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# CA64-SC CA64-SU

**Rev. AA+**  
**System Board**  
**User's Manual**

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### **Caution:**

Danger of explosion if battery incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the battery manufacturer's instructions.

## FCC and DOC Statement on Class B

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 when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, 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 into 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.

### Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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## Read Me First

This page contains a summary of the important notes that must be given special attention to prior to using the system board.

### AGP Pro Slot

The system board is equipped with a universal AGP Pro slot that supports 2x/4x AGP or AGP Pro add-in card. If you are using 2x/4x AGP add-in card, make sure you install the card between the 20-pin and 28-pin bays of the slot. Installing it incorrectly may damage the card or the system board. AGP Pro add-in cards, on the other hand, will fit into the AGP Pro slot in only one orientation thus preventing you from installing the add-in card incorrectly.

### Processor

- The frequency ratio of some processors may have been locked by the manufacturer. If you are using this kind of processor, setting an extended ratio for the processor will have no effect. The system will instead use its factory default ratio.
- The frequency ratio of processors greater than 8x has been locked by the manufacturer and will no longer have the flexibility of using extended ratios. Therefore, the system will use the processor's factory default ratio.
- Selecting an external bus clock other than 66MHz, 100MHz or 133MHz may result to the processor's or system's instability and are not guaranteed to provide better system performance.

### System Memory

The system board supports both VCM and PC SDRAM DIMMs. If you are using more than one DIMM, make sure you insert the same type of DIMMs into the DIMM sockets. Using different types (VCM or PC SDRAM) of DIMMs may cause problems.

### 5VSB Power

- If you are using the (1) Wake-On-LAN and/or (2) Wake-On-Ring (internal modem) functions, the 5VSB power source of your power supply must support  $\geq 720\text{mA}$ .
- If you are using the Suspend to RAM function, the 5VSB power source of your power supply must support  $\geq 1\text{A}$ .

### Drivers

Make sure to reboot the system after each driver installation. Problems will occur if you reboot only after installing all the drivers.

# Chapter I - Introduction

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## I.1 Features and Specifications

### I.1.1 Features

#### Chipset

- VIA® 82C694X/82C686A AGPset

#### Processor

The system board is equipped with Socket 370. It is also equipped with a switching voltage regulator that automatically detects 1.30V to 3.5V.

- Pentium® III FCPGA 133MHz FSB (533EB-933EB) or 100MHz FSB (500E-850E) processor
- Celeron™ 66MHz FSB: FCPGA (566MHz-700MHz) or PPGA (300A-533MHz) processor
- Future VIA CyrixIII processor

#### System Memory

- Up to 1GB using VCM (Virtual Channel Memory) or PC SDRAM DIMM (unbuffered or registered)
- Three 168-pin DIMM sockets
- Uses x64 or x72 PC SDRAM, 3.3V
  - PC-66 SDRAM DIMM for 66MHz FSB processors
  - PC-100 SDRAM DIMM for 100/66MHz FSB processors
  - PC-133 SDRAM DIMM for 133MHz FSB processors
- ECC supported (uses x72 PC SDRAM DIMM)



#### **Note:**

*If you are using more than one DIMM, make sure you insert the same type of DIMMs into the DIMM sockets. Using different types (VCM or PC SDRAM) of DIMMs may cause problems.*

DIMMs	Memory Size	DIMMs	Memory Size
2MBx64/x72	16MB	16MBx64/x72	128MB
4MBx64/x72	32MB	32MBx64/x72	256MB
8MBx64/x72	64MB	64MBx64/x72	512MB

### Expansion Slots

The system board is equipped with 1 universal AGP Pro slot. AGP Pro is an extension to the existing AGP slot. It delivers additional electrical power on both ends of the slot to meet the needs of advanced workstation graphics add-in cards. The universal AGP Pro slot supports AGP 2x with up to 533MB/sec. bandwidth and AGP 4x with up to 1066MB/sec. bandwidth, allowing you to install either an AGP add-in card or an AGP Pro add-in card. AGP in this system board will deliver faster and better graphics to your PC.

The system board is also equipped with 4 dedicated PCI slots, 1 shared PCI/ISA slot and 1 AMR slot. AMR (Audio/Modem Riser) is an interface designed for installing an audio riser card, modem riser card or audio/modem riser card that is compliant to the AMR specification.



#### **Important:**

*The CA64-SU system board only supports primary modem riser card.*

### Onboard Audio Features (CA64-SC only)

- Supports Microsoft® DirectSound/DirectSound 3D
- AC'97 supported with full duplex, independent sample rate converter for audio recording and playback

### Onboard PCI Audio Features - Creative ES1373 (CA64-SU only)

- Supports Microsoft® DirectSound /DirectSound 3D / DirectMusic SW acceleration
- 64 voice wavetable synthesizer
- Hardware SoundBlaster Pro for Windows DOS Box and standard Microsoft Windows Sound 2.0
- Digital I/O compatible with consumer mode (SPDIF)
- Downloadable sound (DLS) level-1

### ATX Double Deck Ports (PC 99 color-coded connectors)

- Two USB ports
- Two NS16C550A-compatible DB-9 serial ports
- One SPP/ECP/EPP DB-25 parallel port
- One mini-DIN-6 PS/2 mouse port
- One mini-DIN-6 PS/2 keyboard port
- One game/MIDI port
- Three audio jacks: speaker-out (CA64-SU) or line-out (CA64-SC), line-in and mic-in

### Connectors

- One connector for 2 additional external USB ports
- One connector for IrDA interface
- Two IDE connectors
- One floppy drive interface supports up to two 2.88MB floppy drives
- One 20-pin ATX power supply connector
- One Wake-On-LAN connector
- One Wake-On-Ring connector
- CPU, chassis and second fan connectors
- Three internal audio connectors (AUX-in, CD-in and TAD)

### PCI Bus Master IDE Controller

- Two PCI IDE interfaces support up to four IDE devices
- Supports ATA/33 or ATA/66 hard drives
- PIO Mode 3 and Mode 4 Enhanced IDE (data transfer rate up to 16.6MB/sec.)
- Bus mastering reduces CPU utilization during disk transfer
- Supports ATAPI CD-ROM, LS-120 and ZIP

### IrDA Interface

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. It supports peripheral devices that meet the HPSIR and ASKIR standard.

## USB Ports

The system board supports 4 USB ports. Two onboard USB ports are located at the ATX double deck ports of the board. The J18 connector on the system board allows you to connect the optional 3rd and 4th USB ports. These optional USB ports, which are mounted on a card-edge bracket, will be provided as an option. USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

## BIOS

- Award BIOS, Windows® 95/98/2000 Plug and Play compatible
- Supports SCSI sequential boot-up
- Flash EPROM for easy BIOS upgrades
- Supports DMI 2.0 function
- 2Mbit flash memory

## Desktop Management Interface (DMI)

The system board comes with a DMI 2.0 built into the BIOS. The DMI utility in the BIOS automatically records various information about your system configuration and stores these information in the DMI pool, which is a part of the system board's Plug and Play BIOS. DMI, along with the appropriately networked software, is designed to make inventory, maintenance and troubleshooting of computer systems easier. Refer to chapter 4 for instructions on using the DMI utility.

### 1.1.2 System Health Monitor Functions

The system board is capable of monitoring the following “system health” conditions.

- Monitors CPU/system temperature and overheat alarm
- Monitors V<sub>CORE</sub>/3.3V/5V/12V/2.5V voltages and failure alarm
- Monitors CPU/chassis fan speed and failure alarm
- Automatic CPU and chassis fans on/off control
- Read back capability that displays temperature, voltage and fan speed

Refer to the “PC Health Status” section in chapter 3 and the “VIA Hardware Monitor” section in chapter 4 for more information.

### 1.1.3 Intelligence

#### Automatic CPU/Chassis Fan Off

The CPU and chassis fans will automatically turn off once the system enters the Suspend mode.

#### Dual Function Power Button

Depending on the setting in the “Soft-Off By PWRBTN” field of the Power Management Setup, this switch will allow the system to enter the Soft-Off or Suspend mode.

#### Wake-On-Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming through an internal or external modem. Refer to “Wake-On-Ring Connector” in chapter 2 and “Resume On LAN/Ring” (“Wake Up Events” field) in the Power Management Setup section in chapter 3 for more information.



**Important:**

*If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of  $\geq 720\text{mA}$ .*

#### RTC Timer to Power-on the System

The RTC installed on the system board allows your system to automatically power-on on the set date and time. Refer to “Resume On Alarm” (“Wake Up Events” field) in the Power Management Setup section in chapter 3 for more information.

#### Wake-On-LAN

The Wake-On-LAN function allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. Your LAN card must support the remote wakeup function. Refer to “Wake-On-LAN Connector” in chapter 2 and “Resume On LAN/Ring” (“Wake Up Events” field) in the Power Management Setup section in chapter 3 for more information.



**Important:**

*The 5VSB power source of your power supply must support a minimum of  $\geq 720\text{mA}$ .*

## AC Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually, let the system power-on automatically or return to the state where you left off before power failure occurs. Refer to “PWR Lost Resume State” in the Power Management Setup section in chapter 3 for more information.

## ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. Currently, only Windows® 98/2000 supports the ACPI function allowing you to use the **Suspend to RAM** function.

**With the Suspend to RAM function enabled**, you can power-off the system at once by pressing the power button or selecting “Standby” when you shut down Windows® 98/2000 without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system. **Refer to “Using the Suspend to RAM Function” in appendix A for more information.**



### **Important:**

*The 5VSB power source of your power supply must support  $\geq 1A$ .*

## Virus Protection

Most viruses today destroy data stored in hard drives. The system board is designed to protect the boot sector and partition table of your hard disk drive.

## I.2 Package Checklist

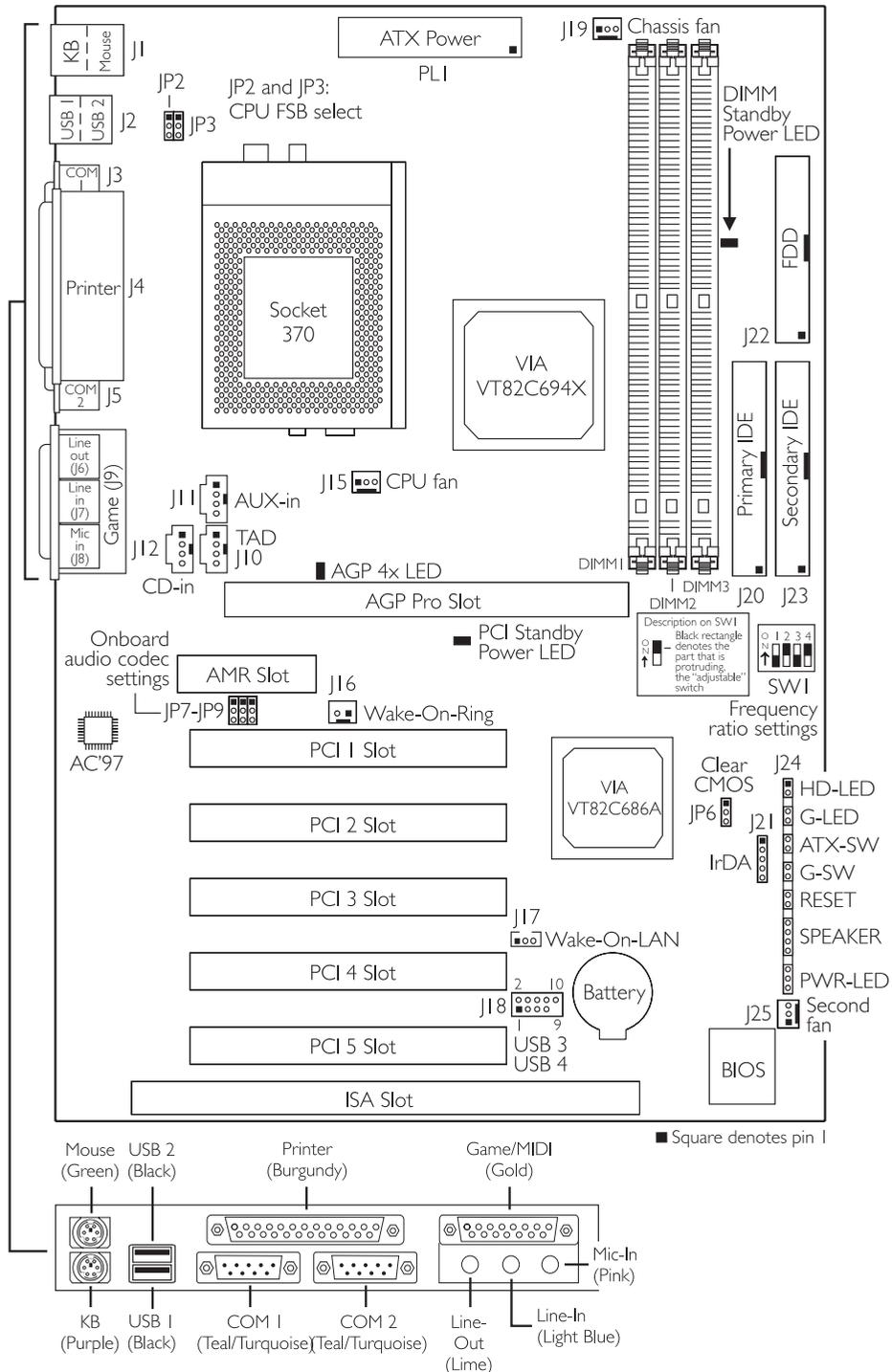
The system board package contains the following items:

