
Safety and Regulatory Information

USA Notice

FCC Part 15: 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, this notice is not a guarantee that interference will not occur in a particular installation.

CAUTION: To comply with the limits for the class B device, pursuant to Part 15 of the FCC Rules, this device must be installed in computer equipment certified to comply with the Class B limits.

All cables used to connect the computer and peripherals must be shielded and grounded. Operation with non-certified computers or non-shielded cables may result in interference to radio or television reception.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the device.

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Table of Contents

1: Motherboard Features	1
Package Contents & Options	2
Main Features	3
Layout & Port Positions.....	6
2: Configuration & Installation.....	9
Hardware Configuration.....	9
Configuring The Jumpers.....	9
Installing A CPU	12
Installing System Memory.....	15
Installing Options	17
Installing The Motherboard.....	17
Installing in a System Housing.....	18
System Housing Connections	19
Disk Drive Connections	21
Other Connections	23
Checking The Installation.....	25
Support Software.....	26
Installing the Support Software.....	26
Installing Bundled Software	30
3: Using The Motherboard.....	31
System Controls.....	31
Front Panel Features.....	31
Connecting External Peripherals.....	33
Connecting Peripherals to Conventional Ports	33
Connecting USB Peripherals.....	35
Installing Expansion Cards	36
Installing PCI Cards	36
Installing A Modem Riser Card.....	39
Upgrading System Memory.....	40
4: The System BIOS & CMOS Setup Utility	41
The System BIOS	41
The CMOS Setup Utility.....	41
Using the CMOS Setup Utility.....	42
5: Troubleshooting & Technical Summary.....	52
Troubleshooting	52
General Troubleshooting.....	52
Support Software Problems	54
Battery Replacement	54
Technical Summary.....	55

Jumper Settings55
CPU Options56
System Memory Specification56

How This Manual Is Organized

This manual is divided in to five sections with the following topics:

1: Motherboard Features

Describes the main features of the motherboard and the location of important components on the motherboard.

2: Configuration & Installation

Information on changing the motherboard' s default hardware configuration, installing a CPU and system memory and installing the motherboard in a system housing.

3: Using The Motherboard

Contains pointers and useful information on using the motherboard' s features once it is installed.

4: The System BIOS & CMOS Setup Utility

Explains how to use the CMOS Setup Utility and notes important points on changing the default configuration.

5: Troubleshooting & Technical Summary

Has a brief section on troubleshooting motherboard problems and has a summary of the board setup information for the experienced user.

The manual is designed to provide useful explanations where needed while making it easy to find basic information without a lot of searching.

Motherboard Features

What's In This Chapter:

Package Contents
& Product Options
Main Features
Board Layout &
Port Positions

This chapter lists what you should find in the packing box, introduces your motherboard's features and indicates the position of components you may need to know about. Please review this chapter to familiarize yourself with the basic information about your motherboard.

The BST1M series motherboard uses the SiS 630 series chipset and the SiS 950 or equal level Super I/O chip. The 630 chipset has video display, audio and LAN functions integrated into the chipset, so separate cards or onboard chips are not required. The 950 I/O chip provides a full set of I/O ports on the board.

The motherboard also has an ADIMM slot that supports the optional DS301 display port card, but this feature is available on BST1M only.

The motherboard also comes with full software driver support for the 630 chipset on a convenient CD-ROM Support Disk. The Support Disk has a user-friendly installation interface and also includes some useful utility software.

This motherboard comes in two models, with (BST1M) and without (BST1M-E) the ADIMM expansion slot.

Package Contents & Options

Your motherboard package should include the items listed here. If any thing is missing or damaged, please contact the vendor you bought it from to resolve the problem. If you purchased a board with optional features or equipment, please check the options list. You should find:

- The motherboard
- IDE connector cable (supports UDMA/66)
- Floppy disk drive connector cable
- This User' s Manual
- Support software CD-ROM disk

Optional Items:

- COM 2 port bracket (separate purchase)
- Modem Riser card (separate purchase)
- DS-301 Multi-display card (separate purchase for BST1M only)

Main Features

This motherboard a full set of system features built onto the board.

Micro ATX Form Factor

This motherboard has a Micro ATX circuit board that integrates system I/O ports onto the board and uses any standard or Micro ATX system housing. All I/O ports except the second serial port are on the motherboard. The optional serial port brackets with attached ribbon cables attach to connectors on the motherboard.

SiS 630 Chipset

The SiS 630 chipset supports many system features onboard including video display and audio circuitry. It also supports UDMA66 EIDE data transfer mode. The chipset supports FrontSide Bus (FSB) speeds of 66, 100, or 133MHz. The board also has an optional display memory module for the onboard video display and supports up to PC133 SDRAM .

CPU Support

The motherboard has a Socket 370 ZIF socket for PPGA Celeron and FCPGA Pentium III CPUs running at speeds up to 733Mhz.

The CPU operating speed is set in the BIOS firmware based or onboard jumpers on the external clock speed.

Integrated I/O

This motherboard has a full set of integrated I/O ports mounted on the board. They include PS/2 keyboard and mouse ports, two USB ports, a RJ45 LAN connector, a parallel port, a serial port, a VGA port, a game/MIDI port and Line Out, Line In and Mic audio jacks.

There are also pin connectors on the board for optional port brackets for the separately-purchased Ir-DA port module. If you install an infrared port, the second serial port is disabled.

Onboard Peripheral Interfaces

There are connectors for two IDE channels and a floppy disk drive interface on the motherboard. The board supports two floppy disk drives. The two IDE channels support two devices each for a total of four devices. All IDE data transfer modes are supported including all PIO modes and Ultra DMA33 and 66 modes for a maximum data transfer rate of 66MB per second. The motherboard comes with one floppy and one IDE cable. The IDE cable supports all IDE modes and devices.

System Memory

The motherboard has two sockets for 168-pin 3.3V non-buffered SDRAM DIMM memory modules. You can use PC100 or PC133 memory. PC66 memory is not supported. You can install any combination of DIMMs from 16MB to 256MB for a maximum system memory of 512MB.

Embedded 2D/3D Video Display

The SiS 630 series chipset has an embedded 64-bit AGP video display. The chipset supports 2D display graphics up to 1600 x 1200 in 8-bit color at a refresh rate of 85Hz.

The embedded 64-bit video display supports both 2D and 3D display graphics. It is AGP 2.0 compliant and runs up to 133MHz. The display circuitry uses a shared memory architecture that allows a maximum of 64MB of main memory to act as a frame buffer. The video controller also supports hardware DVD acceleration and direct DVD to TV playback.

Display drivers are supplied on the Support Disk that comes with the motherboard.

Onboard 32-bit Audio

The SiS 630 chipset onboard audio comes with audio drivers that are supplied on the Support Disk. The audio subsystem uses the Line-In, Mic and Line-Out jacks on the audio port to connect to external devices and also uses either of the onboard CD-ROM audio-in connectors to process audio from a CD-ROM drive.

The onboard audio uses an AC'97 audio CODEC. This reduces noise to improve audio quality and performance and also improves voice synthesis and recognition.

