IDE DMA Transfer Access (Enabled)

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

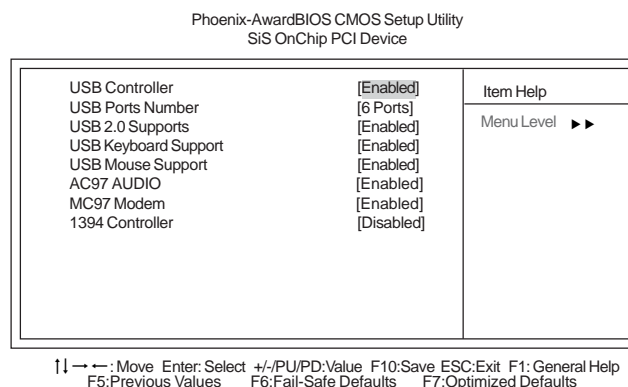
IDE Burst Mode (Enabled)

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 page.

► OnChip PCI Device (Press Enter)

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

**USB Controller (Enabled)**

Enables or disables the onboard USB controller. We recommend users keep the default value. Disabling it might cause the USB devices not to work properly.

USB Ports Number (6 Ports)

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

USB 2.0 Supports (Enabled)

This item enables or disables the onboard USB 2.0.

USB Keyboard Support (Enabled)

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

USB Mouse Support (Enabled)

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.

AC97 AUDIO (Enabled)

Enables or disables the onboard AC 97 audio function. Disable this item if you are going to install a PCI audio add-on card.

MC97 Modem (Enabled)

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

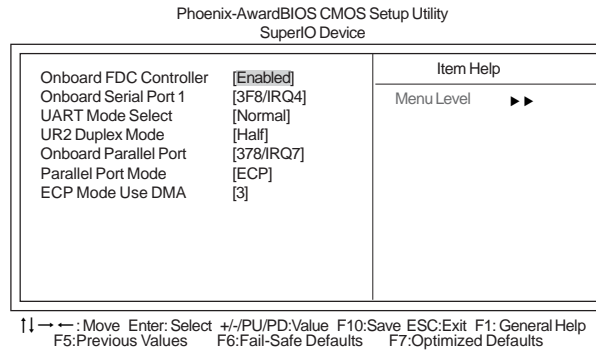
1394 Controller (Disabled)

Enables or disables the onboard 1394 controller.

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

► 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).

UART Mode Select (Normal)

This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. UART Mode Select enables you to select the infrared communication protocol-Normal (default), IrDA, or ASKIR. IrDA is an infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

UR2 Duplex Mode (Half)

This field is available when UART 2 Mode is set to either ASKIR or IrDA. This item enables you to determine the infrared function of the onboard infrared chip. The options are Full and Half (default). Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

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 page.

Onboard LAN Device (Enabled)

Use this item to enable and disable the onboard LAN function.

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 mainboard.

IDECH0/IDECH1 ACCESS INTERFACE (EDB Bus)

This item determines whether the IDE access interface is the PCI bus or the embedded bus.

USB0/USB1/USB2 ACCESS INTERFACE (EDB Bus)

This option determines whether the USB0/USB1/USB2 access interface is the embedded bus or the PCI bus.

USB2.0 ACCESS INTERFACE (EDB BUS)

This option determines whether the USB2.0 access interface is the embedded bus or a PCI bus.

MAC ACCESS INTERFACE (EDB BUS)

This option determines whether the mac access interface is the embedded bus or a PCI bus.

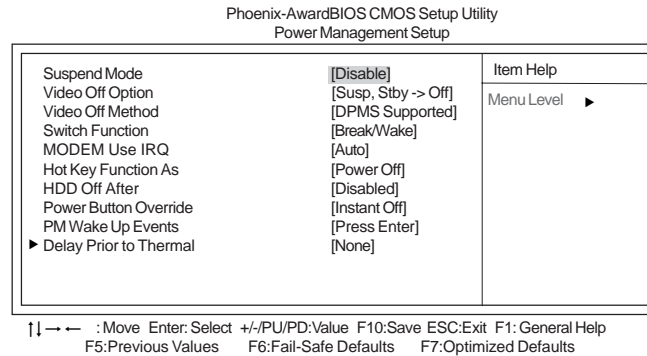
Audio ACCESS INTERFACE (EDB BUS)

This option determines whether the audio access interface is the embedded bus or a PCI bus.

Press <Esc> to return to AwardBIOS CMOS Setup Utility screen.

Power Management Setup

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



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.

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.

Switch Function (Break/Wake)

This item defines if pressing the power switch will cause the system to wake up from suspend or standby mode.

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.

Hot Key Function As (Power Off)

This option allows you to set the Hot Key functionality to one of the following states: Disable (turn off Hot Key functionality), Power Off, Suspend.

HDD Off After (Disable)

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

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 resume 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.

Using BIOS

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)

Phoenix-AwardBIOS CMOS Setup Utility
PM Wake Up Events

IRQ [3-7, 9-15], NMI	[Enabled]	Item Help
IRQ 8 Break Suspend	[Disabled]	Menu Level ▶▶
RING Power Up Control	[Disabled]	
MAC PME Power Up Control	[Enabled]	
Resume by PCI PME		
Power Up by Alarm	[Disabled]	
x Month Alarm	Na	
x Day of Month Alarm	0	
x Time (hh:mm:ss) Alarm	0 : 0 : 0	
Reload Global Timer Events		
Primary IDE	[Disabled]	
Secondary IDE	[Disabled]	
FDD, COM, LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

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

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.