- The system board
- A user's manual
- One IDE cable for ATA/33 or ATA/66 IDE drives
- One 34-pin floppy disk drive cable
- One "Main Board Utility" CD

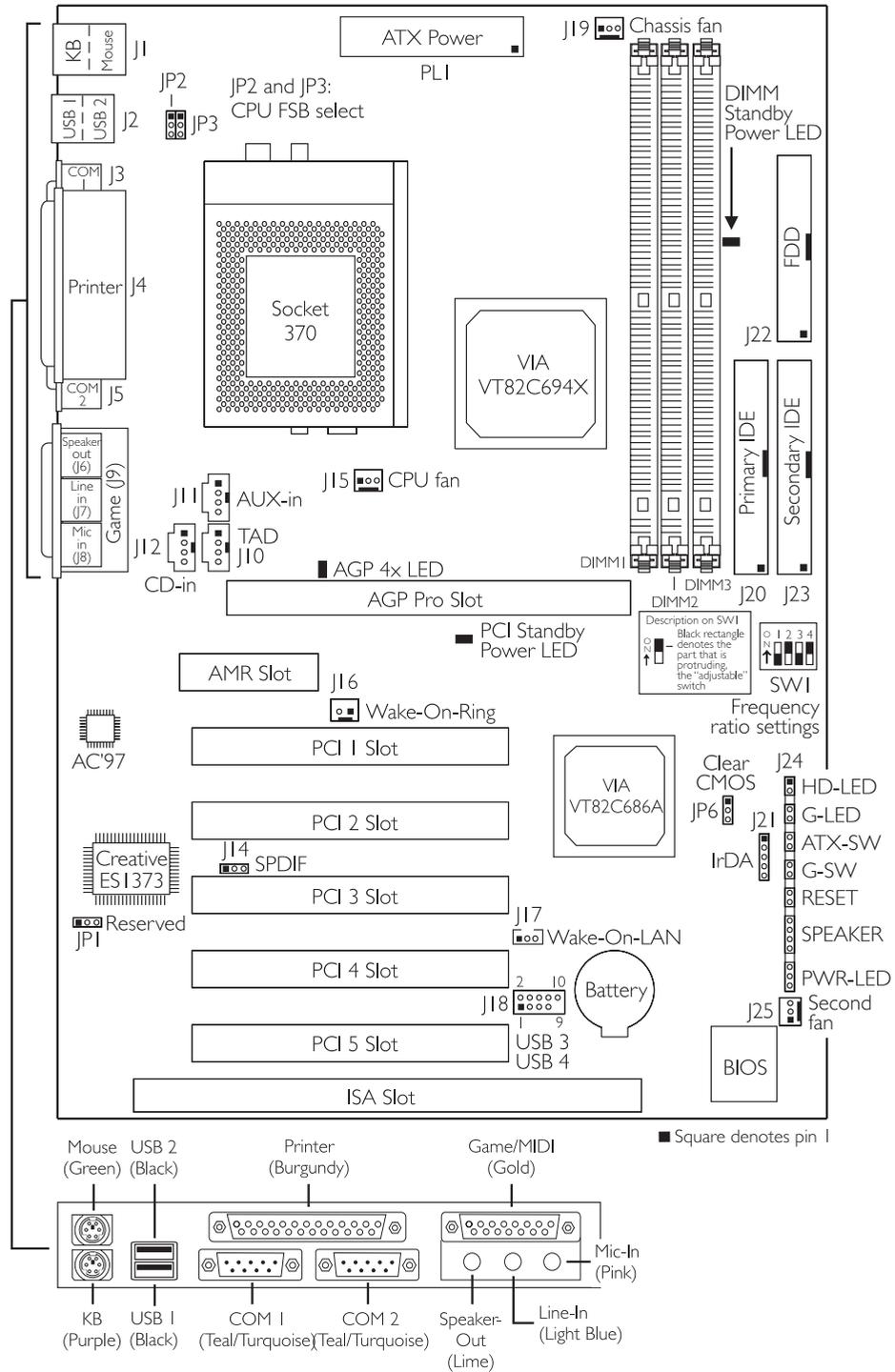
If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

# Chapter 2 - Hardware Installation

## 2.1 System Board Layout



CA64-SC



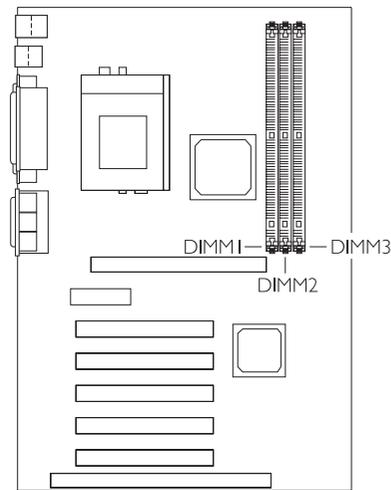
CA64-SU

**Warning:**

*Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.*

## 2.2 System Memory

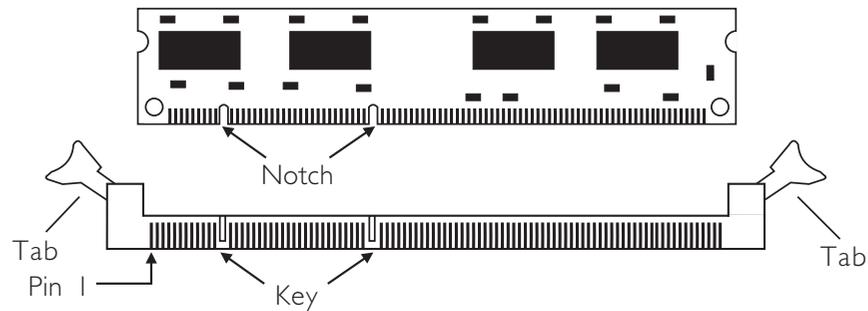
The system board is equipped with three 168-pin DIMM (Dual In-line Memory Module) sockets that support VCM or PC SDRAM DIMM. PC SDRAM (Synchronous Dynamic Random Access Memory) uses a fast memory interface technology that includes using the clock on the chip to synchronize with the CPU clock so that the timing of the memory chips and the timing of the CPU are synchronized. This saves time during transmission of data, subsequently increasing system performance.



The system board also supports the ECC (Error Checking and Correction) function. To use this function, you must install DIMM that supports parity. Refer to chapter 1 (System Memory section) for detailed specification of the memory supported by the system board.

## 2.2.1 Installing the DIM Module

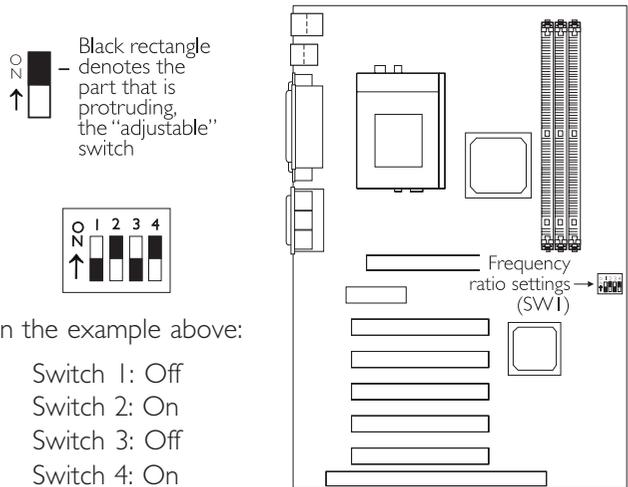
A DIM module simply snaps into a DIMM socket on the system board. Pin 1 of the DIM module must correspond with Pin 1 of the socket.



1. Pull the “tabs” which are at the ends of the socket to the side.
2. Position the DIMM above the socket with the “notches” in the module aligned with the “keys” on the socket.
3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

### 2.3 Frequency Ratio Settings for Processors

The following table shows the available frequency ratios and their corresponding DIP switch setting. There are 4 switches on SW1. The black rectangle in the diagram denotes the part that is protruding, the “adjustable” switch. Make sure SW1 is set correctly before applying power, otherwise you will not be able to power-on the system.



Processor			Freq. Ratio	SW1	Processor			Freq. Ratio	SW1
66MHz	100MHz	133MHz			66MHz	100MHz	133MHz		
---	---	533MHz	4x		433MHz	650MHz	866MHz	6.5x	
300MHz 300MHz	---	600MHz	4.5x		466MHz	700MHz	933MHz*	7x	
333MHz	500MHz	667MHz	5x		500MHz	750MHz	1GHz*	7.5x	
366MHz	550MHz	733MHz	5.5x		533MHz	800MHz	1.067GHz*	8x	
400MHz	600MHz	800MHz	6x						

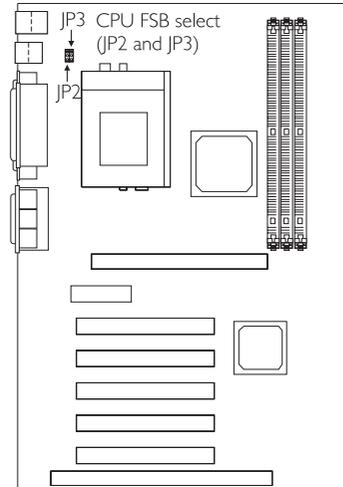
**Important:**

- The frequency ratio of some processors shown in the table may have been locked by the manufacturer. If you are using this kind of processor, setting an extended ratio for the processor will have no effect. The system will instead use its factory default ratio.
- The frequency ratio of processors greater than 8x has been locked by the manufacturer and will no longer have the flexibility of using extended ratios. Therefore, the system will use the processor's factory default ratio.
- At the time this document was printed, the CPUs marked with asterisk (\*) are not yet available. They are included in the table for reference only.
- The processors supported by the system board support VID (Voltage Identification). The switching voltage regulator on the system board will automatically set the voltage regulator according to the voltage of the processor.

## 2.4 Jumper Settings for Selecting the CPU's Front Side Bus

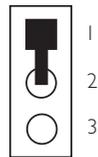
### CPU Front Side Bus Select - Jumpers JP2 and JP3

These jumpers are used to select the front side bus of the processor installed on the system board. The default setting is Auto - the system will automatically run according to the FSB of the processor.