Expansion Options

This motherboard has two 32-bit Revision 2.2 PCI expansion slots for PCI expansion cards. Both slots are Bus Master capable.

The motherboard's MR slot supports a Modem Riser card that has data/fax modem and other telephony features.

The onboard ADIMM slot can support a DS-301 multi-display card, or an optional display memory module. But this slot is available on BST1M only.

Such cards above are available as a separate purchase. Ask your motherboard vendor for details.

ACPI Ready

ACPI (Advanced Configuration and Power Interface) support provides energy saving functions for operating systems that support ACPI such as Windows 98.

Award BIOS

This motherboard uses the Award PnP BIOS and the CMOS Setup Utility which allows setting of various system hardware parameters. The CMOS Setup Utility has an easy-to use interface and supports software clock frequency control.

Virus Protection

The motherboard also comes with PC-cillin, an anti-virus software utility for Microsoft Windows 9x and 2000. The software and installation guide are located on the Support Disk that comes with the motherboard.

DS-301 Display Expansion Card

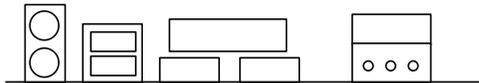
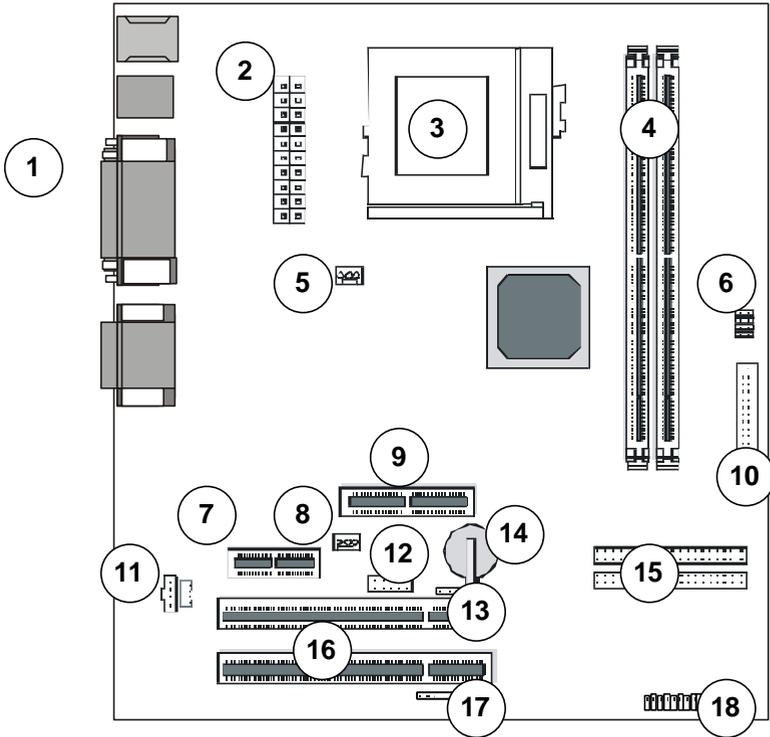
The DS-301 Display Expansion Card provides a second VGA port and TMDS LCD interface for dual display function as well as component and S-video connectors for the TV-Out display feature. The card installs in the ADIMM slot on the motherboard which is on BST1M only.

Layout & Port Positions

The figure at right shows the layout of the motherboard with the components you might need to locate labeled.

Component	Description
1: Onboard Ports	See illustration key
2: ATX Power	ATX power supply connector
3: Socket 370	Socket 370 CPU socket
4: DIMM1, DIMM2	168-pin memory module slots
5: CPU FAN	CPU cooling fan power connector
6: JP2	CPU external clock/memory clock jumper
7: MR slot	Modem Riser slot
8: SYS FAN	System cooling fan power connector
9: ADIMM	ADIMM expansion slot
10: FDC	Floppy disk drive controller connector
11: CD-ROM	CD-ROM audio -in connectors
12: COM2	Com2 2 nd serial port bracket connector
13: JP9	Clear CMOS jumper
14: Battery	Onboard battery and housing
15: IDE	IDE channel 1 & 2 connectors
16: PCI 1,2	32-bit PCI expansion slots
17: IrDA	Connector for optional infrared port
18: Case Panel	Connector for case panel features

1 BST1M Series User's Manual



PS/2 Mouse
PS/2 Keybd

LAN
USB1
USB2

Parallel
Serial
VGA

Game/MIDI
Audio 1,2,3
Audio:
1: Line Out
2: Line In
3: Mic

Configuration & Installation

This chapter explains how to configure the motherboard, install a CPU and system memory and has basic information on installing the motherboard in a system housing or “chassis”. We then explain how to install the support software that comes on the Support Disk. If the board is already installed in a system, you may want to review this chapter or you can skip it and go to the next chapter which covers some post-installation topics.

What’s In This Chapter:

Hardware Configuration

Installing the Motherboard

Installing Support Software

Hardware Configuration

There are three steps to configure the motherboard hardware before installing it in a system housing: configuring the jumper switches, installing a CPU and installing system memory.

Configuring The Jumpers

This motherboard has three jumper switches. All the jumpers come preset to the default settings. You may not need to change any of the settings. Please note that once the motherboard is installed, you should always turn your computer off and disconnect the power cord before changing any jumper settings. In all cases, you should always take precautions against static electric damage to sensitive components. The default settings are listed in the following table.

Jumper Setting Summary

JP2 - CPU External Clock/Memory Clock

CPU/DIMM	66/66	66/100	100/100	100/133	133/100	133/133
1-2	Short	Short	Open	Open	Open	Open
3-4	Short	Short	Short	Short	Open	Open
5-6	Short	Short	Short	Open	Short	Open
7-8	Open	Short	Short	Short	Short	Short

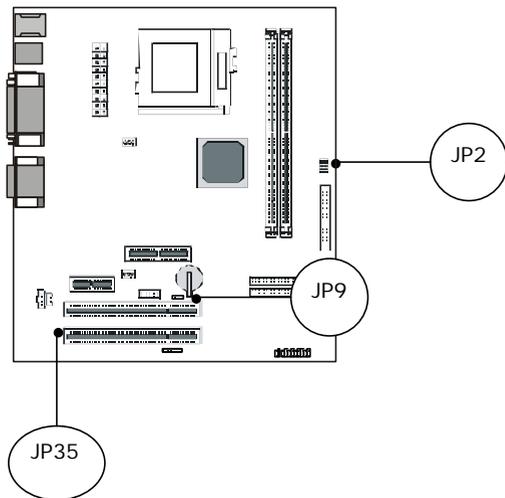
JP9 - Clear CMOS

Setting	Function
1-2	Clear CMOS
2-3	Normal

JP35 - Audio select

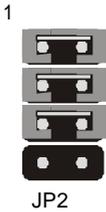
Setting	Function
1-2	Onboard Audio Enable
2-3	Onboard Audio disable

Default settings are in **bold**



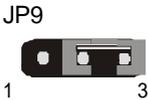
Jumper Functions

This section explains the functions performed by the jumper switches.



JP2: CPU /DIMM clock setting

This jumper setting the CPU/DIMM clock frequency. Set it according to the speed of CPU FSB and DIMM you will install.