Ring PowerUp Control (Disabled)

Use this item to enable LAN or modem activity to wakeup the system from a power saving mode.

MAC PME Power Up Control

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

Resume by PCI PME (Enabled)

This item allows users to enable or disable PCI activity to wakeup the system from a power saving mode.

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 **

Global Timer (power management) events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device that is configured as Enabled, even when the system is in a power-down mode.

Primary/Secondary IDE I/O (Disabled)

When these items are enabled, the system will restart the power-saving timeout counters when any activity is detected on any of the drives or devices on the primary or secondary IDE channels.

Using BIOS

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 PIRO[A-D]# (Disabled)

When disabled, any PCI device set as the Master will not power on the system.

Press <Esc> to return to Power Management Setup page.

Delay Prior to Thermal (None)

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

Press <Esc> to return to CMOS Setup Utility page.

PNP/PCI Configurations

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

Phoenix-AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

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

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

Reset Configuration Data [Disabled]

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 [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.

IRQ Resources [Press Enter]:

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.

Using BIOS

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.

Assign IRQ For USB [Enabled]

Names the interrupt request (IRQ) line assigned to the USB on your system. Activity of the selected IRQ always awakens the system.

INT Pin 1-8 Assignment (Auto)

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

Press <Esc> to return to CMOS Setup Utility page.

PC Health Status

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

Phoenix-AwardBIOS CMOS Setup Utility
PC Health Status

Shutdown Temperature [Disabled]	Item Help
CPU Vcore Voltage	Menu Level ▶
CPU Temperature	
CPUFAN Speed	
CASFAN1 Speed	

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

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.

Press <Esc> to return to CMOS Setup Utility page.

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
Frequency/Voltage Control

CPU Clock Ratio [0 X] Auto Detect PCI Clk [Enabled] Spread Spectrum [Enabled] CPU Frequency [Default]	Item Help <hr/> Menu Level ▶
---	------------------------------------

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

CPU Clock Ratio (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 (multiple) x 100 MHz (frontside bus) = 350 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/PCI slots.

Spread Spectrum (Enabled)

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

CPU Frequency (Default)

Use this item to set the CPU Host Clock frequency for the installed processor (Default ,133 MHz, 100MHz).

Press <Esc> to return to CMOS Setup Utility page.

Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility. Press <Y> and the <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

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

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.

Using BIOS

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.



If you have made settings that you do not want to save, use the “Exit Without Saving” item and press <Y> to discard any changes you have made.

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

Chapter 4

Using the Motherboard Software

About the Software CD-ROM

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



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

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

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

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



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 the Utility Folder Installation Notes later in this chapter.

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



If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Setup Tab

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

Application Tab

Lists the software utilities that are available on the CD.

Read Me Tab

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

Running Setup

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

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

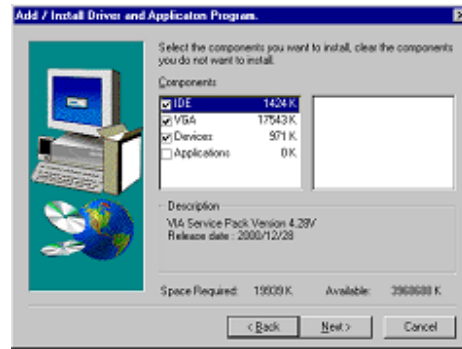


The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

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

Using the Motherboard Software

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 onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Using the Motherboard Software

Manual Installation

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

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

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

Utility Software Reference

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



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

AWARD Flash Memory Utility

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

WinFlash Utility

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

PC-CILLIN

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

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

This concludes Chapter 4. Refer to the next chapter for information about SATA RAID Setup.

Using the Motherboard Software

Caractéristiques

Processeur

651C-M utilise un socket 478broches présentant les caractéristiques suivantes:

- Prend en charge les processeurs P4 de 1.5GHz jusqu'à 3.2GHz
- Prend en charge le CPU de technologie Hyper-Threading
- Prend en charge un bus frontal (FSB) de 533/400 MHz

La technologie "Hyper-Threading" permet au système d'exploitation de penser qu'il est connecté à deux processeurs, permettant d'exécuter deux threads en parallèle, à la fois sur des processeurs 'logiques' dans le même processeur physique.

Chipset

La SiS 651C Northbridge (NB) et SiS962L Southbridge (SB) sont basés sur une architecture novatrice et dimensionnable avec une fiabilité et des performances prouvées.