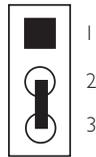


	JP2	JP3
Auto*	1-2 On	1-2 On
66MHz	2-3 On	2-3 On
100MHz	All Off	2-3 On
133MHz	All Off	All Off

“\*” denotes default setting



1-2 On



2-3 On



All Off



### **Warning:**

Some processors, when overclocked, may result to the processor's or system's instability and are not guaranteed to provide better system performance. If you are unable to boot your system due to overclocking, make sure to set these jumpers back to their default settings.

## 2.5 Jumper Settings for Clearing CMOS Data

### Clear CMOS Data - Jumper JP6

If you encounter the following,

- a) *CMOS data becomes corrupted.*
- b) *You forgot the supervisor or user password.*
- c) *You are unable to boot-up the computer system because the processor's bus clock was incorrectly set in the BIOS.*

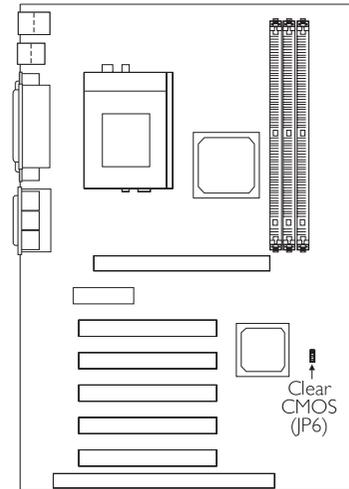
you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

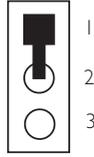
1. Power-off the system and unplug the power cord.
2. Set JP6 pins 2 and 3 to On. Wait for a few seconds and set JP6 back to its default setting, pins 1 and 2 On.
3. Plug the power cord and power-on the system.

If your reason for clearing the CMOS data is due to incorrect setting of the processor's bus clock in the BIOS, please proceed to step 4.

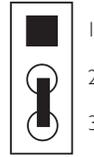
4. After powering-on the system, press <Del> to enter the main menu of the BIOS.
5. Select the "Frequency/Voltage Control" submenu and press <Enter>.
6. Set the "CPU Host/PCI Clock" field to its default setting or an appropriate bus clock. Refer to "CPU Host/PCI Clock" in the "Frequency/Voltage Control" section in chapter 3 for more information.
7. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" and press <Enter>.



8. Type <Y> and press <Enter>.



1-2 On: Normal  
(default)

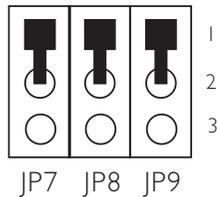
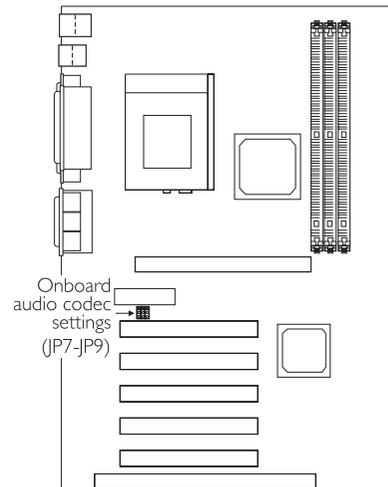


2-3 On:  
Clear CMOS Data

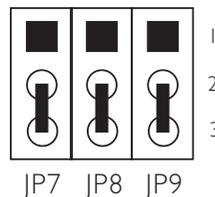
## 2.6 Jumper Settings for the Onboard Audio Codec (CA64-SC only)

### Onboard Audio Codec Settings - Jumpers JP7, JP8 and JP9

The default setting is 1-2 On, the onboard audio codec enabled. If you are not using the onboard audio codec, set these jumpers to 2-3 On - Disabled.



1-2 On:  
Enable the Onboard  
Audio Codec  
(default)



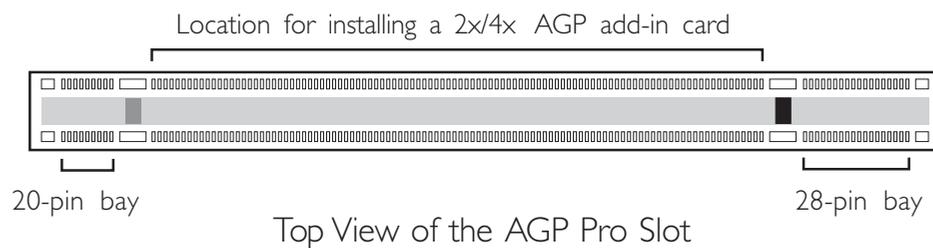
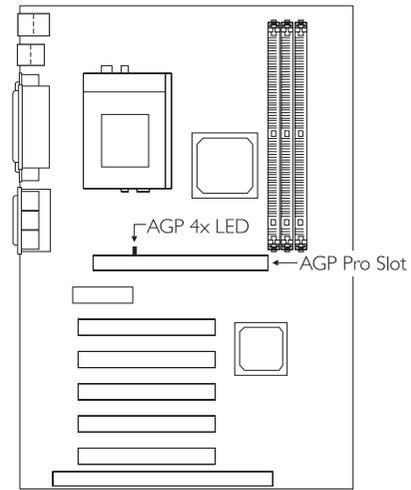
2-3 On:  
Disable the Onboard  
Audio Codec

## 2.7 AGP Pro Slot

The system board is equipped with a universal AGP Pro slot that supports 2x/4x AGP or AGP Pro add-in card. AGP Pro is an extension to the existing AGP slot. It delivers additional electrical power on both ends of the slot to meet the needs of advanced workstation graphics add-in cards.

If you are using 2x/4x AGP add-in card, make sure you install the card between the 20-pin and 28-pin bays of the slot. Installing it incorrectly may damage the card or the system board. AGP Pro add-in cards, on the other hand, will fit into the AGP Pro slot in only one orientation thus preventing you from installing the add-in card incorrectly. Align the add-in card above the slot and push it down firmly with even pressure on both sides of the top, until it is completely seated.

The AGP 4x LED will light only when the AGP Pro slot is installed with a 4x add-in card.

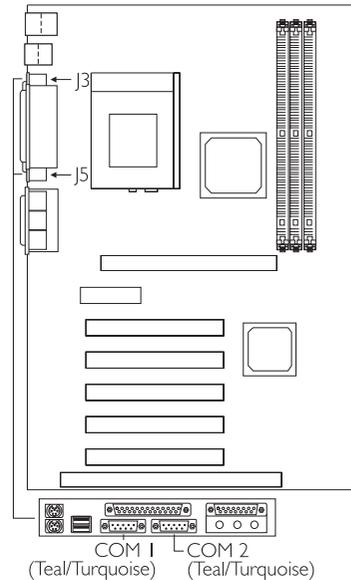


## 2.8 Ports and Connectors

### 2.8.1 Serial Ports

The system board is equipped with onboard serial ports (COM 1: J3 and COM 2: J5) - both in Teal/Turquoise color located at the ATX double deck ports of the board.

These ports are RS-232C asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices. You can set the serial ports' I/O address in the Integrated Peripherals submenu of the BIOS.



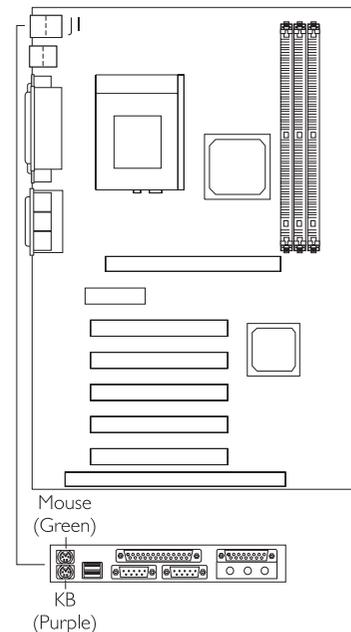
### 2.8.2 PS/2 Mouse and PS/2 Keyboard Ports

The system board is equipped with an onboard PS/2 mouse (Green) and PS/2 keyboard (Purple) ports - both at location J1 of the ATX double deck ports. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.



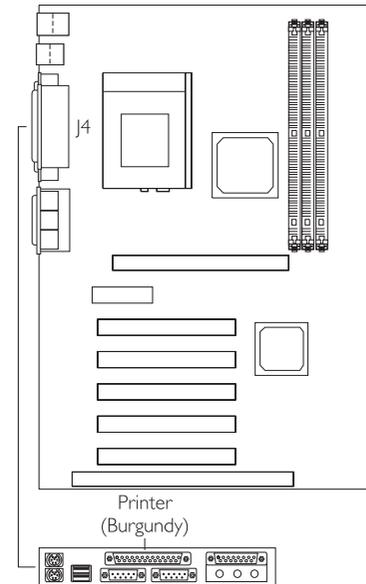
**Warning:**

*Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.*



### 2.8.3 Parallel Port

The system board has a standard printer port (J4 - Burgundy) located at the ATX double deck ports of the board for interfacing your PC to a parallel printer. It supports Normal, ECP and EPP modes. You can set the port's mode in the Integrated Peripherals submenu of the BIOS.



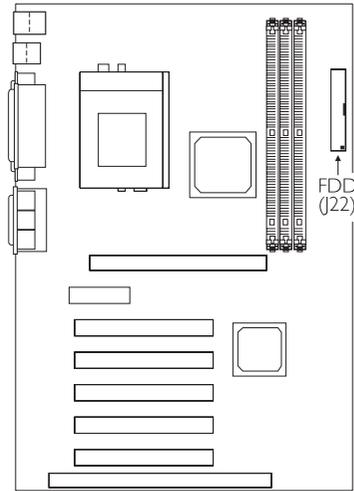
Setting	Function
Normal	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel port operation at maximum speed.

### 2.8.4 Floppy Disk Drive Connector

The system board is equipped with a shrouded floppy disk drive connector that supports two standard floppy disk drives. To prevent improper floppy cable installation, the shrouded floppy disk header has a keying mechanism. The 34-pin connector on the floppy cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header. You may enable or disable this function in the Integrated Peripherals submenu of the BIOS.

### Connecting the Floppy Disk Drive Cable

1. Install the 34-pin header connector into the shrouded floppy disk header (J22) on the system board. The colored edge of the ribbon should be aligned with pin 1 of J22.
2. Install the other 34-pin header connector into the disk drive(s). Align the colored edge of the daisy chained ribbon cable with pin 1 of the drive edge connector(s). The end-most connector should be attached to the drive you want to designate as Drive A.

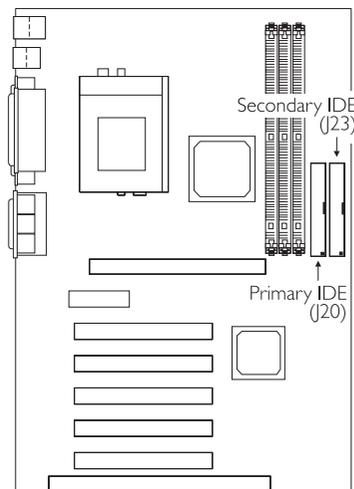


### 2.8.5 IDE Disk Drive Connector

The system board is equipped with two shrouded PCI IDE headers that will interface four Enhanced IDE (Integrated Drive Electronics) disk drives. To prevent improper IDE cable installation, each shrouded PCI IDE header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

#### Connecting the IDE Disk Drive Cable

1. If you are connecting two IDE disk drives, install the 40-pin connector of the IDE cable into the primary shrouded IDE header (J20). If you are adding a third or fourth IDE device, install the 40-pin connector of the other IDE cable into the secondary shrouded IDE header (J23).



2. Install the other 40-pin header connector(s) into the device with the colored edge of the ribbon cable aligned with pin 1 of the drive edge connector(s).