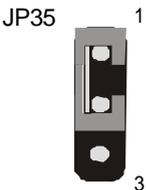


JP9: Clear CMOS

This jumper is a trouble shooting jumper that allows you to clear the system configuration record that is created by the Award BIOS CMOS Setup Utility and stored in CMOS memory. You only do this if the system has become unbootable due to incorrect settings or a corrupted configuration record and you can't access the CMOS Setup Utility.

Warning ! Please do not clear the CMOS after refreshing system BIOS, unless you have restarted the computer. Otherwise, the MAC address will be permanently lost and you need recover the MAC address which is labeled on the motherboard.

Please refer to the section on Troubleshooting in Chapter 5 for information on how to do this. The default setting for this jumper is **Normal**.



JP35: Onboard Audio Selector

This jumper allow you to select onboard audio enable or disable, when your choice a PCI audio card, you may disable the onboard audio by this jumper.

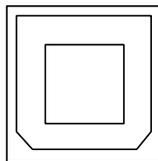
Installing A CPU

You can install an Intel PPGA or FC-PGA CPU in the motherboard's Socket 370. If you purchased a CPU packaged by Intel, follow the installation instructions that come with it. In any case please review the following generic instructions which are the same for both CPU types. Make sure you take precautions against static electric damage to the CPU.

Please Note:

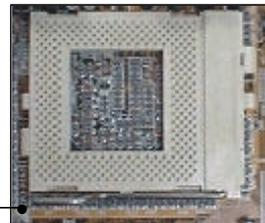
The pictures in this section are generic and are not of the motherboard this manual is about.

1. The CPU will only fit into the socket in one orientation. Look at the top of the CPU with and note the two angled corners where some pins are missing. On the other two corners the pins form a 90° angle.
2. Locate the PGA370 socket on the motherboard and identify the socket's Pin 1 position at the end of the socket actuating lever (or "handle"). Note the angled corners of the pin receptacles on that side of the socket.



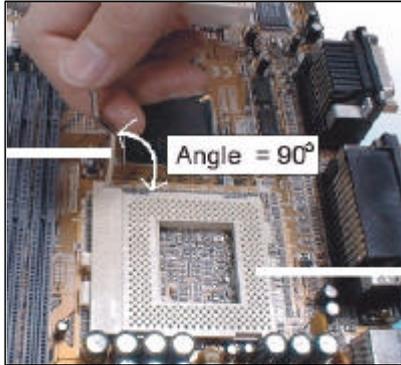
CPU
Pin 1 side

370 Socket
Pin 1

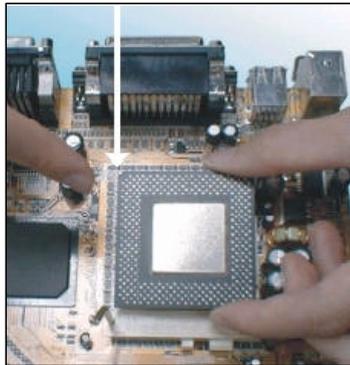


Pin 1

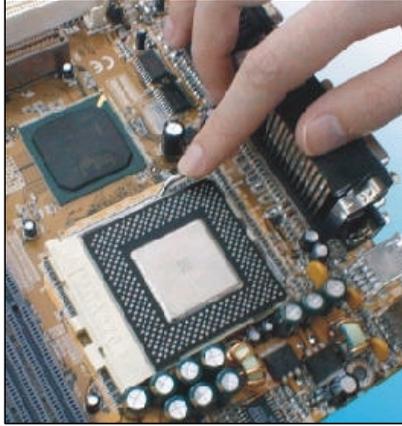
3. Raise the socket lever to a 90° angle.



4. Insert the CPU in the socket so that the angled pin corners match the angled pin receptacle corners. The CPU will only insert in the correct orientation. Don't force it. If it doesn't go in easily, check and make sure you've got the CPU correctly oriented.



5. Lower the socket lever and press it back into place to lock the CPU in the socket.



You will also need to install a heatsink/fan devices on top of the CPU. If you purchased an Intel CPU in retail packaging use the fan that comes in the package. If you a purchased a CPU that doesn't come with a fan, you will need to purchase one separately. Follow the installation instructions and plug the fan power connector onto the CPU FAN power connector near the PGA370 socket.

Installing System Memory

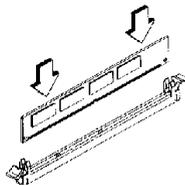
There are two system memory sockets on the motherboard. They use 3.3Volt, non-buffered SDRAM DIMMs (Dual In-line Memory Module). This motherboard uses either PC100 or PC133 DIMMs. This means you can use PC100 memory even if the external clock frequency used by the CPU is 66MHz. You can install any size DIMM from 16MB to 256MB in either socket in any order for a total of 512MB.

Installing DIMMs

The DIMM sockets have three edge connector sections divided by spacers with a crossbar. The crossbars match cut-outs in the DIMMs so that only the correct type of module can be installed. The cutouts vary by module type. Make sure you use the correct module type as noted above. When installing memory, you should take precautions against static electric damage to sensitive components on the modules and the motherboard. To install a module does as follows:

1. Press the socket retaining latches down to create full access to the socket.
2. Align the DIMM to the socket so that its edge connector matches the socket's connectors. The three sections are of different lengths to make the correct orientation obvious.
3. Lightly press the DIMM into the socket at a 90° to the motherboard. Make sure the module and the socket are lined up correctly.

4. Press the DIMM fully into the socket. The retaining latches will rotate upwards and should fit into the corresponding notches on the DIMM. Press the latches into place if necessary. If the latches won't insert properly into the module notches push them back and try inserting the DIMM again. When the latches are fully in place the DIMM is properly installed.



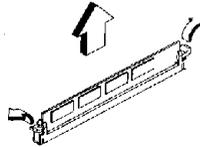
Install DIMM

Depending on the module size and the total capacity you want to install, you may install memory in only one or both sockets. For example, to install 128MB of system memory you can install either one 128MB DIMM in one socket or two 64MB modules using both sockets. We recommend that you use the largest module that fits your installation plans so that you can leave the second socket open for later upgrades.

If you want to upgrade system memory after the motherboard is installed you can install additional memory in the empty socket. If there is no empty socket, you will need to remove at least one module and replace it with the upgrade module. In some cases, you may need to remove both modules to allow installing your intended configuration. To remove a DIMM do as follows.

1. Make sure the computer is turned off and unplugged.

2. Press down on the retaining latches to release the module and push it partially out of the socket.
3. Carefully remove the module from the socket, preferably grasping it by the top corners of the circuit board.



Remove DIMM

Installing Options

To install any optional hardware such as the Modem Riser card or optional Infrared port you must first install the motherboard in a system housing. Please refer to the Other Connections portion of the next section.

Installing The Motherboard

This section is a brief generic explanation of how to install the motherboard in a system housing (“case” or “chassis”) and connect other internal system components to it. If you are not experienced at installing and assembling computer hardware we recommend you consider having a qualified service technician install and assemble your system for you. If you will do the work yourself, make sure to take precautions against damage from static electric discharge while installing and connecting components.