- SiS651C (NB)**
- Prend en charge deux DIMM DDR333/DDR266/200 jusqu'à 2Go
 - Prend en charge les processeurs de série P4 avec FSB jusqu'à 533MH
 - Conforme AGP v2.0 avec mode de transfert en 4X avec prise en charge de Fast Write

- SiS962L (SB)**
- Conforme aux spécifications PCI 2.2 en 33 MHz, supportant jusqu'à 6 maîtres PCI
 - Prend en charge le mode PIO 0,1,2,3,4 et le mode Multiword DMA 0,1,2 et UltraDMA 133/100/66/33
 - Contrôleur USB 2.0, supportant 6 ports USB 2.0/1.1
 - Contrôleur clavier intégré avec support de souris PS2

Mémoire

- Prend en charge les types de mémoire DDR333/266/200
- Peut recevoir deux SDRAM DDR DIMM sans mémoire tampon de 2.5 volts
- Capacité maximum totale de 2 Go

CODEC audio AC'97

Le CODEC Audio AC'97 est conforme aux spécifications AC'97 2.3 offrant le support du format de données PCM 8 bits/16 bits mono/stéréo. Les caractéristiques comprennent la prise en charge pour les tampons en ligne de 32 octets pour chaque canal SGD et Entrée/Sortie S/PDIF numérique.

Multi-Language Translation

Options d'extension

La carte mère comporte les options d'extension suivantes :

- Trois emplacements PCI 32 bits
- Un emplacement AGP
- Deux barrettes IDE avec prise en charge de quatre périphériques IDE
- Une interface lecteur de disquettes
- Un logement Communications Network Riser (CNR)
- Une embase de Lecteur de Carte USB

La carte mère prend en charge la maîtrise de bus Ultra DMA avec des débits de 133/100/66/33Mo/s.

LAN sur carte (optionnel)

Le LAN sur carte possède les caractéristiques suivantes :

- Supporte le fonctionnement en Auto-négociation N-way en 10Mb/s et 100Mb/s
- Half/Full duplex
- Prend en charge l'interface MII pour contrôleur ethernet et configuration & état
- Conforme à tous les Standards IEEE 802.3, 10Base-T et 100Base-Tx

E/S intégrées

La carte mère comporte un ensemble complet de connecteurs et de ports E/S :

- Deux ports PS/2 pour souris et clavier
- Un port série
- Un port parallèle (optionnel)
- Quatre ports USB
- Un port LAN
- Un port VGA
- Prise audio pour micro, entrée de ligne et sortie de ligne

Microprogramme BIOS

La carte mère utilise Award BIOS qui permet à l'utilisateur de configurer bon nombre de fonctions du système, dont :

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

Le micro-programme peut également être utilisé pour définir les paramètres pour différentes vitesses d'horloge de processeur.



Certaines spécifications matérielles et certains éléments logiciels sont susceptibles de modification sans préavis.

Leistungsmerkmale

Prozessor

651C-M verwendet einen 478-Pin Sockel mit den folgenden Eigenschaften:

- Unterstützt P4-Prozessoren von 1.5GHz bis zu 3.2GHz
- Unterstützt Hyper-Threading Technology CPU
- Unterstützt 533/400 MHz Front Side Bus (FSB)

“Hyper-Threading”-Technologie läßt das Betriebssystem glauben, es sei an zwei Prozessoren angeschlossen, was zwei parallele Threads auf separaten ‘logischen’ Prozessoren im selben physischen Prozessor erlaubt.

Chipsatz

Der SiS651C Northbridge (NB)- sowie SiS962L Southbridge (SB)-Chipsatz basiert sich auf eine innovative und skalierbare Architektur mit bewiesener Zuverlässigkeit und Leistung.

- SiS651C(NB)**
- Unterstützt zwei DDR333/DDR266/200 DIMMs für bis zu 2GB
 - Unterstützt P4-Prozessoren mit zu 533 MHz FSB
 - Gemäß AGP v2.0 mit einem Transfermodus von 4X und Fast Write- Unterstützung

- SiS962L (SB)**
- Entspricht den Richtlinien der PCI 2.2- spezifikationen von 33 MHz, mit einer Unterstützung von bis zu 6 PCI Master
 - Unterstützt P4-Prozessoren mit zu 533 MHz FSB
 - Unterstützt PIO-Modus 0,1,2,3,4 und Multiword DMA-Modus 0,1,2 sowie UltraDMA 133/100/66/33
 - Eingebauter Tastatur-Controller mit einer PS2-Maus-Unterstützung

Arbeitsspeicher

- Unterstützt DDR333/266/200-Speicherausführungen
- Versorgt zwei ungepufferte DIMM von 2.5 Volt DDR SDRAM
- Unterstützt eine Gesamtkapazität von bis zu 2 GB

AC'97 Audio CODEC

Der AC'97 Ton-CODEC stimmt mit den AC'97 2.3 Spezifikationen überein, welche eine Unterstützung des PCM-8Bit/16Bit Mono/Stereo Datenformats liefert. Die Eigenschaften enthalten eine Unterstützung für 32-Byte-Linienpuffer für jeden SGD und S/PDIF IN/OUT Digitalkanal.

Multi-Language Translation

Erweiterungsmöglichkeiten

Das Motherboard ist mit den folgenden Erweiterungsmöglichkeiten ausgestattet:

- Drei 32-Bit PCI-Steckplätze
- Ein AGP-Steckplatz
- Zwei IDE-Anschlüsse für vier IDE-Geräte
- Ein Diskettenlaufwerkanschluss
- Einen Steckplatz für Communications Network Riser (CNR)
- Ein Card Reader-USB-Header

Das Motherboard unterstützt Ultra DMA-Busmaster mit Transferraten von 133/100/66 /33MB/s.