**Note:**

*Refer to your disk drive user's manual for information about selecting proper drive switch settings.*

## Adding a Second IDE Disk Drive

When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.

The system board supports Enhanced IDE or ATA-2, ATA/33 or ATA/66 hard drives. We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.

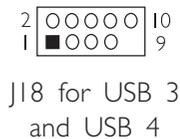
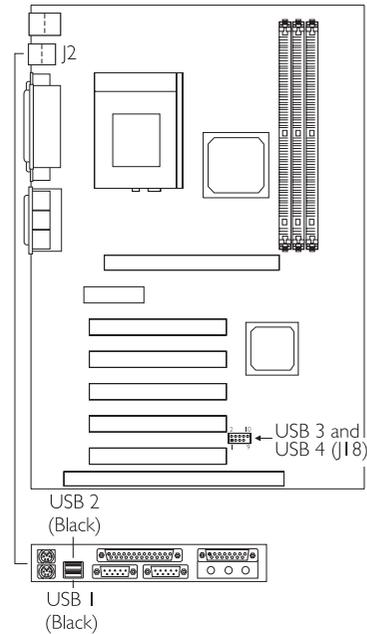
**Important:**

*If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.*

## 2.8.6 Universal Serial Bus Ports

The system board supports 4 USB ports. USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals. You must have the proper drivers installed in your operating system to use the USB ports. Refer to your operating system's manual or documentation.

Two onboard USB ports (J2 - Black) are located at the ATX double deck ports of the board. The J18 connector on the system board allows you to connect the optional 3rd and 4th USB ports. These optional USB ports, which are mounted on a card-edge bracket, will be provided as an option. If you wish to use the optional 3rd and 4th USB ports, install the card-edge bracket to the system chassis then insert the connector that is attached to the USB port cables to J18. The USB ports' cable connector can be inserted only if pin 1 of the cable is aligned with pin 1 of J18.

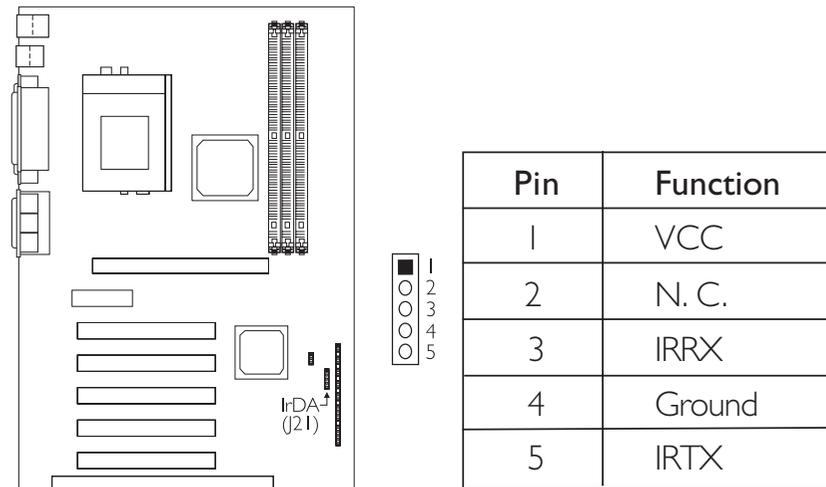


Pin	Function	Pin	Function
1	VCC	2	VCC
3	-Data	4	-Data
5	+Data	6	+Data
7	Ground	8	Ground
9	Key	10	Ground

## 2.8.7 IrDA Connector

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter.

Connect your IrDA cable to connector J21 on the system board. Set “UART 2 Mode” in the Integrated Peripherals submenu of the BIOS to the type of IrDA standard supported by your device. You must have the proper drivers installed in your operating system to use this connector. Refer to your operating system’s manual or documentation.

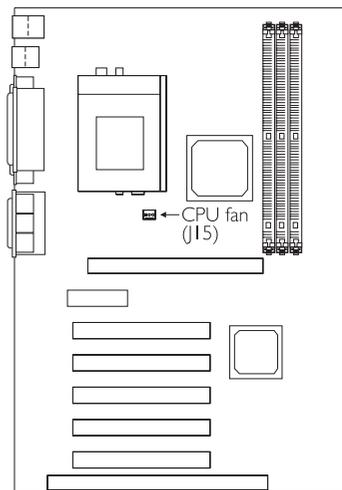


**Note:**

*The sequence of the pin functions on some IrDA cable may be reversed from the pin function defined on the system board. Make sure to connect the cable to the IrDA connector according to their pin functions.*

### 2.8.8 CPU Fan Connector

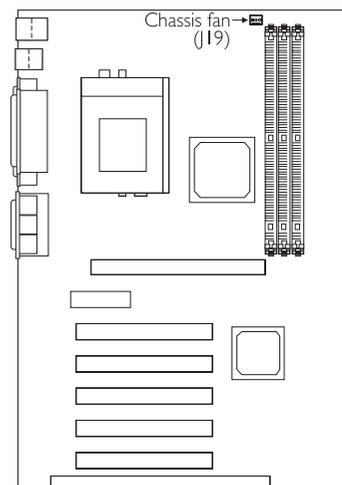
The processor must be kept cool by using a fan with heatsink. Connect the CPU fan to the 3-pin fan connector at location J15 on the system board. The system is capable of monitoring and controlling the speed of the CPU fan. The CPU fan, together with the chassis fan, will automatically turn off once the system enters the Suspend mode.



Pin	Function
1	On/Off
2	+12V
3	Sense

### 2.8.9 Chassis Fan Connector

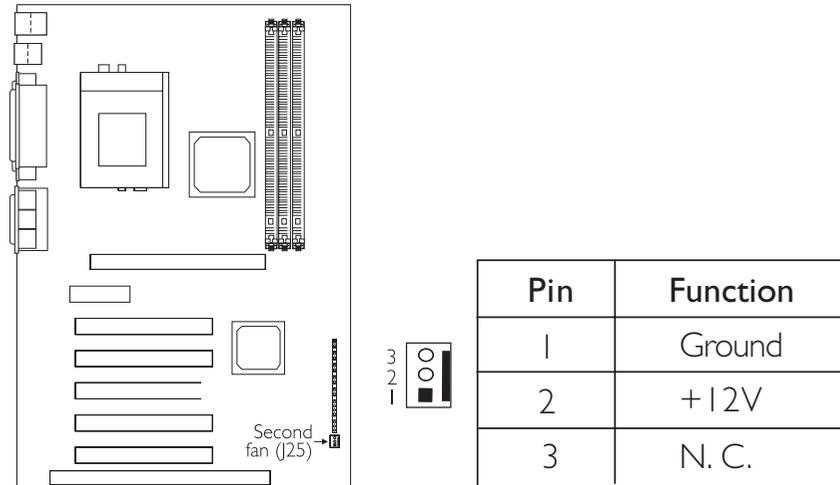
If you are installing a chassis fan in the system unit, connect the fan's connector to location J19 on the system board. The fan will provide adequate airflow throughout the chassis to prevent overheating the processor. The system is capable of monitoring and controlling the speed of the chassis fan. The chassis fan, together with the CPU fan, will automatically turn off once the system enters the Suspend mode.



Pin	Function
1	On/Off
2	+12V
3	Sense

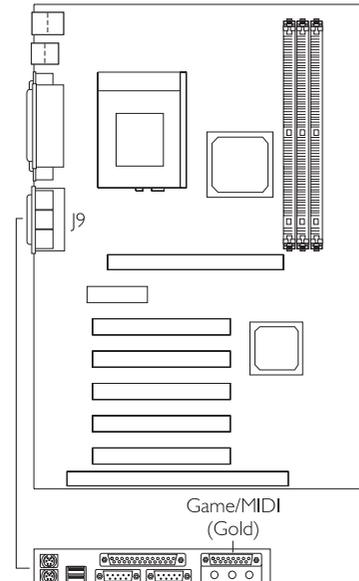
### 2.8.10 Second Fan Connector

If you are installing a second fan in the system unit, connect the fan's connector to location J25 on the system board.



### 2.8.11 Game/MIDI Port

The Game/MIDI port is identical to that of a standard PC game adapter or game I/O port. Connect an analog joystick to the 15-pin D-sub connector (J9 - Gold) located at the ATX double deck ports of the system board. This port works well with any application that is compatible with the standard PC joystick.



### 2.8.12 Audio Jacks

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

#### Speaker-out Jack (J6 - Lime) - CA64-SU only

This amplified jack is used to connect external speakers.

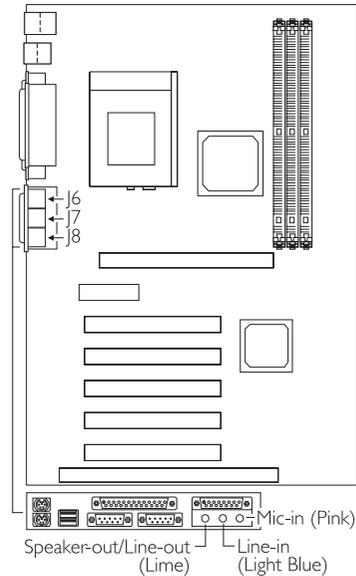
#### Line-out Jack (J6 - Lime) - CA64-SC only

This jack is used to connect external amplifier speakers.



#### Note:

*The speaker-out jack is very similar to the line-out jack except that it is amplified with a power amplifier.*



#### Line-in Jack (J7 - Light Blue)

This jack can be connected to any external audio devices such as Hi-fi set, CD player, AM/FM radio tuner, synthesizer, etc. Connect a stereo cable from the line-out jack of your external device to this line-in jack.

#### Mic-in Jack (J8 - Pink)

Connect a microphone to the mic-in jack.

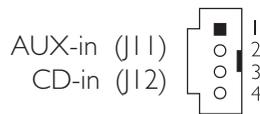
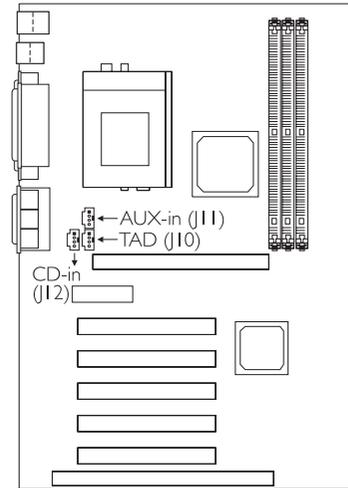
### 2.8.13 Internal Audio Connectors

#### AUX-in and CD-in

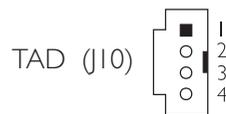
These audio-in connectors are used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

#### TAD

TAD is a connector for telephony audio devices such as voice modem cards. By installing a PCI voice modem card that is also equipped with a TAD connector, connect one end of the cable (that came with the card) to the card's TAD connector and the other end to the TAD connector on the system board. The voice modem will interface with the onboard audio allowing voice to come from the external speaker.



Pin	Function
1	Left audio channel
2	Ground
3	Ground
4	Right audio channel



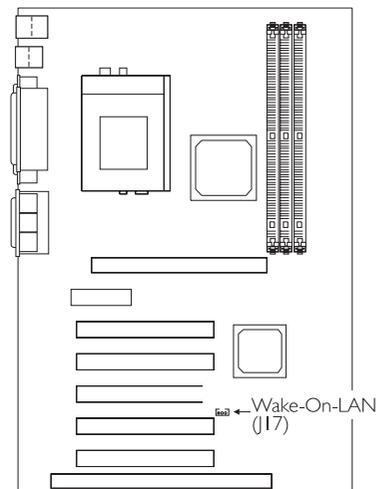
Pin	Function
1	Modem-out (from modem)
2	Ground
3	Ground
4	Modem-in (to modem)

### 2.8.14 Wake-On-LAN Connector

The Wake-On-LAN connector is used to connect to a LAN card that has the same connector. This function will allow the network to remotely power-on a Soft Power Down (Soft-Off) PC. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

To use the Wake-On-LAN function, you must enable “Resume on LAN/Ring” (“Wake Up Events” field) in the Power Management Setup of the BIOS. Your LAN card package should include a cable. Connect one end of the cable to the wakeup header on the card and the other end to location J17 on the system board. The network will detect Magic Packet and assert a wakeup signal to power-up the system. Refer to the add-in card’s manual for details. Note: Your LAN card must support the remote wake up function.