Installing in a System Housing

Since housing designs vary considerably the section provides general guidelines and notes the basic requirements. This motherboard is a Micro ATX board that requires either a Micro ATX or ATX case (chassis) and power supply. The case should come with mounting hardware for the motherboard and at least basic instructions on how to install a motherboard. It is advisable to check the case before you by it and confirm that it has adequate hardware and instructions. If you are upgrading the motherboard in a system you already own, you will need to make sure your system case can accommodate this motherboard.

This is the basic procedure to install the motherboard:

1. Check over the hardware and instructions that came with the system housing and make sure everything is there and that you understand the instructions.
2. Attach whatever mounting hardware is needed to the case. Some cases support more than one motherboard form factor, for example Baby AT, Micro ATX and ATX. Identify the mounting points that match as many of the mounting holes on the motherboard as possible and install hardware at those points. Some cases use both metal nut-headed screws and plastic spacers with a pointed end that inserts in a mounting hole on the motherboard. The spacers fit into slots in the motherboard mounting plate.
3. Install a port cover panel if necessary. Follow the instructions that came with the case.

4. Line the motherboard mounting holes up with the appropriate attachment points on the motherboard mounting plate. If you had to install plastic spacers in some holes, make sure they fit into their slots as you align the board.
5. Use the mounting screws and washers that came with the system case to attach the motherboard to the mounting plate. Seat the screws firmly but not to tightly.

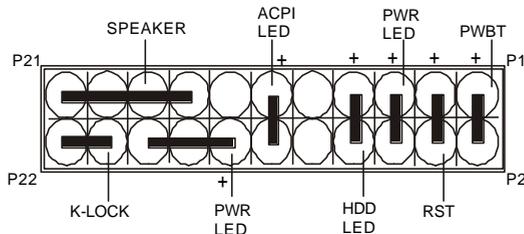
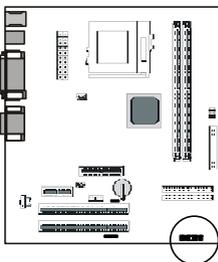
With the motherboard installed, you can now attach internal system components including wire leads from the system case and disk drive or other cables and port brackets.

System Housing Connections

You will need to connect several wires from the system housing to the motherboard. These include leads for functions on the housing's front panel and the power connector from an ATX power supply and any system cooling fans.

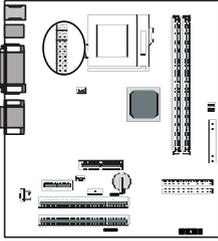
Connecting Front Panel Leads

System housings usually have several system controls and indicators mounted on the front panel. This motherboard supports several of these standard features via the J20 Switch & Indicator panel connector. The supported features and the pins J20 they connect to are shown in the following table and figures.



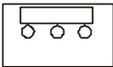
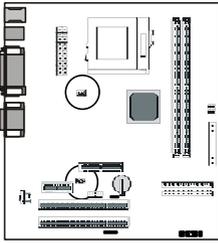
Pin	Name	Description
1 - 2	PWBT	Power Button
3 - 4	RST	Reset switch
5 - 6	PWR LED	Power status light
7 - 8	HDD LED	HDD activity light
9 - 10	Reserved	NA
11 - 12	ACPI LED	Suspend indicator
14 16 18	PWR LED	Power LED (3-pin)
20 22	K-LOCK	Key Lock
15 17 19 21	SPEAKER	Chassis speaker

Connecting ATX Power



The power connector from the ATX power supply is a rectangular plastic connector with multiple wires running back to the power supply. It plugs onto the ATX power connector on the motherboard. The connector will only plug on one way, so if it won't plug on easily, turn it around and try again. Make sure the power supply is unplugged when you connect the power lead.

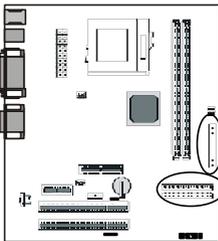
Connecting Cooling Fans



Fan Out +5V GND

There are two connectors on the motherboard for connecting power leads from system cooling fans mounted in the system housing. The system housing may already have such a fan installed. If so, you should connect it to the nearest connector on the motherboard. Many cases have a space to install a standard cooling fan. The fan power leads will only plug on one way so you can't connect them incorrectly.

Disk Drive Connections



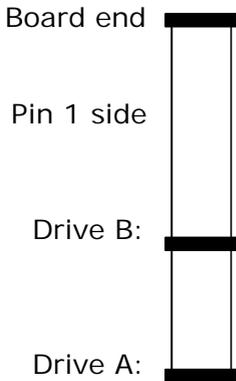
This motherboard has three connectors for disk drives, one for up to two floppy disk drives and two EIDE connectors which can connect to two IDE devices each for a total of four. The motherboard comes with two ribbon connector cables, one floppy cable and one IDE cable.

Connecting Floppy Disk Drives

The motherboard floppy disk drive controller connector uses the narrower (34-pin) of the two supplied cables. There are three connectors on the cable, one at each end and one in the middle, more towards one end. The end with two connectors closer together goes to the disk drives. The other end connects to the motherboard.

Always connect the Pin 1 side of the ribbon cable (the colored edge) to the Pin 1 side of the cable connector on the motherboard or device. The Pin 1 corner is marked on the motherboard and drives usually have it marked in some way. The rule of thumb for drives is that the Pin 1 side of the connector is on the drive power connector side.

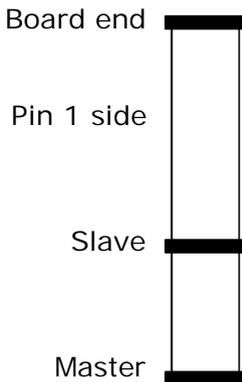
The end drive connector on the ribbon cable is for floppy disk drive Drive A: and the middle connector is for Drive B:. The supplied cable only supports 1.44MB floppy disk drives.



Connecting IDE Devices

The motherboard EIDE device controller connector uses the wider (40-pin) of the two supplied cables. There are three connectors on the cable, one at each end and one in the middle, more towards one end. The end with two connectors closer together goes to the IDE devices. The other end connects to the motherboard.

Always connect the Pin 1 side of the ribbon cable (the colored edge) to the Pin 1 side of the cable connector on the motherboard or device. The Pin 1 corner is marked on the motherboard and IDE devices usually have it marked in some way. The rule of thumb for IDE devices is that the Pin 1 side of the connector is on the drive power connector side.



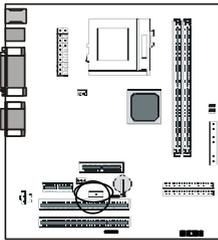
The end drive connector on the ribbon cable is for the Master IDE device and the middle connector is for the Slave device. The supplied cable supports IDE devices in all modes.

If you want to install devices on the second IDE channel, you will need to purchase an additional IDE ribbon cable. If you want to use IDE devices that use the UDMA66 data transfer mode, you will need to get an IDE cable that specifically supports UDMA/66 like the supplied cable.