Onboard LAN (optional)

Das Onboard-LAN hat die folgenden Leistungsmerkmale:

- Unterstützt 10Mb/s und 100Mb/s N-Way Auto-Negotiation
- Halb- und Vollduplex
- Unterstützt eine MII Schnittstelle des Ethernet-Kontroller und Einstellung & Rang.
- Entspricht allen geltenden IEEE 802.3, 10Base-T und 100Base-Tx-Standards

Integrierte I/O

Das Motherboard hat einen vollständigen Satz von E/A-Schnittstellen bzw. -Anschlüssen:

- Zwei PS/2-Anschlüsse für Maus und Tastatur
- Eine serielle Schnittstellen
- Eine parallele Schnittstelle(optional)
- Vier USB-Anschlüsse
- Ein LAN-Anschluss
- Ein VGA-Anschluss
- Audiobuchse für Mikrofon, Line-In und Line-Out

BIOS-Firmware

Das Motherboard verwendet Award BIOS, das es Benutzern gestattet, viele Systemfunktionen inkl. der Folgenden zu konfigurieren:

- Energieverwaltung
- Aufweckfunktionen
- CPU-Parameter
- CPU- und Arbeitsspeicherfrequenz

Die Firmware kann auch zur Einstellung von Parametern für verschiedene Prozessortaktgeschwindigkeiten verwendet werden.



Manche Hardwarespezifikationen und Softwareelemente können ohne Ankündigung geändert werden.

Caratteristiche

Processore

651C-A utilizza un Socket a 478 pin che supporta le seguenti caratteristiche:

- Supporta processori P4 da 1,5GHz sino a 3,2GHz
- Supporta CPU con tecnologia Hyper-Threading (HT)
- Supporta FSB da 533/400 MHz

La tecnologia "Hyper-Threading" (HT) abilita il sistema operativo a credere di essere collegato a due processori, consentendo di eseguire in parallelo due Thread, entrambi su processori "logici" separati, all'interno dello stesso processore fisico.

Chipset

I Chipset SiS651C Northbridge (NB) e SiS962L Southbridge (SB) si basano su di una architettura innovativa e scalabile con affidabilità e prestazioni provate.

- SiS651C (NB)**
- Supporta due DDR333/DDR266/200 DIMMs sino a 2GB
 - Supporta processori di serie P4 con FSB sino a 533MHz
 - Conforme allo standard AGP v2.0 4X con supporto Fast Write
- SiS962L (SB)**
- Conforme alle specifiche PCI 2.2 a 33 MHz, in grado di supportare fino a 6 master PCI.
 - Supporta la modalit? PIO 0,1,2,3,4, la modalit? Multiword DMA 0,1,2 e UltraDMA 133/100/66/33.
 - Controller USB 2.0, in grado di supportare sino a 6 porte USB 2.0/1.1.
 - Controller integrato per la Tastiera e supporto mouse PS2

Memoria

- Supporto per i banchi di memoria DDR 333/266/200
- Può alloggiare due DIMM SDRAM DDR unbuffered a 2.5 volt
- Una capacità massima totale di 2 GB

AC'97 Audio CODEC

Il CODEC AC'97 Audio rispetta lo standard AC'97 2.3 che garantisce il supporto per i formati PCM mono/stereo 8bit/16bit. Le funzioni includono il supporto buffer lineari a 32 byte per ogni canale SGD e S/PDIF IN/OUT digitale.

Multi-Language Translation

Opzioni d'espansione

La scheda madre è dotata delle seguenti opzioni d'espansione:

- Tre alloggiamenti PCI 32 bit
- Un alloggiamento AGP
- Due collettori IDE che supportano quattro dispositivi IDE
- Una interfaccia unità dischetti floppy
- Una slot Communications Network Riser (CNR)
- Unità centrale USB Card Reader

Questa scheda madre supporta masterizzazione bus Ultra DMA con velocità di trasferimento di 133/100/66/33 MB/s.

LAN su scheda (optional)

La LAN su scheda fornisce le seguenti caratteristiche:

- Supporto operazioni di auto negoziazione N-Way a 10Mb/s e 100Mb/s
- Half e Full Duplex
- Supporto dell'interfaccia MII per i controller ethernet e per la configurazione e status
- Conforme a tutti gli standard applicabili IEEE 802.3, 10Base-T e 100Base-Tx

I/O integrato

La scheda madre ha una serie completa di porte e connettori I/O:

- Due porte PS/2 per mouse e tastiera
- Una porta seriale
- Una porta parallela (optional)
- Quattro porte USB
- Una porta LAN
- Una porta VGA
- Connettori audio per microfono, ingresso linea ed uscita linea

Firmware BIOS

La scheda madre impiega il software Award BIOS che abilita gli utenti a configurare molte caratteristiche de sistema, tra cui sono incluse le seguenti:

- Risparmio energetico
- Allarmi di riattivazione
- Parametri CPU
- Temporizzazione di CPU e memoria

Il Firmware può anche essere utilizzato per impostare i parametri di diverse velocità di temporizzazione del processore.