Pin	Function
1	+5VSB
2	Ground
3	WOL



**Important:**

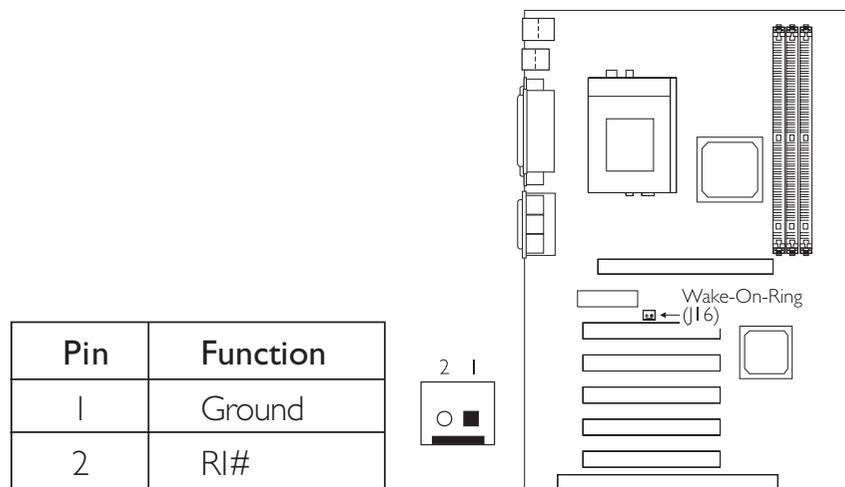
*The 5VSB power source of your power supply must support a minimum of  $\geq 720\text{mA}$ .*

## 2.8.15 Wake-On-Ring Connector

The Wake-On-Ring connector is used to connect to an internal modem card that has the same connector. It will allow the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming through the internal modem card.

To use this function, connect one end of the cable (that came with the card) to the card's wake-on-ring connector and the other end to location J16 on the system board. You must also enable "Resume on LAN/Ring" ("Wake Up Events" field) in the Power Management Setup of the BIOS.

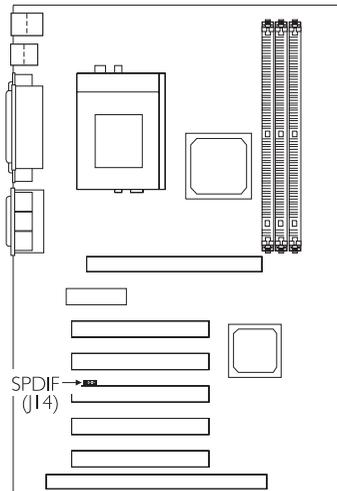
If you are using an external modem, the ring-on function will come through the serial port where the external modem is connected.



### **Important:**

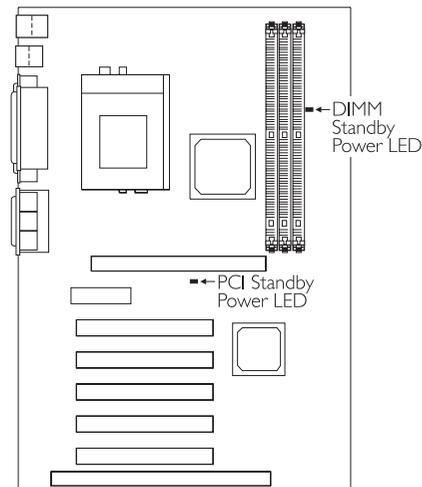
*If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of  $\geq 720\text{mA}$ .*

### 2.8.16 SPDIF Connector (CA64-SU only)



The CA64-SU system board uses the Creative ES1373 PCI audio chip which supports the SPDIF function. SPDIF (Sony/Phillips Digital Interface Format) is a digital audio interface that provides the capability of sending a two-channel digital signal from the computer to a stereo system via the SPDIF connector. Its digital signal prevents the cable from picking up noises thus providing better sound quality. Connect one end of the cable to the SPDIF connector on the system board and the other end to a device that has the SPDIF input connector.

## 2.8.17 DIMM and PCI Standby Power LEDs



### DIMM Standby Power LED

This LED will turn red when the system's power is on or when it is in the Suspend state (Power On Suspend or Suspend to RAM). It will not light when the system is in the Soft-Off state.

### PCI Standby Power LED

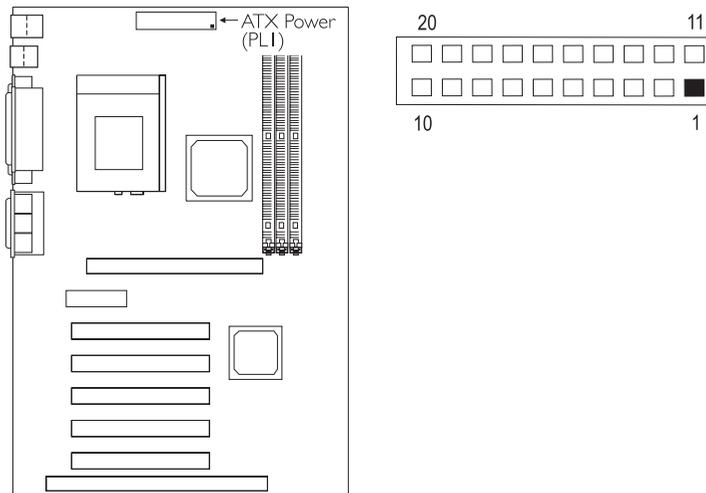
This LED will turn red when the system is in the power-on, Soft-Off or Suspend (Power On Suspend or Suspend to RAM) state.



#### **Important:**

*Lighted LEDs serve as a reminder that you must power-off the system then turn off the power supply's switch or unplug the power cord prior to installing any DIM modules or add-in cards.*

## 2.8.18 Power Connector



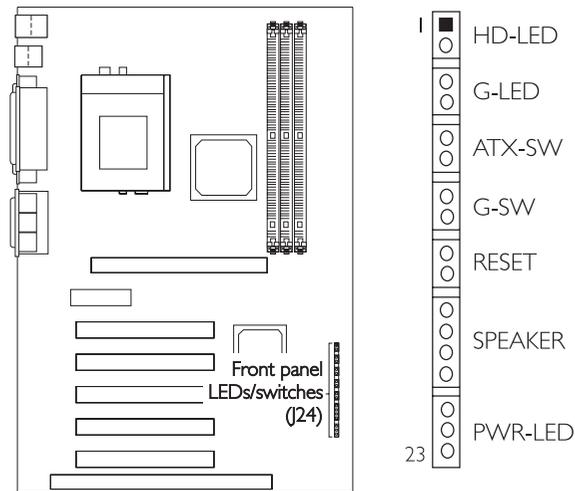
The pin assignment of the ATX power connector is shown below.

Pin	Function	Pin	Function
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	PW-OK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

**Important:**

*The system board requires a minimum of 3.3V/6A electric current.*

## 2.8.19 Front Panel LEDs and Switches



### HD-LED: Primary/Secondary IDE LED

This LED will light when the hard drive is being accessed.

### G-LED: Green LED

This LED will not light when the system's power is on or when the system is in the S3 (STR - Suspend To RAM) state. It will blink every second when the system is in the S1 (POS - Power On Suspend) state.

### ATX-SW: ATX Power Switch

Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode. Refer to "Soft-Off By PWRBTN" in the Power Management Setup (chapter 3).

### G-SW: Green Switch

This switch will allow your system to enter the Suspend mode.

### RESET: Reset Switch

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

### SPEAKER: Speaker Connector

This connects to the speaker installed in the system chassis.

**PWR-LED: Power/Standby LED**

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

**Note:**

*If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.*

	Pin	Pin Assignment
<b>HD-LED</b> (Primary/Secondary IDE LED)	1	HDD LED Power
	2	HDD
	3	N. C.
<b>G-LED</b> (Green LED)	4	Green LED Power
	5	Ground
	6	N. C.
<b>ATX-SW</b> (ATX power switch)	7	PWRBT
	8	Ground
	9	N. C.
<b>G-SW</b> (Green switch)	10	SMI
	11	Ground
	12	N. C.
<b>RESET</b> (Reset switch)	13	H/W Reset
	14	Ground
	15	N. C.
<b>SPEAKER</b> (Speaker connector)	16	Speaker Data
	17	N. C.
	18	Ground
	19	Speaker Power
	20	N. C.
<b>PWR-LED</b> (Power/Standby LED)	21	LED Power (+)
	22	N. C.
	23	LED Power (-) or Standby Signal



CMOS Setup Utility - Copyright (C) 1984-2000 Award Software  
Standard CMOS Features

Date (mm:dd:yy)	Tue, May 23 2000	Item Help
Time (hh:mm:ss)	4 : 35 : 5	Menu Level
IDE Primary Master	Press Enter None	Change the day, month, year and century
IDE Primary Slave	Press Enter None	
IDE Secondary Master	Press Enter None	
IDE Secondary Slave	Press Enter None	
Drive A	1.44M, 3.5 in.	
Drive B	None	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults		

The settings on the screen are for reference only. Your version may not be identical to this one.

## Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

## Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

## IDE Primary Master, IDE Primary Slave, IDE Secondary Master and IDE Secondary Slave

Move the cursor to the "IDE Primary Master", "IDE Primary Slave", "IDE Secondary Master" or "IDE Secondary Slave" field, then press <Enter>.

### IDE HDD Auto Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

### IDE Primary/Secondary Master/Slave

If you wish to define your own drive type manually, select "Manual". The drive type information should be included in the documentation from your hard disk vendor. If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

### Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

### Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select Normal or Large. Please check your operating system's manual or Help desk on which one to select.

## Drive A and Drive B

These fields identify the types of floppy disk drives installed.

<i>None</i>	No floppy drive is installed
<i>360K, 5.25 in.</i>	5-1/4 in. standard drive; 360KB capacity
<i>1.2M, 5.25 in.</i>	5-1/4 in. AT-type high-density drive; 1.2MB capacity
<i>720K, 3.5 in.</i>	3-1/2 in. double-sided drive; 720KB capacity
<i>1.44M, 3.5 in.</i>	3-1/2 in. double-sided drive; 1.44MB capacity
<i>2.88M, 3.5 in.</i>	3-1/2 in. double-sided drive; 2.88MB capacity

## Video

This field selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type. The default setting is EGA/VGA.

<i>EGA/VGA</i>	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA and PGA monitor adapters.
<i>CGA 40</i>	Color Graphics Adapter. Power up in 40-column mode.
<i>CGA 80</i>	Color Graphics Adapter. Power up in 80-column mode.
<i>Mono</i>	Monochrome adapter. Includes high resolution monochrome adapters.

### Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

*No Errors* The system boot will not stop for any errors detected.

*All Errors* The system boot will stop whenever the BIOS detects a non-fatal error.

*All, But Keyboard* The system boot will not stop for a keyboard error; it will stop for all other errors.

*All, But Diskette* The system boot will not stop for a disk error; it will stop for all other errors.

*All, But Disk/Key* The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

### Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

### Extended Memory

Displays the amount of extended memory detected during boot-up.

### Total Memory

Displays the total memory available in the system.