Other Connections

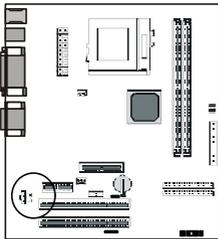
There are several other connection points on the motherboard which you will or may need to use. These include the port bracket connectors, the connectors for CD-ROM drive audio input and the IR port connector.

The Serial Port Bracket



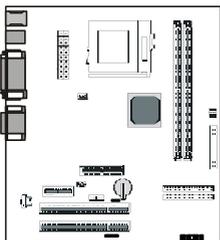
The serial port bracket plugs onto the COM2 connector on the motherboard. Mount the port bracket in an expansion slot opening that doesn't block an expansion slot and plug the ribbon cable connectors onto the connectors on the motherboard. The connectors will only plug on in one orientation so you can't get it wrong.

CD-ROM Audio Input



There are two audio input connectors for a CD-ROM. Plug the audio cable from a CD-ROM drive into the connector that matches the connector on the end of the cable. If there is more than one CD-ROM drive installed in the system you can connect an additional drive to the unused connector. Only one audio source at a time will play through the onboard audio subsystem.

The Optional IR Port



This connector is for an infrared wireless communications port. Connect a separately purchased port to the IrDA connector. Make sure to orient the Pin 1 side of the port connector to the Pin 1 on the onboard connector. The Pin 1 position is marked on the motherboard. You will also need to configure the port in the CMOS Setup Utility's Integrated Peripherals section to the appropriate setting for your port. Follow the directions that come with the IR port to install it.

Checking The Installation

Once you have installed and connected internal peripherals -- most likely at least a hard disk drive, a floppy disk drive and a CD-ROM drive -- check and make sure everything is correctly and firmly connected or installed. After that, assemble the system housing and connect a monitor, keyboard and mouse or other pointing device. Plug the power cord into the power supply and plug it into a surge-protected power outlet.

Turn on the computer. The POST (Power On Self Test) will run and should display the correct memory total. The default BIOS settings should automatically detect and configure any floppy disk drives and IDE devices as well as assign resources for any expansion cards you may have installed. If you encounter a problem, reboot and run the CMOS Setup Utility by pressing the delete key. If you need help using the utility, see Chapter 4. The system should now be ready to install an Operating System on the hard disk drive and the necessary support software from the Support Disk.

Support Software

All versions of this motherboard come with a software Support Disk that has both support software and bundled software on it. The Support Disk is for an entire range of motherboards. There is more software on the Support Disk than is used by this motherboard, so don't be confused by the software that doesn't apply. An Operating System must be installed on the primary system hard disk drive before you can install support software. Most of the support software is for Microsoft Windows 95, 98 or NT as these are the operating Systems most likely to be used with this motherboard.

Installing the Support Software

The Support Disk is set to run automatically. The disk has an installation interface that will appear when you load the disk in the CD-ROM drive. You can then make selections from the menu that appears by clicking on an item with the mouse. You can also use the arrow keys on the keyboard to make a selection and then press the Enter key.

The installation interface has a number of nested levels. The top level, which you see when the disk loads looks like the following figure. You can exit the level you are in either by clicking on the Exit bar, selecting it and pressing the Enter key or by pressing the Esc key. The top level Exit bar closes the installation program.

You will need to install the SiS 630 support software under the SiS Series heading. Installing the other bundled software is optional.

Main screen



Main menu



SiS Support Software

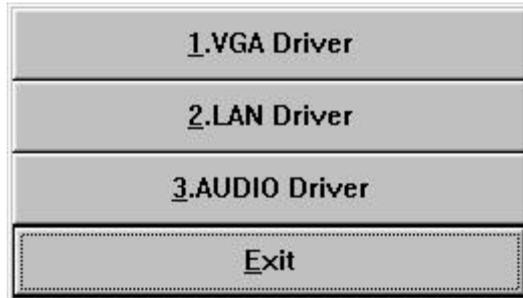
Under the SiS Series heading you will need to click on the SiS 630 bar to access the software for this board. To install software, click on or select the appropriate item and press the Enter key. Follow the installation instructions that appear.

There are three items in the SiS 630 driver section: VGA, LAN and Audio. You must install the VGA driver for the operating system you are using. The LAN has information on LAN driver installation and the Audio driver installation program runs automatically when you click on that item.

SiS menu



SiS630 menu



VGA Display Drivers

The VGA Driver section has a submenu for various versions of Windows including 9x, NT 4.0 and 2000. Choose the driver for the OS you are using.

VGA menu



Audio Driver Software

To install the audio software, click on the Audio Driver bar or select it and press the Enter key. Follow the installation instructions that appear. You should only install the audio software in the SiS 630 section. DO NOT install anything from the Audio Driver item in the main menu of the installation program.

Installing Bundled Software

The Support Disk also has some utility software on it. The free Adobe Acrobat Reader is supplied for viewing files in the Acrobat PDF format, including online manuals. The PC-cillin 98 anti-virus software is bundled with this motherboard to enhance your system' s protection from computer virus infection. To install either software utility, click on or select the appropriate item and press the Enter key. Follow the installation instructions that appear.



Using The Motherboard

This chapter covers a few points on how some of the motherboard features impact use of the computer it is installed in. This includes using system control features, connecting external peripherals, installing expansion cards and upgrading system memory.

What's In This Chapter:

- System Controls
- Connecting External Peripherals
- Installing Expansion Cards
- Upgrading System Memory

System Controls

There are several system controls that either connect to the motherboard from the front panel of the system housing or work through the keyboard or pointing device.

Front Panel Features

System housings vary in design, so a particular system case may not support all the features on the motherboard. Most housing do support the majority of these features however. The location and appearance of these features will vary according to the housing design.

The Power Button

The power switch on an ATX case is likely to be a power button that can do more than function as an on/off switch. You can set how the power button works in the BIOS CMOS Setup Utility. The button can either function as instant on/off or as suspend/off after 4 second delay. You can configure the power button under the Soft-OFF by PWR-BTTN line in the Power Management Setup section of the CMOS Setup Utility.

The Reset Switch

A reset switch is standard to almost all PCs. Pushing the switch will cause the computer to do a “hard” restart. If the computer hangs during operation and becomes unresponsive to other controls, you can restart the computer using this switch. Don't use it if the computer is operating normally. You should always shut down from within the Operating System. Only use reset as a last resort and instead of turning the computer off and then back on.

The Suspend Button

An external Suspend button appears on some cases. Pushing the button will cause the system to enter whatever power-saving suspend or “Sleep” mode it is configured to enter. In suspend mode the computer may appear to be turned off, but is in fact just in a low power mode. Don't turn the computer off when it is suspended. Pushing the button while the system is suspended will resume or “Wake Up” the system and cause it to return to its previous state.

Indicator Lights

The motherboard supports several indicator lights that may be present on the front panel of the system housing. These include a Power LED, a Hard Disk Drive LED and a Suspend LED.

- Power LED: Lights when the system is on
- Hard Disk Drive LED: Flashes when the hard disk drive is being accessed
- Suspend LED: Lights when the system is in power saving Suspend or “ACPI” mode

Connecting External Peripherals

This section covers information on connecting external peripheral equipment to the computer via the motherboard's onboard ports. This motherboard has a full complement of external ports including all standard I/O ports and a VGA video display port.