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

Función

Procesador

651C-M utiliza un receptáculo de 478 pins que tiene las características siguientes:

- Soporta procesadores P4 de 1.5GHz hasta 3.2GHz
- Soporta CPU de la tecnología Hyper-Threading (Hiperhilado)
- Soporta bus de lado frontal (FSB) de 533/400 MHz

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.

Juego de chips

El conjunto de chips Northbridge SiS651C (NB) y SiS962L Southbridge (SB) está basado en una arquitectura innovadora y escalable con un rendimiento y fiabilidad probados.

- **SiS651C (NB)**
 - Soporta dos DIMMs de DDR333/DDR266/200 hasta 2GB
 - Soporta procesadores de serie P4 con FSB hasta 533MHz Host con el ancho de banda total de 533 MB/s
 - Conformidad AGP v2.0 con modo de transferencia 4X con soporte Fast Write
- **SiS962L (SB)**
 - Conforme con la especificación PCI 2.2 en 33 MHz, que soporta hasta 6 másters de PCI
 - Soporta modo PIO 0,1,2,3,4 y modo Multiword DMA 0,1,2 y UltraDMA 133/100/66/33
 - Controlador USB 2.0, con soporte para 6 puertos USB 2.0/1.1
 - Controlador de teclado integrado con soporte de ratón PS2

Memoria

- Soporta los tipos de memoria DDR333/266/200
- Acomoda dois DIMM sin buffer de DDR SDRAM de 2.5 voltios
- Una capacidad máxima total de 2 GB

CODEC de audio AC'97

El CODEC de Sonido AC'97 se conforma con la especificación AC'97 2.3 que provee soporte de formato de datos PCM 8bit/16bit mono/estéreo. Las características incluyen soporte para buffers de línea de 32-byte para cada canal SGD y S/PDIF IN/OUT digital.

Multi-Language Translation

Opciones de expansión

La placa base viene con las opciones siguientes de expansión:

- Tres zócalos PCI de 32 bits
- Un zócalo AGP
- Dos cabezales IDE que admiten cuatro dispositivos IDE
- Una interfaz para unidad de disquete
- Una ranura de Communications Network Riser (Levantador de Redes de Comunicaciones/CNR)
- Una cabezal de Lector de tarjeta USB

Esta placa base admite ultra DMA bus mastering con velocidades de transferencia de 133/100/66/33 MB/s.

LAN en placa (opcional)

La LAN en placa proporciona las características siguientes:

- Admite el funcionamiento de negociación automática de n vías de 10Mb/s y 100Mb/s
- Dúplex completo y medio
- Soporta interfaz MII al controlador de ethernet y configuración & estado
- Reúne Todo la Apropiado IEEE 802.3, 10Base-T y 100Base-Tx Convencionales

I/O integrado

La placa base tiene un conjunto completo de puertos I/O y conectores:

- Dos puertos PS/2 para ratón y de teclado
- Un puerto serie
- Un puerto paralelo (opcional)
- Cuatro puertos USB
- Un puerto LAN
- Un puerto VGA
- Clavijas de audio para micrófono, entrada de línea y salida de línea

Firmware de BIOS

La placa base utiliza Award BIOS que permite a los usuarios configurar muchas funciones del sistema, incluyendo las siguientes:

- Administración de energía
- Alarmas de encendido
- Parámetros CPU
- Temporización de memoria y CPU

El firmware también puede utilizarse para ajustar los parámetros para diversas velocidades del reloj del procesador.



Algunas especificaciones de hardware y elementos de software están sujetos a cambios sin previo aviso.

Características

Processador

651C-M usa uma tomada 478-pin com as seguintes características:

- Suporta processadores P4 com 1.5GHz até 3.2GHz
- Suporta CPU com tecnologia Hyper-Threading
- Suporta 533/400 MHz bus frontal (FSB)

A tecnologia “Hyper-Threading” permite que o sistema operativo “pense” que está ligado a dois processadores, permitindo que sejam executados dois threads em paralelo, ambos em processadores

Chipset

O chipset de Ponte Norte (NB) SiS651C e a Ponte Sul (SB) SiS962L é baseado em uma arquitetura inovadora e escalável com confiabilidade e desempenho comprovados.

- SiS651C(NB)**
- Suporta dois DDR333/DDR266/200 DIMMs até 2GB
 - Suporta processadores de série P4 com FSB até 533MHz
 - AGP v2.0 em conformidade com 4X modulo de transferência com apoio Fast Write (Escrita Rápida)

- SiS962L(SB)**
- Compatível com especificação PCI 2.2 a 33 MHz, suportando mais de 6 PCI mestres
 - Suporta PIO mode 0,1,2,3,4 e Multiword DMA mode 0,1,2 e UltraDMA 133/100/66/33
 - Controlador USB 2.0, suportando portes para 8 USB 2.0/1.1
 - Controlador de teclado integrado com suporte para mouse PS2

Memória

- Suporta memória dos tipos DDR333/266/200
- Acomoda dois DIMM sem polimento de 2.5 volt DDR SDRAM
- Capacidade total máxima de 2 GB

Codec de áudio AC'97

O AC'97 Audio CODEC está conforme com a especificação AC'97 2.3, que fornece 8bit/16bit mono/stereo formato de suporte PCM. Inclui suporte para 32-byte para cada canal SGD e digital IN/OUT S/PDIF.