### 3.1.2 Advanced BIOS Features

The Advanced BIOS Features allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software  
Advanced BIOS Features

Virus Warning	Disabled	↑ ↓	Item Help
CPU Internal Cache	Enabled		Menu Level
External Cache	Enabled		Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
CPU L2 Cache ECC Checking	Enabled		
Processor Serial Number	Disabled		
Quick Power On Self Test	Enabled		
First Boot Device	Floppy		
Second Boot Device	HDD-0		
Third Boot Device	LS120		
Boot Other Device	Enabled		
Swap Floppy Drive	Disabled		
Boot Up Floppy Seek	Disabled		
Boot Up NumLock Status	Off		
Gate A20 Option	Fast		
Security Option	Setup		
OS Select For DRAM > 64MB	Non-OS2		
Video BIOS Shadow	Enabled		
C8000-CBFFF Shadow	Disabled		
CC000-CFFFF Shadow	Disabled		
D0000-D3FFF Shadow	Disabled		
D4000-D7FFF Shadow	Disabled		
D8000-DBFFF Shadow	Disabled		
DC000-DFFFF Shadow	Disabled		
		ve ESC:Exit F1:General Help s F7:Optimized Defaults	

The screen above list all the fields available in the Advanced BIOS Features submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

#### Virus Warning

This field protects the boot sector and partition table of your hard disk drive. When this field is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear.

After seeing the error message, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field. Also, disable this field if you are installing or running certain operating

systems like Windows® 95/98/2000 or the operating system may not install nor work.

### CPU Internal Cache and External Cache

These fields speed up the memory access. The default value is enabled. Enable the External Cache for better performance.

### CPU L2 Cache ECC Checking

The processors supported by the system board come with built-in Level 2 cache. By default, ECC is enabled to check the Level 2 cache. If you are not using this function, set this field to Disabled.

### Processor Serial Number

This field will appear only when you are using Intel's Pentium® III or later processor. These processors come with an individual "processor serial number" which by default is activated. Therefore, when connected to the Internet, the processor transmits the serial number online making it possible to track your online activity. This field provides you the option of disabling this function.

### Quick Power On Self Test

This field speeds up Power On Self Test (POST) after you power on the system. When Enabled, the BIOS will shorten or skip some check items during POST.

### First Boot Device, Second Boot Device, Third Boot Device and Boot Other Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set "Boot Other Device" to Enabled if you wish to boot from another device.

### Swap Floppy Drive

When this field is enabled and the system is booting from the floppy drive, the system will boot from drive B instead of drive A. When this field is disabled and the system is booting from the floppy drive, the system will boot from drive A. You must have two floppy drives to use this function.

### Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

### Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### Gate A20 Option

This entry allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 Mbyte. Initially, gate A20 was handled via the keyboard controller. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

### Security Option

This field determines when the system will prompt for the password - everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

- System* The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.
- Setup* The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

### OS Select for DRAM > 64MB

This field allows you to access the memory that is over 64MB in OS/2. The options are: Non-OS2 and OS2.

### Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. Video Shadow will increase the video speed. Note that some graphics boards require that this option be disabled. The default value is Enabled.

*Enabled* Video shadow is enabled.  
*Disabled* Video shadow is disabled.

### C8000-CBFFF Shadow to DC000-DFFFF Shadow

These fields determine whether option ROMs will be copied to RAM.

*Enabled* Optional shadow is enabled.  
*Disabled* Optional shadow is disabled.



### Memory Hole

This field is used to select the memory area that must not be addressed to the ISA bus.

### P2C/C2P Concurrency

When enabled, the PCI/AGP master to CPU cycle will be concurrent whenever the Host CPU is performing R/W access to the PCI or slave devices.

### Fast R-W Turn Around

When enabled, the turn around time of a memory read followed by a memory write is reduced.

### AGP Aperture Size

This field is relevant to the memory-mapped graphics data of the AGP card installed in your system. Leave this in its default setting, which is 64M.

### AGP Fast Write

This function is supported only if this field is set to Enabled.

### OnChip USB

This field is used to enable or disable the onboard USB controller supported by the chipset. If you are using a USB peripheral device, make sure to set this field to Enabled.

### USB Keyboard Support

By default, USB Keyboard Support is Disabled. However, if you are using a USB keyboard under DOS, make sure to enable this function.

### OnChip Modem

Select "Auto" if you are using the onboard modem controller supported by the chipset.

### CPU to PCI Write Buffer

*Enabled* Writes from the CPU to the PCI bus are buffered to offset the speed difference between the CPU and PCI bus.

*Disabled* Writes are not buffered therefore the CPU must wait until the write cycle is complete before starting another write cycle.

### PCI Dynamic Bursting

When enabled, every write transaction goes to the write buffer.

### PCI Master 0 WS Write

When enabled, writes to the PCI bus are executed with zero wait state.

### PCI Delay Transaction

When enabled, this function frees up the PCI bus for other PCI masters during the PCI-to-ISA transactions. This allows PCI and ISA buses to be used more efficiently and prevents degradation of performance on the PCI bus when ISA accesses are made.

### PCI#2 Access #1 Retry

Set this field to Enabled if you want to rotate the priority of the PCI masters.

### AGP Master 1 WS Write

Set this field to Enabled to add one clock tick to AGP write operations.

### AGP Master 1 WS Read

Set this field to Enabled to add one clock tick to AGP read operations.

### Memory Parity/ECC Check

If you are using x72 (72-bit) PC SDRAM DIMMs, which are DIMMs that support the ECC (Error Checking and Correction) function, set this field to Enabled.

### 3.1.4 Integrated Peripherals

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software  
Integrated Peripherals

		Item Help
OnChip IDE Channel0	Enabled	Menu Level
OnChip IDE Channel1	Enabled	
IDE Prefetch Mode	Enabled	
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
Init Display First	PCI Slot	
Onboard Audio Device	Enabled	
IDE HDD Block Mode	Enabled	
Onboard FDD Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART 2 Mode	Standard	
X IR Function Duplex	Half	
X TX,RX Inverting Enable	No, Yes	
Onboard Parallel Port	378/IRQ7	
Onboard Parallel Mode	ECP+EPP	
ECP Mode Use DMA	3	
Parallel Port EPP Type	EPP1.7	
Onboard Legacy Audio	Enabled	
Sound Blaster	Disabled	
SB I/O Base Address	220H	
SB IRQ Select	IRQ 5	
SB DMA Select	DMA 1	
MPU-401	Disabled	
MPU-401 I/O Address	330-333H	
Game Port (200-207H)	Enabled	

ve ESC:Exit F1:General Help  
:s F7:Optimized Defaults

The screen above list all the fields available in the Integrated Peripherals submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

#### OnChip IDE Channel0 and OnChip IDE Channel1

These fields allow you to enable or disable the primary and secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

#### IDE Prefetch Mode

This allows data and addresses to be stored in the internal buffer of the chip, thus reducing access time. Enable this field to achieve better performance.

### IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

*Auto* The BIOS will automatically set the system according to your hard disk drive's timing.

*Mode 0-4* You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

### IDE Primary Master/Slave UDMA and IDE Secondary Master/Slave UDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

*Auto* The BIOS will automatically detect the settings for you.

*Disabled* The BIOS will not detect these categories.

### Init Display First

This field is used to select whether to initialize AGP or PCI first when the system boots.

*AGP* When the system boots, it will first initialize AGP.

*PCI Slot* When the system boots, it will first initialize PCI.

### Onboard Audio Device (CA64-SU only)

This field will appear only when you are using the CA64-SU system board. CA64-SU uses an onboard PCI audio chip (Creative ESI373). By default, this field is enabled. Set this field to Disabled if you wish to install an audio add-in card.

### IDE HDD Block Mode

*Enabled* The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

*Disabled* The IDE HDD uses the standard mode.

### Onboard FDD Controller

*Enabled* Enables the onboard floppy disk controller.

*Disabled* Disables the onboard floppy disk controller.

### Onboard Serial Port 1 and Onboard Serial Port 2

*Auto* The system will automatically select an I/O address for the onboard serial port 1 and serial port 2.

*3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3* Allows you to manually select an I/O address for the onboard serial port 1 and serial port 2.

*Disabled* Disables the onboard serial port 1 and/or serial port 2.

### UART 2 Mode

The system board supports IrDA function for wireless connectivity between your computer and peripheral devices. You may not use IrDA (J21) and the COM 2 serial port (J5) at the same time. If you are using the COM 2 serial port, make sure this field is set to Standard.

To use the IrDA function, follow the steps below.

1. Connect your IrDA cable to connector J21 on the system board.
2. Set the "UART 2 Mode" field to the type of IrDA standard supported by your IrDA peripheral/device (HPSIR or ASKIR). For better transmission of data, your IrDA peripheral device must be within a 30° angle and within a distance of 1 meter.
3. Set the "IR Function Duplex" and "TX,RX Inverting Enable" fields appropriately.

### IR Function Duplex

- Half* Data is completely transmitted before receiving data.  
*Full* Transmits and receives data simultaneously.

### TX,RX Inverting Enable

The options are No, Yes; Yes, No; Yes, Yes; No, No.

### Onboard Parallel Port

- 378/IRQ7, 3BC/IRQ7, 278/IRQ5* Selects the I/O address and IRQ for the onboard parallel port.  
*Disabled* Disables the onboard parallel port.

### Onboard Parallel Mode

The options are Normal, EPP, ECP and ECP+EPP. These apply to a standard specification and will depend on the type and speed of your device. Refer to your peripheral's manual for the best option.

#### **Normal**

Allows normal speed operation but in one direction only.

#### **“ECP (Extended Capabilities Port)”**

Allows parallel port to operate in bidirectional mode and at a speed faster than the normal mode's data transfer rate.

#### **“EPP (Enhanced Parallel Port)”**

Allows bidirectional parallel port operation at maximum speed.

### ECP Mode Use DMA

This is used to select a DMA channel for the parallel port. The options are 1 and 3. Default setting: 3.

### Parallel Port EPP Type

The options are EPPI.9 and EPPI.7. Default setting: EPPI.7.

### Onboard Legacy Audio (CA64-SC only)

This field will appear only when you are using the CA64-SC system board. By default, this field is enabled allowing you to use the audio features in DOS mode. The following fields are selectable only when this field is set to Enabled.

#### *Sound Blaster*

This field is used to enable or disable the sound blaster.

#### *SB I/O Base Address*

This field is used to select the sound blaster's I/O base address. The options are 220H, 240H, 260H and 280H.

#### *SB IRQ Select*

This field is used to select the sound blaster's IRQ. The options are IRQ 5, IRQ 7, IRQ 9 and IRQ 10.

#### *SB DMA Select*

This field is used to select the sound blaster's DMA. The options are DMA 0, DMA 1, DMA 2 and DMA 3.

#### *MPU-401*

This field is used to enable or disable MPU-401.

#### *MPU-401 I/O Address*

This field is used to select MPU-401's I/O address. The options are 330-333H, 300-303H, 310-313H and 320-323H.

#### *Game Port (200-207H)*

This field is used to enable or disable the onboard game port.



### *HDD Power Down*

After the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

### *Doze Mode*

This is selectable only when the Power Management field is set to User Define. When the system enters the Doze mode according to the power saving time selected, the CPU clock will run at a slower speed (1/2 of full speed) while all other devices still operate at full speed.

### *Suspend Mode*

This is selectable only when the Power Management field is set to User Define. When the system enters the Suspend mode according to the power saving time selected, the CPU and onboard peripherals will be shut off.

## ACPI Suspend Type

This field is used to select the type of Suspend mode.

- S1(POS)* Enables the Power On Suspend function.
- S3(STR)* Enables the **Suspend to RAM** function. **Refer to “Using the Suspend to RAM Function” in appendix A for more information.**

## PM Control by APM

- Yes An Advanced Power Management device will be activated to enhance the maximum power saving mode and stop the CPU's internal clock. Use this option in Windows® 95/98/2000. (default)
- No The system BIOS will ignore APM when initiating the Power Management mode.