Connecting Peripherals to Conventional Ports

It is safest to turn the computer off before connecting or disconnecting any external peripherals. The “conventional” ports on this motherboard are color-coded according to the PC99 standard. This allows for easier system setup when using similarly color-coded peripheral cable connectors. The port colors and functions are as follows:

- **Parallel port [Burgundy]:** Generally used for connecting a printer. Usually configured as LPT1. Can also connect to other devices designed to use this port. More than one device can be connected to the port by using a “pass-through” cable. The port supports multiple modes and is configurable via the BIOS CMOS Setup Utility in the Integrated Peripherals section of the utility. Any device connected will also require Operating System driver support.
- **Serial ports [Teal]:** Used for connecting modems, printers and other serial devices. The port supports multiple address configurations and is configurable via the BIOS CMOS Setup Utility in the Integrated Peripherals section of the utility. Any device connected will also require Operating System driver support.

- PS/2 Keyboard port [Purple]: For a PS/2-compatible keyboard.
- PS/2 Mouse port [Green]: For a PS/2-compatible pointing device. Driver support for basic pointing devices such as a standard 2-button mouse is not required under Windows. Enhanced pointing devices require a driver for their added functionality.
- Audio jacks:
 - Audio Line Out [Lime]: Uses a mini-plug cable connector to output to external audio, either speakers or an amplifier.
 - Audio Line In [Light Blue]: Uses a mini-plug cable connector to receive audio input from an external source such as an audio CD or MP3 player.
 - Microphone [Pink]: Uses a mini-plug cable connector to receive audio input from a microphone.
- Game/MIDI port [Gold]: This port can function as either a Game port or as a MIDI port. The port is configurable via the BIOS CMOS Setup Utility in the Integrated Peripherals section of the utility. The default configuration for this port is as a Game port. If you configure the port as a MIDI port, it will need to use either IRQ 5 or 10.

Connecting USB Peripherals

The motherboard has two Universal Serial Bus ports. You can connect USB devices to either the USB ports directly or to either a bus-powered or self-powered USB hub which provides more ports. The bus provides limited power. A powered hub increases the number of powered devices you can connect to the bus. Some USB devices may also have their own power source. USB devices are “hot swappable” which means you don’t have to turn the computer off before connecting or disconnecting a USB device. The USB specification supports up to 127 devices.

USB is an interface for peripherals that use a relatively low data transfer speed, such as USB keyboards, pointing devices, scanners, printers, modems and other telephony devices and game devices. USB also supports MPEG-1 and MPEG-2 digital video. It has a maximum transfer rate of 12Mbits per second, which is equivalent to 1.5MB per second. To use the USB feature, the computer must use an Operating System that supports it. For example, all versions of Microsoft Windows from Windows 95 OSR2 and later support USB. Earlier versions of Windows do not support USB.

Installing Expansion Cards

This section has some general information on installing expansion cards on the motherboard. This motherboard has five standard PCI expansion slots. The slots are all 32-bit PCI Revision 2.2 compliant and are all Bus master capable. There is another special slot for an optional Modem Riser card. Note that there are no legacy ISA slots on this motherboard.

Installing PCI Cards

There are several issues that affect your choice and installation of expansion cards on the motherboard. These include Bus Master drivers, Plug and Play and system power and resource considerations.

Bus Master Drivers

The PCI expansion slots are Bus Master capable. The Bus Master feature can substantially improve system performance and also is used by the onboard IDE channels. To make use of this feature under Windows 95 you will need to install the default Windows 95 Bus Master driver. Later versions of Windows do not need a separate Bus Master driver to take advantage of this capability.

Plug and Play

It is likely that any PCI card you will install on the motherboard will be Plug and Play (PnP) compliant. Plug and Play is a design specification for expansion cards that allows the system to automatically assign and manage resources for installed expansion cards rather than requiring manual configuration as in pre-PnP designs. Any new expansion cards you install are more than likely to be PnP compliant. Some old PCI cards might possibly not be. Where you have the option, we suggest not installing cards that are not PnP compliant as it simplifies the management of system resources.

System Resources & Power Limitations

Many expansion cards require the use of system resources such as IRQ and DMA channels. By design, all PCs have a limited number of these resources and their proper configuration is fundamental to proper system operation. As noted in the previous section, the PnP feature handles the management of system resources. The problem is that these resources are finite. If you install enough expansion cards and connect enough devices that use system resources to the various ports, it is possible to run out of these resources. While IRQs can be shared, there is a limit to doing so. Resource conflicts and problems can result in operation problems.

If you have a lot of cards installed and devices connected it is a good idea to check the system resource status. For example, if you are running Windows 98, you can use the System Information utility to examine system resource assignments. An average configuration is unlikely to encounter this problem so it is not something to be concerned about.

Power Considerations

The system power supply has a fixed electrical capacity measured in watts. If you install numerous internal peripherals and expansion cards, for example four IDE devices, a SCSI card and internal SCSI peripherals, it is possible to exceed the capacity of the power supply. Be aware of the total wattage capacity of the power supply in the system and make sure that you don't install more devices than it can handle.

This motherboard was designed with ACPI mode requirement, so you have to install this board with a power supply which has minimum 720mA 5Volt standby output.

Installing Cards

When the motherboard is installed in a system housing the expansion slots line up with access openings in the rear of the case. These will be covered with either individual slot covers or metal plates. To install a card you have to remove the slot cover.

Refer to the instructions that come with the expansion card you want to install for detailed information on installing the card and any special considerations and instructions. For most new cards, the hardware installation is simple. Always turn off and **unplug** the computer before you install any expansion card.

Driver & Other Software

Many cards will require the installation of driver or other software. Follow the software installation instructions that come with the card. It is a good idea to make sure that you have the most recent driver for the card. In some cases, there may be an updated driver on the company's web site. If you have Internet access, it is a good idea to check for an updated driver before installing the card.

Installing A Modem Riser Card

The special Modem Riser slot is for a separately purchased Modem Riser telephony card. The card provides a V.90 modem and other telephony features and installs in the same way as a conventional expansion card although the slot is smaller. The card has two external RJ-11 phone jacks on it, one for Line-in and the other to connect out to a telephone set. You should receive driver software for the card. The driver software may only support a limited number of Operating Systems so check that the driver supports your OS before you buy the card. Follow the instructions that come with the card to install it.

Upgrading System Memory

There is a full explanation of how to install system memory in Chapter 2. Please refer to it if you need information on the installation procedure. This motherboard uses 3.3V unbuffered SDRAM 168-pin DIMMs with SPD. It requires at least PC100 SDRAM modules. It can also use PC133 DIMMs. The system will automatically detect the memory clock speed and the speed can be different from the external clock frequency used by the CPU.

If both sockets are occupied, you will need to remove one or both modules to install an upgrade. If you're only removing one module, always remove the one with the smaller capacity.

What's In This Chapter:

System BIOS

CMOS Setup Utility

The System BIOS & CMOS Setup Utility

This section explains what the system BIOS does and has a summary of the CMOS Setup Utility.