Multi-Language Translation

Opções de expansão

A placa-mãe possui as seguintes opções de expansão:

- Três slots PCI de 32 bits
- Um slot AGP
- Dois conectores IDE que suportam quatro dispositivos
- Uma interface para unidade de disquete
- Uma ranhura Communications Networking Riser (CNR)
- UM Colector de Leitor de Cartões USB

Esta placa-mãe suporta o controle de barramento Ultra DMA com taxas de transferência de 133/100/66/33 MB/s.

LAN integrada (opcional)

A LAN integrada oferece os seguintes recursos:

- Suporta operação de autonegociação N-way de 10 e 100 Mb/s
- Half /Full Duplex
- Suporta interface MII para controlador Ethernet, bem como configuração e status
- Aplica-se a todas as aplicações IEEE 802.3, 10Base-T e 100Base-TX standards

E/S integradas

A placa principal conta com um conjunto completo de portas e conectores E/S:

- Duas portas PS/2 para o rato e o teclado
- Uma portas de série
- Uma porta paralela(opcional)
- Quatro portas USB
- Uma porta LAN
- Uma porta VGA
- Tomadas de áudio para microfone, linha de entrada e linha de saída

Firmware do BIOS

A placa-mãe usa o Award BIOS que permite aos usuários configurar vários recursos do sistema, como:

- Gerenciamento de energia
- Alarmes de reativação
- Parâmetros da CPU
- Sincronização da CPU e memória

O firmware também pode ser usado para definir os parâmetros de diferentes velocidades de clock do processador.



Alguns itens de software e especificação de hardware estão sujeitos a alterações sem prévio aviso.

機能

プロセッサ

651C-M は、478ピンソケットを搭載しています。それに、次の特徴があります：

- Intel P4の1.5GHzから3.2GHzのプロセッサに対応、
- ハイパースレッド 技術をサポート、
- 500/400 MHzのシステムバス(FSB)をサポートします。

"Hyper-Threading"技術というのは、事実上1つのプロセッサ(物理上のプロセッサ)を、2つのプロセッサ(論理上のプロセッサ)が存在するかのようにオペレーションシステムに認識させることで、同一の物理上のプロセッサで2つの電算スレッドを同時に執行させる技術です。

チップセット

SiS651C Northbridge(NB)およびSiS964L Southbridge(SB)チップセットは、実証された信頼性と性能を持つ革新的で拡張性のあるアーキテクチャに基づいています。

- | | |
|--------------|--|
| SiS651C (NB) | <ul style="list-style-type: none">• 2つのDDR333/DDR266/200 DIMMで2GBまでのメモリーを搭載可能です。• P4 シリーズプロセッサを最大533MHzのFSB で対応します。• 高速書込み式の AGP 8X/4X インターフェースをもサポートします。 |
| SiS962L (SB) | <ul style="list-style-type: none">• 33MHZでのPCI2.2規格に準拠することで、最大6つまでのPCIマスター設備の取り付けを可能。• PIOモード 0,1,2,3,4と、Multiword DMA モード 0,1,2とUltraDMA 133/100/66/33とをサポートします。• 内蔵のUSB 2.0 コントローラーで、6つポートの接続を可能にします。• PS2マウス対応のキーボードコントローラを内蔵済みです。 |

メモリー

- 333/266/200 MHz メモリモジュールに対応し、
- 2.5V仕様DDR SDRAM の非バッファードDIMMスロットを2つ備え、
- 合計で2GBまでをサポートします。

AC'97 Audio CODEC

AC'97 Audio CODEC はAC'97 2.3 規格に対応し、8ビット/16ビット モノ/ステレオ PCM テータ形式をサポートすると共に、SGDチャネル毎とデジタルS/PDIF入出力毎と

拡張オプション

このメインボードには次の拡張オプションがあります::

- 32ビットPCIスロットが3つ、
- AGP スロットが1つ、
- IDEヘッダーが2つで、4つのIDEチャネルをサポート、
- フロッピーディスクインターフェースが1つ、
- 通信ネットワークライザー (CNR) スロットが1つ、
- USBカード Cardリーダーヘッダー。

このマザーボードは、133 / 100 / 66 / 33 MB/秒の転送レートでUltra DMAバスマスターリングに対応します。

オンボードLAN (オプション)

オンボードLANは、次の機能を提供します。

- 10Mb/秒および100Mb/秒N-way自動ネゴシエーション操作をサポート
- 半二重および全二重
- MIIインターフェースでイーサネットコントローラやその構成と状態表示とをサポートします。
- IEEE 802.3や10Base-T、100Base-TX などの基準にすべて対応します。

統合I/O

マザーボードには、次のI/Oポートやコネクタを揃えています。

- マウスとキーボード用のPS/2ポート x2
- シリアルポート x2
- パラレルポート x1(オプション)
- USBポート x4
- LANポート x1
- VGAポートx1
- マイク、ラインイン、ラインアウト用オーディオジャック