### Video Off Option

- Always On*      The system BIOS will never turn off the screen.
- Suspend -> Off*      The screen is off when the system is in the Suspend mode.
- All Modes -> Off*      The screen is off when the system is in the Doze, Standby or Suspend mode.

### Video Off Method

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 synchronization ports and write blanks to the video buffer.
- Blank Screen*      This option only writes blanks to the video buffer.
- DPMS Support*      Initializes display power management signaling. Use this option if your video board supports it.

### MODEM Use IRQ

This field is used to select an IRQ channel for the modem installed in your system.

### Soft-Off by PWRBTN

This category allows you to select the method of powering off your system.

- Hold 4 Sec.*      Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally “hit” or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.
- Instant-Off*      Pressing and then releasing the power button at once will immediately power off your system.

### PWR Lost Resume State

- Keep Off* When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.
- Turn On* When power returns after an AC power failure, the system will automatically power-on.
- Last State* When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

### Wake Up Events

Move the cursor to this field and press <Enter>. The following fields will appear:

#### VGA

When set to On, the system will respond and wake up to any VGA activity.

#### LPT & COM

Select the port you would like the system to respond and wake up when an event occurs on that port.

#### HDD & FDD

When set to On, the system will respond and wake up to any hard drive or floppy drive activity.

#### PCI Master

When set to On, the system will respond and wake up to any PCI or bus master activity.

#### Resume on PCI Event

*Enabled* Access to a PCI card such as a modem or LAN card will cause the system to wake up. The PCI card must support the wake up function.

*Disabled* The system will not wake up despite access to the PCI card.

### Resume On LAN/Ring

This field supports two functions.

- When enabled, the system will power-on to respond to calls coming through an external or internal modem. Refer to “Wake-On-Ring Connector” in chapter 2 for more information.
- When enabled, the LAN card in the system will allow the network to power-on a Soft Power Down (Soft-Off) PC. However, if your system is in the Suspend mode, you can wake up the system only through an IRQ or DMA interrupt. Your LAN card must support the remote wake up function. Refer to “Wake-On-LAN Connector” in chapter 2 for more information.

### Resume On Alarm

*Enabled* When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the “Date (of Month)” and “Resume Time (hh:mm:ss)” fields. However, if the system is being accessed by incoming calls or the network prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

*Disabled* Disables the automatic power-on function. (default)

### Date (of Month)

*0* The system will power-on everyday according to the time set in the “Resume Time (hh:mm:ss)” field.

*1-31* Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the “Resume Time (hh:mm:ss)” field.

### Resume Time (hh:mm:ss)

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the “Date (of Month)” field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

### Primary INTR

When set to On, the system will respond and wake up to an IRQ activity that has been detected.



### Resources Controlled By

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

- Auto(ESCD)* The system will automatically detect the settings for you.
- Manual* Choose the specific IRQ and DMA resources in the “IRQ Resources” and “DMA Resources” fields respectively.

### IRQ Resources

Move the cursor to this field and press <Enter>. The “IRQ-3” to “IRQ-15” fields will appear. Set each system interrupt to either Legacy ISA or PCI/ISA PnP.

- PCI/ISA PnP* For devices compliant with the PCI bus architecture.
- Legacy ISA* For devices compliant with the original PC AT bus specification.

### DMA Resources

Move the cursor to this field and press <Enter>. The “DMA-0” to “DMA-7” fields will appear. Set each DMA address to either Legacy ISA or PCI/ISA PnP.

- PCI/ISA PnP* For devices compliant with the PCI bus architecture.
- Legacy ISA* For devices compliant with the original PC AT bus specification.

### PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not. The default value is Disabled.

- Enabled* MPEG ISA/VESA VGA cards work with PCI/VGA.
- Disabled* MPEG ISA/VESA VGA cards does not work with PCI/VGA.

### Assign IRQ for VGA

When Enabled, the system automatically assigns an IRQ for the VGA card installed. Your VGA card will need an IRQ only when using the video capture function of the card. If you are not using this function and a new device requires an IRQ, you can set this function to Disabled. The IRQ (previously occupied by the VGA card) will be available for your new device.



**Note:**

*When Disabled, a “Yellow” mark will appear in Windows® 95’s Device Manager.*

### Assign IRQ for USB

When Enabled, the system automatically assigns an IRQ for the USB device connected to your system. However, if you are not using USB devices and an ISA slot requires an IRQ, set this function to Disabled. The IRQ previously occupied by the USB device will be available for the ISA slot.



**Note:**

*When Disabled, a “Yellow” mark will appear in Windows® 95’s Device Manager.*





If you selected an option other than “Default” and is unable to boot up the system, there are 2 methods of going back to its default setting.

Method 1: Clear the CMOS data by setting jumper JP6 pins 2 and 3 to On. All fields in the BIOS Setup will automatically be set to their default settings.

Method 2: Press the <Insert> key and power button simultaneously, then release the power button first. Keep-on pressing the <Insert> key until the power-on screen appears. This will allow the system to boot according to the FSB of the processor. Now press the <Del> key to enter the main menu of the BIOS. Select "Frequency/Voltage Control" and set the "CPU Host/PCI Clock" field to "Default" or an appropriate clock frequency.



**Note:**

*Use a PS/2 or AT (requires a DIN to mini DIN adapter) keyboard for method 2.*

### 3.1.9 Load Fail-Safe Defaults

The “Load Fail-Safe Defaults” option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press <Enter>. The message below will appear:

Load Fail-Safe Defaults (Y/N)? N

If you want to proceed, type <Y> and press <Enter>. The default settings will be loaded.

### 3.1.10 Load Optimized Defaults

The “Load Optimized Defaults” option loads optimized settings from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>. The message below will appear:

Load Optimized Defaults (Y/N)? N

Type <Y> and press <Enter> to load the Setup default values.

### 3.1.11 Set Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the Advanced BIOS Features. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the Advanced BIOS Features. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>. The message below will appear:

Enter Password:

Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

### 3.1.12 Set User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the Advanced BIOS Features. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the Advanced BIOS Features.

Using user's password to enter Setup allows a user to access only "Set User Password" that appears in the main menu screen. Access to all other options is denied. To set, confirm, verify, disable or delete a user's password, follow the procedures described in the section "Set Supervisor Password".

### 3.1.13 Save & Exit Setup

When all the changes have been made, highlight “Save & Exit Setup” and press <Enter>. The message below will appear:

Save to CMOS and Exit (Y/N)? N

Type “Y” and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

### 3.1.14 Exit Without Saving

When you do not want to save the changes you have made, highlight “Exit Without Saving” and press <Enter>. The message below will appear:

Quit Without Saving (Y/N)? N

Type “Y” and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

## Chapter 4 - Supported Softwares

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### 4.1 Desktop Management Interface (DMI)

The system board comes with a DMI built into the BIOS. DMI, along with the appropriately networked software, is designed to make inventory, maintenance and troubleshooting of computer systems easier. With DMI, a network administrator or MIS engineer can remotely access some information about a particular computer system without physically going to it. Quite often a service call may be unnecessary as the problem can be solved remotely.

The DMI utility in the BIOS automatically records various information about your system configuration. Information about the type and speed of CPU, type and amount of memory for each memory slot, BIOS revision level, types of add-in PCI boards and components, certain revision numbers of hardware installed, etc. are automatically detected and stored in the DMI pool, which is a part of the system board's Plug and Play BIOS. Additional information, such as ISA based peripherals, which may not be automatically detected, can be manually recorded in the DMI pool by using the Add DMI menu. The DMI pool data is then verified or updated whenever the system hardware or setup is altered.

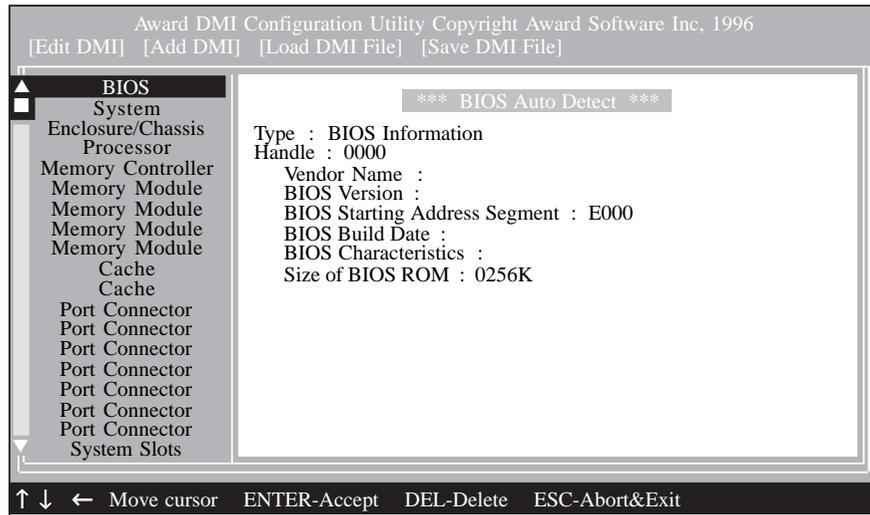
#### 4.1.1 Running the DMI Utility

To run the DMI utility, type: DMICFG.EXE. You can download this utility from <ftp.dfiusa.com> - /utilities/DMI directory.

The DMI utility must run in real mode with at least 180K of base memory. Memory managers like HIMEM.SYS (required by Windows) must not be installed. You may do this by using one of the 3 methods listed below.

1. Boot up from a system diskette without the AUTOEXEC.BAT and CONFIG.SYS files,
2. "REM" HIMEM.SYS in the CONFIG.SYS, or
3. Press <F5> during bootup to bypass your AUTOEXEC.BAT and CONFIG.SYS files.

### 4.1.2 Using the DMI Utility



The four menus located on top of the DMI Configuration Utility screen are Edit DMI, Add DMI, Load DMI File and Save DMI File. Use the ← or → (left or right) arrow keys to select a menu from the Menu bar.

On the left side of the screen is a list of the system configuration items. Use the ↑ or ↓ (up or down) arrow keys to select an item.

The commands at the bottom of the screen will allow you to navigate through the various setup menus.

#### Edit DMI

1. Use the ← or → arrow keys to select the Edit DMI menu.
2. Highlight the item on the left screen that you would like to edit by using the ↑ or ↓ arrow keys, then press <Enter>.
3. The cursor will move to the screen you select allowing you to edit information. The screen will also display the auto-detected information.
4. Press <F10> to update the edited information into the flash ROM.

## Add DMI

1. Use the ← or → arrow keys to select the Add DMI menu.
2. Highlight the item on the left screen that you would like to add by using the ↑ or ↓ arrow keys, then press <Enter>.
3. The cursor will move to the screen you select allowing you to enter information about the added item.
4. Press <F10> to save information into the flash ROM.

To view information about the added items, go to the Edit DMI menu.

## Load DMI File

1. Use the ← or → arrow keys to select the Load DMI File menu.
2. The following message will appear:

*Press [Enter] to select DMI file for load*

Press <Enter>.

3. The DMI files will appear on the screen. Select the file you would like to load and press <Enter>.
4. The following message will appear:

*Do you want to execute? (Y/N)*

Type <Y>. All previous DMI structures will be destroyed and the new file will be saved into the flash ROM.

## Save DMI File

1. Use the ← or → arrow keys to select the Save DMI File menu.
2. The following message will appear:

*Press [Enter] to select DMI file for save*

Press <Enter>.

3. Enter the directory and filename under which you would like the DMI file saved.

## 4.2 VIA Hardware Monitor

The system board comes with the VIA Hardware Monitor utility contained in the provided CD. It is capable of monitoring the system's hardware conditions such as the temperature of the CPU and system, voltage, and speed of the CPU and chassis fans. It also allows you to manually set a range to the items being monitored. If the values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.



**Note:**

*Use this utility only in Windows® 95, Windows® 98, Windows® 98 SE/ME, Windows® 2000 or Windows NT® 4.0 operating system.*

To install the utility, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click the "VIA Hardware Monitor" button to install the utility. Refer to its "readme" file for instructions on using the utility.