The System BIOS

This motherboard uses the Award system BIOS. The system BIOS (Basic Input Output System) is firmware -- software stored on a chip -- that is permanently stored on the motherboard's Flash ROM chip.

The BIOS is a set of routines which function as an interface between the Operating System and the system hardware. It supports the installed peripherals and provides internal services such as the realtime clock produces time and date data.

When the system is starting up, the BIOS tests the system and prepares the computer for operation by checking the CMOS memory where the system configuration information is stored and retrieving information on the configuration settings. When it is finished it loads the operating system and passes control of the system to it.

The system configuration information that the BIOS retrieves from CMOS memory is recorded there by the CMOS Setup Utility.

The CMOS Setup Utility

This section explains the CMOS Setup Utility program. The utility is permanently stored in the Flash ROM chip on the motherboard. It creates a record of the motherboard and some system configuration information and stores it in battery-supported CMOS memory. This configuration record must be intact and accurate in order for the motherboard to operate correctly.

After an explanation of how to operate the utility there is a summary of the various sections of the utility. Normally, once your system is set up, you should have little or no need to use the utility.

Using the CMOS Setup Utility

This section explains how to access and use the CMOS Setup Utility interface.

Accessing The CMOS Setup Utility

When you turn on your computer, a message appears on the screen indicating you can run the Setup program by pressing the Del key -- it' s on the keypad and the Delete key performs the same function. The message appears at the end of the POST (Power On Self Test).

If you want to run Setup but you don' t respond in time before the message disappears, you can reset the system by pressing the Ctrl + Alt + Delete keys at the same time, or by pushing the system Reset button. The message will then reappear.

After you press the Del or Delete key the program menu screen will appear, displaying the Setup utility section names and some command instructions.

There are fourteen items on the main screen:

- **Standard CMOS Setup:** Date, time, disk drive setup, video display and error handling.
- **Advanced BIOS Features:** Boot-up and drive options and system feature customization
- **Advanced Chipset Features:** Advanced cache, system memory and display cache settings.
- **Integrated Peripherals:** Settings for the IDE channels, onboard ports, audio, LAN and video memory
- **Power Management Setup:** Sets up the power management features or enables ACPI.
- **PNP/PCI Configurations:** PCI bus, system resource and LAN boot ROM settings and SCSI detection.
- **PC Health Status:** CPU and cooling fan and voltage status monitor readouts and system Shutdown temperature threshold setting.
- **Frequency/Voltage Control:** On BIOS and manual settings for CPU, memory and PCI clock settings and the CPU multiplier.
- **Load Fail-Safe Defaults:** Loads minimum settings from the BIOS ROM.
- **Load Optimized Settings:** Loads optimized settings from the BIOS ROM.
- **Set Password:** Sets a system password which is configured by the Security Option item in Advanced BIOS Features Setup.
- **Save & Exit Setup:** Saves the current settings and exits the program.
- **Exit Without Saving:** Discards any changes made and exits the program.

To enter a section of the Setup program, highlight a menu item by moving to it with the arrow keys and press the Enter key to load that item. The submenu screen for the selected section will appear. All the main screen items that have submenus are marked with an arrowhead at their left.

Submenu Commands

The CMOS Setup Utility has an additional set of interface commands for the submenus.

There is a self-explanatory list of interface commands listed at the bottom of each submenu screen. There are also commands for the help system and the default setting options.

General Help

Pressing the F1 key brings up context-sensitive help where available to explain many menu items.

Default Settings

There are two types of default settings, Fail-Safe and Optimized. The system loads the Optimized Defaults the first time the motherboard starts up after it is installed in a system and autodetects system devices to create a system configuration record which it stores in CMOS memory. You can then customize the settings further. The optimized settings are designed to provide better system performance.

The Fail-Safe Defaults are minimum settings that will get the board up and running if you are trying to troubleshoot a problem and suspect that the BIOS may be involved.

Interface Conventions

There are several interface conventions that improve the program's ease-of-use. There are also some features of the CMOS Setup Utility's interface that are important to be aware of.

Scrollable Menus

In several submenus, there are more menu entries than can appear on the screen at the same time. These submenus have a scroll bar in the center of the screen to indicate this. You can scroll down the list by using the down arrow key.

Menu Options Pop-up

The second convention is that pressing the Enter key when a submenu item is highlighted will cause a window with a list of all available options for that item to appear. This convenience feature adds considerably to the program's ease-of-use.

Item-Dependent Settings

You will note that some menu items are grayed-out. Many of these are dependent on a previous item in the submenu. The appropriate setting in the governing item will activate the grayed-out items below to configure the governing item's selected option. There are also some submenu items that lead to subsections of the submenu.

Menu Subsections

The Standard CMOS Features and PnP/PCI Configurations both have submenu items with manual configuration subsections. They are marked by "Press Enter" in the option field. Highlighting them and pressing the Enter key brings up the subsection. Set resource control to Manual to access the one in PnP/PCI Configurations.

Main Menu Item Pointers

These are a few pointers on the main menu items.

Standard CMOS Features

Set the system Date and Time here. You can manually configure IDE devices in submenu sections by device position. The floppy Drive A: is set to 1.44MB by default.

Advanced BIOS Features

Set BIOS-level anti-virus feature. Set the POST to run quickly. Change the boot order and device here. You can set the first, second and third device the system will try to boot from among a selection of nine boot device options. Set the Security Option based on passwords you have entered. OS/2 memory setting if you are running OS/2.

Advanced Chipset Features

We recommend not changing the defaults. You can adjust the AGP aperture size.

Integrated Peripherals

Change I/O port configurations here. If you need more IRQs, disable unused ports here.

You can disable the SiS 630 OnChip PCI devices including the onboard audio, network interface and soft modem support from here. You can also disable the USB controller if you're not using it. Enable USB Keyboard Support to use one.

Set Game and MIDI port addresses here. Enable LAN Boot ROM feature from here.

The video display shared memory setting is in this section. The default setting is for 8MB. The setting range is from 2MB to 64MB. You can increase video display memory to allow higher resolution and color settings.

Power Management Setup

Enable ACPI and or customize settings here. You set power management options for any OS that doesn't support OS power management here. You can also configure Power Management Wake Up events and set the system to wake-up at a specific time and/or date.

The item options for setting up power management for non-ACPI compliant Operating Systems are explained below.

ACPI function

Default: Enabled

When Enabled, an ACPI OS controls power management. Disabled allows manual settings.

Video Off Option

Default: Susp,Stby - > Off

Sets in which modes the display gets turned off. The default is Suspend and Standby modes.

Video Off Method

Default: DPMS

This determines the manner in which the monitor is blanked.

V/H SYNC+ Blank: This selection will cause the system to turn off the vertical and horizontal sync. ports and write blanks to the video buffer.

Blank: This option only writes blanks to the screen video buffer.

DPMS: Initial display power management signaling so that OS can control the display.

MODEM Use IRQ

Default: 3

This item tells the system which IRQ the modem is using.

The choices are: 3,4,5,7,9, 10,11,N/A.

HDD Off After

Default: Disable

You can set any IDE hard disk drive to turn off after a set period of system inactivity, measured in minutes, up to 15 minutes. All other devices remain active.