BIOSファームウェア

本マザーボードはAward BIOSを採用し、次の機能を含めた多様なシステム構成を行います。

- 電源管理
- ウェークアップアラーム
- CPUパラメータ
- CPUおよびメモリのタイミング

さらに、所定のパラメータを設定することによって、プロセッサのクロック速度を変更することもできます。



一部のハードウェア仕様とソフトウェアアイテムは、予告なしに変更することがあります。

특징

프로세서

651C-M 메인보드는 다음과 같은 특징을 지닌 478 을 포함한다:

- 1.5GHz 의 P4 프로세서, 최대 3.2GHz 지원
- Hyper-Threading 기술의 CPU 지원
- 533/400 MHz front side bus (FSB) 지원

Hyper-Threading(HT)* 기술은 운영체제로 하여금 두 개의 프로세서에 연결된 것으로 인식하게 하여 동일한 물리적 프로세서 내의 각기 분리된 논리적 프로세서에서 두 개의 스레드를 병렬로 실행할 수 있게 합니다.

칩셋

SiS651C 노스브리지(NB)와 **SiS962L** 사우스브리지(SB) 칩셋은 증명된 신뢰도와 성능을 지닌 혁신적이고 확장가능한 아키텍처에 기반합니다..

SiS651C (NB)

- 2 개의 DDR333/DDR266/200 DIMM 최대 2GB 지원
- FSB 최대 533MHz 의 P4 시리즈 프로세서 지원
- AGP 4X 인터페이스 / Fast Write Transaction 지원

SiS962L (SB)

- 33 MHz에서 PCI 2.2 사양 호환, 최대 6 PCI 마스터 지원
- PIO 모드 0,1,2,3,4 및 Multiword DMA 모드 0,1,2, UltraDMA 133/100/66/33 지원
- USB 2.0 컨트롤러, 6 USB 2.0/1.1 포트 지원
- PS2 마우스 지원 통합 키보드 컨트롤러

메모리

- DDR 333/266/200 메모리 모듈 지원
- 2 개의 unbuffered 2.5V 184 핀 DIMM 소켓 사용
- 최대 용량 2 GB

AC' 97 오디오 코덱

AC' 97 Audio CODEC 은 8비트/16비트 모노/스테레오 PCM 데이터 포맷 지원을 제공하는 AC' 97 2.3 사양에 부합. SGD 채널과 디지털 S/PDIF IN/OUT 을 위한 32 바이트 라인 버퍼 지원.

확장 옵션

마더보드에는 다음과 같은 확장 옵션이 있습니다:

- 32비트 PCI 슬롯 3개
- AGP 슬롯 1개
- 4개의 IDE 장치를 지원하는 IDE 헤더 2개
- 플로피 디스크 드라이브 인터페이스 1개
- CNR (Communications Network Riser) 슬롯 1 개
- USB 카드 리더 헤더 1개

이 마더보드는 최대 133/100/66/33 MB/s의 전송률로 Ultra DMA 버스 마스터링을 지원합니다.

온보드 LAN(선택 품목)

온보드 LAN에는 다음과 같은 특징이 있습니다.

- 10 Mb/s 및 100 Mb/s N-Way 자동 교섭 작동 지원
- 전이중 및 반이중
- 이더넷 컨트롤러와 구성 및 상태를 위한 MII 인터페이스 지원
- IEEE 802.3, 10Base-T 및 100Base-Tx 표준 부합

통합 I/O

마더보드에는 충분한 수의 I/O 포트 및 커넥터가 있습니다.

- 마우스 및 키보드용 PS/2 포트 2개
- 시리얼 포트 2개
- 병렬 포트 1개 (선택 품목)
- USB 포트 4개
- LAN 포트 1개
- VGA 포트 1개
- 마이크, 라인 인 및 라인 아웃용 오디오 단자

바이오스 펌웨어

마더보드는 다음의 기능은 물론 많은 시스템 기능을 설정할 수 있게 하는 Award 바이오스를 사용합니다.

- 전원 관리
- 웨이크업(Wake-up) 정보
- CPU 매개 변수
- CPU 및 메모리 타이

펌웨어를 사용하여 다른 프로세서 클럭 속도에 대한 매개 변수를 설정할 수도 있습니다.



일부 하드웨어 사양 및 소프트웨어 항목은 사전 통보 없이 변경될 수 있습니다.

功能

處理器

651C-M設置有一個478針插座，該插座具有如下功能：

- 支援P4 1.5GHz至3.2GHz處理器；
- 支援使用高速執行緒(Hyper-Threading)技術之CPU；
- 支援高達400/533 MHz之系統匯流排(FSB)；

利用高速執行緒(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。

晶片組

SiS651C 北橋 (NB) 及 SiS962L 南橋 (SB) 晶片組在研發設計上採用了創新且具擴充性之架構，具備優良的可靠性及性能。

SiS651C(NB)

- 支援DDR333/266/200 DIMM至高達2GB；
- 以高達533MHz之系統匯流排支援P4處理器；
- AGP v2.0 相容於支援快寫功能之4X 傳輸模式。

SiS962L(SB)

- 相容於 PCI 2.2 規格 (33 MHz)，支援6個PCI主控器；
- 支援PIO mode 0,1,2,3,4及Multiword DMA mode 0,1,2 及 UltraDMA 133/100/66/33；
- USB2.0控制器(支援6個USB2.0/1.1埠)；
- 內建有支援PS2滑鼠與鍵盤之鍵盤控制器。