## 4.3 VIA® Service Pack

The CD in the system board package also comes with the VIA® Service Pack. The service pack includes the following drivers.

- AGP VxD Driver
- VIA Chipset Functions' Registry
- VIA PCI IRQ Miniport Driver

To install the drivers, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click the "VIA Service Pack" button. For installation instructions or information, click the "Read Me" button in the autorun screen.

### 4.3.1 VIA® Service Pack Installation Notes

The "AGP VxD Driver" and "VIA Chipset Functions' Registry" drivers in the "VIA Service Pack" are supported in Windows® 95, Windows® 98, Windows® 98 SE/ME and Windows® 2000.

You must first install VIA® Service Pack prior to installing any other drivers. However, this may not be the case for some AGP cards. Please read carefully the following information.



**Important:**

*The VGA driver that came with some AGP cards is already bundled with the AGP VxD driver. Since the version of the bundled VxD driver may be older than the one provided in the CD, installing the bundled VxD driver may cause problems. If you are using this type of card, we recommend that you install first the AGP card's VGA driver before installing the VIA Service Pack.*

To install the VIA Service pack, please follow the steps below.

1. Insert the CD that came with the system board package into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear.
2. Click "VIA Service Pack".
3. The "Welcome" screen will appear. Click "Next". Please read the "VIA Service Pack readme" carefully before proceeding to step 4.
4. Follow the prompts on the screen to complete the installation.
5. Reboot the system for the drivers to take effect.

## 4.4 Audio Drivers and Software Application

The CD in the system board package also includes audio drivers and audio playback software for Windows® 95, Windows® 98, Windows® 98 SE/ME, Windows NT® 4.0 and Windows® 2000 operating systems. For installation instructions or information about their corresponding "readme", click the "Read Me" button in the autorun screen. The autorun screen normally appears after the CD is inserted into a CD-ROM drive.

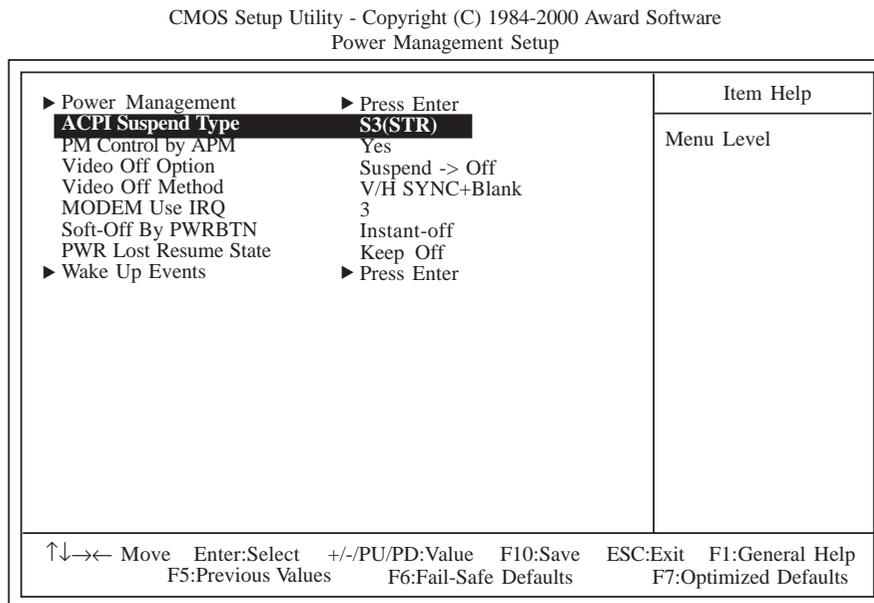
## 4.5 Drivers and Utilities Installation Notes

1. "Autorun" ONLY supports the Windows® 95, Windows® 98, Windows® 98 SE/ME, Windows® 2000 and Windows NT® 4.0 operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Autorun".
2. Please go to DFI's web site at "<http://www.dfi.com/support/download1.asp>" for the latest version of the drivers or software applications.
3. All steps or procedures to install software drivers are subject to change without notice as the softwares are occasionally updated. Please refer to the readme files, if available, for the latest information.

# Appendix A - Using the Suspend to RAM Function

## A.1 Using the Suspend to RAM Function

1. Select "Power Management Setup" in the main menu screen and press <Enter>.
2. In the "ACPI Suspend Type" field, select "S3(STR)".



The settings on the screen are for reference only. Your version may not be identical to this one.

3. Press <Esc> to return to the main menu.
4. Select "Save & Exit Setup" and press <Enter>. Type <Y> and press <Enter>.
5. Install Windows® 98 by typing the following parameter. This is to ensure that the ACPI function is supported.

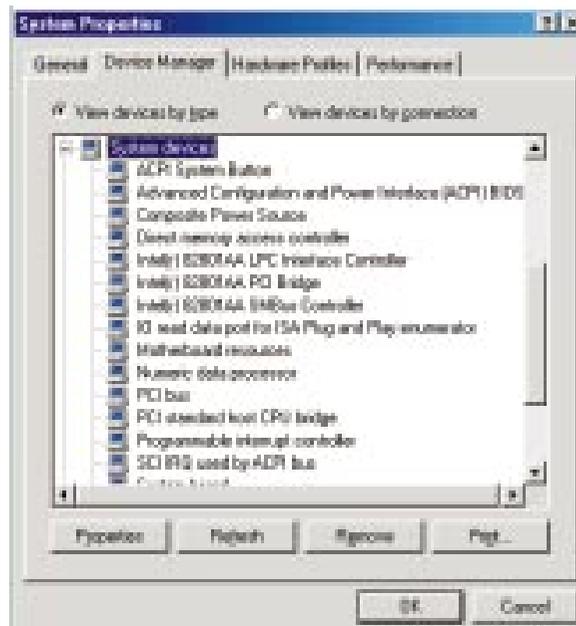
[drive]:>setup /p j

If you have previously installed Windows® 98, you need to upgrade the system in order to support ACPI. Please contact Microsoft for upgrade information.

## Using the Suspend to RAM Function .....

6. Boot Windows® 98. In the Windows® 98 desktop, click the Start button. Move the cursor to Settings, then click Control Panel.

To check whether ACPI was properly installed, double-click the System icon. In the System Properties dialog box, click the “Device Manager” tab. In “View devices by type”, click “System devices”.

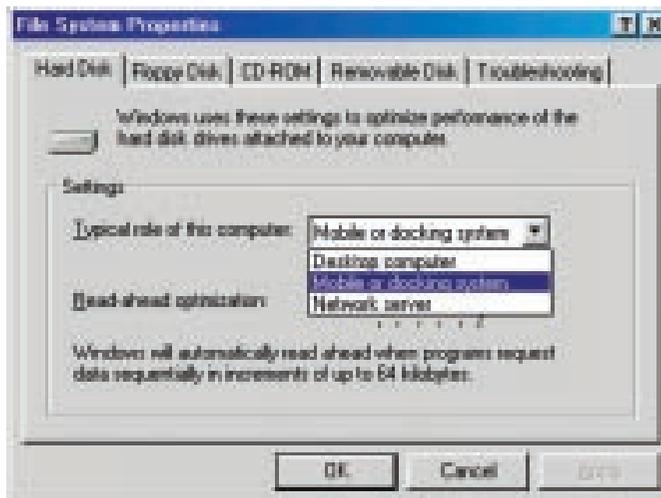


7. Double-click the System icon. In the System Properties dialog box, click the Performance tab.

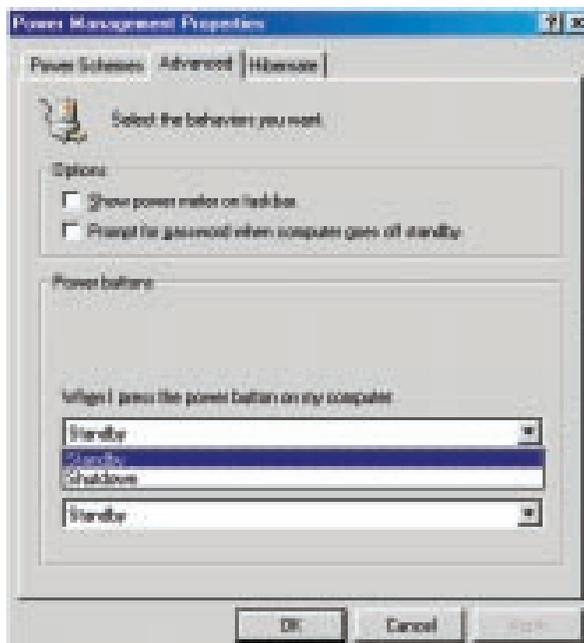


## Using the Suspend to RAM Function

- Click File System. In the “Typical role of this computer” field, select “Mobile or docking system”. Click Apply, then click OK. Restart the computer.



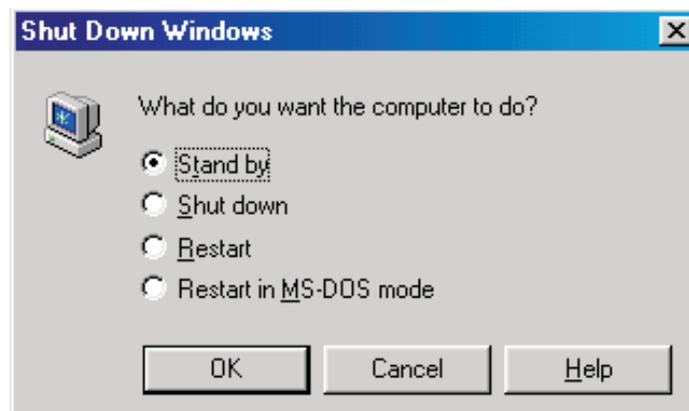
- Repeat step 6 to open the Control Panel dialog box. Double-click the Power Management icon.
- Click the Advanced tab. In the “When I press the power button on my computer” field, select “Standby”.



11. After completing the steps above and you want to power-off the computer, you do not need to go through the process of closing files, applications and operating system. You can power-off the computer at once by pressing the power button or selecting "Standby" when you shut down Windows® 98.

To power-on the computer, just press the power button. The operating session where you left off when you power-off the computer will resume in not more than 8 seconds.

If you have changed the color or resolution (in the Display Properties dialog box), do not apply the settings without restarting. You must restart the computer.



## Appendix B - System Error Message

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When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

### B.1 POST Beep

There are two kinds of beep codes in the BIOS. One code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that a DRAM error has occurred. This beep code consists of a single long beep.

### B.2 Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

#### CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.



#### **Caution:**

*Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.*

#### CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

#### DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different

setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

**FLOPPY DISK(S) fail (80)**

Unable to reset floppy subsystem.

**FLOPPY DISK(S) fail (40)**

Floppy type mismatch.

**Hard Disk(s) fail (80)**

HDD reset failed.

**Hard Disk(s) fail (40)**

HDD controller diagnostics failed.

**Hard Disk(s) fail (20)**

HDD initialization error.

**Hard Disk(s) fail (10)**

Unable to recalibrate fixed disk.

**Hard Disk(s) fail (08)**

Sector Verify failed.

**Keyboard is locked out - Unlock the key**

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

**Keyboard error or no keyboard present**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

**Manufacturing POST loop**

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

**BIOS ROM checksum error - System halted**

The checksum of ROM address F0000H-FFFFFFH is bad.

**Memory test fail**

The BIOS reports memory test fail if the memory has error(s).

## Appendix C - Troubleshooting

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### C.1 Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

#### Monitor/Display

**If the display screen remains dark after the system is turned on:**

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

### The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

### The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

## Power Supply

### When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

## Floppy Drive

### The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

## Hard Drive

### Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

### Excessively long formatting period.

1. If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

## Parallel Port

### The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.

## Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

## Keyboard

Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

## System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.