IRQ Settings

We suggest leaving these set to the default settings.

Power Button Override

Default: Instant-off

Under ACPI, the system can be turned off mechanically (by the power button) or it can use a software power off.

This item allows you to define a software power off using the power button. If the value is set to Instant-Off, the power button will automatically cause a software power off. If the value is set to Delay 4 Sec the power button must be held down for a full four seconds to cause a software power off. If the system has been turned off by software, the system can be resumed by a LAN, Modem or Alarm wake up signal.

Power Up Controls

Default: Enabled

In Suspend mode, the system will wake up if an installed modem receives a ring signal from the telephone line, or if there is a Power Management Event in the MAC or on the PCI bus. You shouldn't need to change these settings.

Power Up by Alarm

Default: Disabled

When this is Enabled, the two lines below it will become active. Date (of Month) Alarm and Time (hh:mm:ss) Alarm allow you to set the date and/or time when the system will wake up.

PnP/PCI Configurations

We recommend not changing the defaults. The VGA IRQ item auto-assigns an IRQ for both the onboard and a PCI display card that requires an one (most don't).

PC Health Status

You can set the CPU warning and shutdown temperatures here or use the defaults.

Frequency/Voltage Control

Normal use requires no changes to the defaults. You set some options manually, but we don't recommend changing these settings unless you know what you are doing. Some settings could result in shortening the life of or damaging the CPU and could lead to CPU failure.

Setting a Password

You can install a system Password. The password prevents access to the CMOS Setup Utility.

To install a Password, follow these steps:

1. Highlight the Set Password item in the main menu and press Enter.
 2. The password dialog box will appear.
 3. If you are entering a new password, carefully type in the password. You cannot use more than eight characters or numbers. Passwords are case-sensitive. Press Enter after you have typed in the password. If you are deleting a password that is already installed just press Enter when the password dialog box appears.
 4. The system will ask you to confirm the new password by asking you to type it in a second time. Carefully type the password again and press Enter, or just press Enter if you are deleting a password that is already installed.
 5. If you have used the correct format, the password will be installed.
- If you decide not to set a password after bringing up the password entry window, press the Enter key, not Esc to exit the password entry window.

Troubleshooting & Technical Summary

This chapter has two sections, Troubleshooting and a Technical Summary. The troubleshooting section covers some basic things you can do in the event that you encounter problems using the motherboard in your system. The Technical Summary is a compilation of the motherboard's configuration specifications to serve as a quick reference for experienced Users who just want to look at a summary of the set-up information presented in greater detail in the manual.

What's In This Chapter:

Troubleshooting
Technical
Summary

Troubleshooting

This section has three parts, General Troubleshooting, Support Software Problems and Battery Replacement.

General Troubleshooting

Once the motherboard is properly configured and installed in a system, it should work without trouble. If the board does operate properly when you first try to use it in the system, it is likely that it is either incorrectly configured or there are connection problems. You always check the most basic possibilities first to troubleshoot a problem. Check the following:

- Make sure the computer and monitor are plugged in and turned on.
- Check all external connections including monitor, keyboard and mouse and ensure they are properly connected.

If there is still a problem check the following:

- Run the CMOS Setup Utility, load the Optimized Defaults, save and exit to restart the computer. If there's still a problem:
- Turn off and unplug the computer.
- Press the installed DIMMs into the sockets to make sure they're fully seated.
- Make sure the CPU is correctly installed.
- Check all hardware configuration settings on the motherboard and ensure they are correct.
- Make sure you use the right cables to connect internal peripherals and that the peripherals are correctly connected. Pay particular attention to the Master/Slave positions on IDE cables. If you have installed a UDMA66 device, make sure you have connected it to the motherboard with an UDMA66-compliant cable to ensure maximum performance.
- Make sure any expansion cards are correctly installed and fully seated in the PCI slots.
- Reassemble the system and try again.

If the problem persists after you have done all of the things above, consult your vendor.

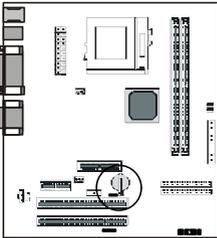
Support Software Problems

There is a variety of software on the Support Disk. If you install the wrong software, the motherboard and the system may not operate properly.

Make sure you check the following:

- **VGA driver:** You must install the correct driver for the operating System you are using.
- **Audio driver:** Check that you have installed the correct driver. Do not install anything from the Audio section of the main menu. Only install from the Audio Driver section of the SiS 630 driver software.

Battery Replacement



This motherboard uses a CR2032 Lithium coin battery to maintain the system configuration record created by the BIOS CMOS Setup Utility. The battery should last for several years. If the battery fails, the system will not be able to retain the system settings and will not operate properly. If this happens, do as follows:

- Turn off and unplug the system.
- Open the system and locate the battery on the motherboard.
- Remove the old battery and dispose of it properly.
- Install the replacement battery with the positive side (marked with a + sign) face up.
- Reassemble the system and reload the Optimized Defaults in the CMOS Setup Utility.

Technical Summary

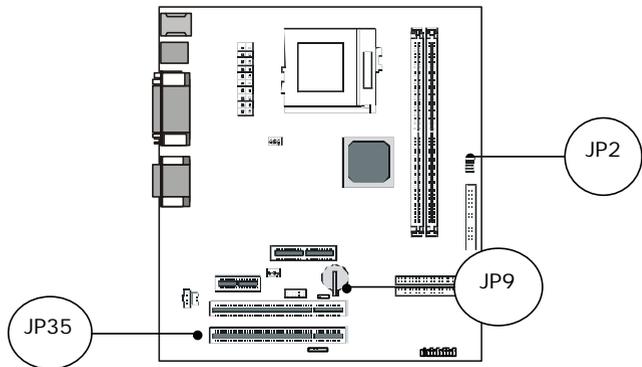
This section combines the setup specifications in the manual in one place for quick reference.

Jumper Settings

These are the settings for this motherboard.

Jumper Setting Summary						
JP2 – CPU External Clock/Memory Clock						
CPU/DIMM	66/66	66/100	100/100	100/133	133/100	133/133
1-2	Short	Short	Open	Open	Open	Open
3-4	Short	Short	Short	Short	Open	Open
5-6	Short	Short	Short	Open	Short	Open
7-8	Open	Short	Short	Short	Short	Short
JP9 – Clear CMOS						
Setting	Function					
1-2	Clear CMOS					
2-3	Normal					
JP35 – Audio select						
Setting	Function					
1-2	Onboard Audio Enable					
2-3	Onboard Audio disable					

Default settings are in **bold**



CPU Options

This motherboard can use any Intel PPGA or FC-PGA Socket 370 CPU running at speeds from 300MHz to 733MHz. The external clock frequency is automatically detected in the default hardware configuration. Frequency controls are in the Frequency/Voltage Control Section of the BIOS CMOS Setup Utility.

System Memory Specification

This motherboard uses 3.3V unbuffered SDRAM 168-pin DIMMs with SPD. It requires at least PC100 SDRAM modules. It can also use PC133 DIMMs. The system will autodetect the DIMM clock.