記憶體

- 支援 DDR333/266/200 記憶體。
- 兩個無緩衝的 2.5V 184針DDR SDRAM DIMM插槽
- 最大容量 2 GB

AC' 97 音頻編碼器

AC'97 Audio CODEC 相容於AC'97 2.3 規格，可支援8位元/16位元單音/立體聲 PCM 資料格式。此外，對每一SGD通道及數位S/PDIF 輸出入端子提供32位元線級緩衝功能。

擴充選項

本主機板包括下列擴充選項：

- 3 個 32-bit PCI 插槽；
- 1 個 AGP 插槽；
- 2 個 IDE 接頭，支援 4 個 IDE 裝置；
- 1 個軟碟機介面；
- 1 個 CNR (Communications Network Riser) 槽；
- 1 個 USB 讀卡接頭。

本主機板支援 傳輸率 133/100/66/33 MB/秒下的 Ultra DMA 匯流排主控功能。

內建區域網路 (可選)

內建區域網路提供下列功能：

- 支援 10Mb/s 及 100Mb/s N-way 自動協調作業；
- 半雙工及全雙工；
- 提供 MII 介面，以支援乙太網路控制器、其相關設定及狀態顯示；
- 符合現有的 IEEE802.3、10BASE-T、及 100BASE-TX 標準。

整合 I/O

主機板具有一組齊全的 I/O 連接埠及連接頭：

- 2 個 PS/2 埠，供滑鼠與鍵盤使用；
- 1 個串列埠；
- 1 個平行埠(可選)；
- 4 個 USB 埠；
- 1 個區域網路埠；
- 1 個 VGA 埠；
- 麥克風音頻插座、線級輸入及線級輸出。

BIOS 韌體

本主機板使用 Award BIOS，使用者可以組態設定許多系統功能，包括如下：

- 電源管理；
- 喚醒警鈴；
- CPU 參數；
- CPU 及記憶體的時間定時。

此外，也可藉由參數的設定，調整處理器的時脈速度。



部份硬體規格和軟體內容可能會在未經通知的情況下更動，敬請見諒。

功能

处理器

651C-M 使用一个 478-pin 插座，此插座具有以下特点：

- 支持 P4 处理器 1.5GHz 到 3.2GHz
- 支持“多线程”技术 CPU
- 支持 533/400 MHz 前端总线 (FSB)

“超线程技术”可以让操作系统认为它挂接了两个处理器，可以让两个线程在同一个“物理”处理器的单独逻辑处理器上并行运行。

芯片组

SiS651C 北桥 (NB) 和 SiS962L 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。

- SiS651C(NB)
- 支持DDR333/DDR266/200 DIMM 内存，最大可支持 2GB。
 - 支持 533MHz FSB 的 P4 系列处理器。
 - 符合 AGP v2.0 标准，4X 传输模式，支持快写键盘。

- SiS962L(SB)
- 符合 33 MHz 下的 PCI 2.2 规格，最大支持 6 个 PCI 主控。
 - 支持 PIO 模式 0、1、2、3、4 和 Multiword DMA 模式 0、1、2 以及 UltraDMA 133/100/66/33。
 - USB 2.0 控制器，支持 6 个 USB 2.0/1.1 端口。
 - 集成支持 PS2 鼠标和键盘的键盘控制器。

内存

- 支持DDR333/266/200内存
- 带 2 个非缓冲 2.5V 184 线 DDR SDRAM DIMM 插槽
- 总共最大可支持 2 GB

AC'97 音频编解码器

符合 AC'97 2.3 规格的 AC'97 Audio CODEC (音频编解码器)，支持 8 位/16 位单声道/立体声 PCM 数据格式。每个 SGD 通道和数字 S/PDIF IN/OUT 支持 32 字节行缓冲区。

扩展选项

此主板提供如下扩展选项：

- 3 个 32 位 PCI 扩展插槽
- 1 个 AGP 槽
- 2 个 IDE 接口，可支持 4 个 IDE 设备。
- 1 个软驱接口
- 1 个通信网络转接 (CNR) 插槽
- 1 个 USB 读卡器接头

主板支持 Ultra DMA 总线控制，传输速率可达 133/100/66/33 MB/sec。

Onboard LAN (可选)

板上集成的 LAN 提供以下功能：

- 支持 10Mb/s 和 100Mb/s N 路自协商工作
- 半双工和全双工
- 支持以太网控制器和配置&状态的 MII 接口
- 符合所有相应的 IEEE 802.3、10Base-T 和 100Base-Tx 标准

集成 I/O

此主板具有完整的 IO 端口和插孔：

- 2 个用于连接鼠标和键盘的 PS2 端口
- 1 个串口
- 1 个并口 (可选)
- 4 个 USB 端口
- 1 个 LAN 端口
- 1 个 VGA 端口
- 麦克风、线入和线出声音插孔

BIOS

此主板使用 Award BIOS，可以让用户自己配置以下系统功能：

- 电源管理
- 唤醒报警
- CPU 参数
- CPU 和记忆定时

还可用于设置不同处理器时钟速度的参数。



某些硬件规格和软件项目若有更改恕不另行通知。