Overview

Hardware Installation

BIOS Setup

IWILL DK8X Motherboard
User's Manual

DK8X Version 1.0

FCC Compliance Statement

This equipment has been tested and found to comply with limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment 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:

1. Reorient or relocate the receiving antenna
2. Move the equipment away from the receiver
3. Plug the equipment into an outlet on a circuit different from that to which the receiver is connected
4. Consult the dealer or an experienced radio/television technician for additional suggestions

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void Your authority to operate such equipment.

This device complies with Part 15 of the FCC Rules. Operation is subjected to the following two conditions

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

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Overview

Thank you for choosing this high performance motherboard. This is a dual AMD Opteron micro-Socket 940 motherboard (M/B) based on the ATX form factor and features both the AMD HyperTransport I/O Hub (8111) and the AMD AGP Tunnel (8151)chipset. The board features a Hyper Transport bandwidth of 6.4 GB/s.

For memory options, there are eight (8) sockets to support up to 16 GB of memory using 184-pin Registered PC2700/2100 ECC DDR memory modules.

Flexibility and expandability are provided by two (2) 32-bit/33Mhz PCI slots, one (1) 64-bit/66MHz PCI slot, two (2) PCI-X slots and an 8x AGP slot. This selection of PCI slots permits the use of numerous add-on cards and Peer PCI transaction support provides increased system performance.

Other features include an onboard Silicon Image Serial ATA interfaces, a 3COM Gigabit Ethernet controller, an onboard RealTek ALC-655 audio chip, and USB 2.0 to provide high system capabilities that meet a wide range of demanding applications.

Before we begin the manual, we would like to go over some precautions to insure the safety of both the MainBoard and the technician/operator. Please read the General Safety, ESD, and Operating Precautions in their entirety before beginning.

GENERAL SAFETY PRECAUTIONS

* Keep the area around the Server clean and free of clutter.

* Servers weigh a lot. They can average about 50 lbs. (~22.68 kg)
When lifting the system, two people should lift slowly from opposite ends with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

* Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won¡¦t accidentally be stepped on.

* While working on the system, do not wear loose items such as neckties and unbuttoned shirt sleeves. They can come into contact with electrical circuits or get pulled into a cooling fan.

* Remove any jewelry or metal objects from your body, which are excellent metal conductors and can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

ESD PRECAUTIONS

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

* Use a grounded wrist strap designed to prevent static discharge.

* Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

* Touch a grounded metal object before removing the board from the antistatic bag.
* Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
* Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
* When handling chips or modules, avoid touching their pins.
* Put the motherboard and peripherals back into their antistatic bags when not in use.
* For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
* After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

OPERATING PRECAUTIONS

Care must be taken to insure that the chassis cover is in place when the server is operating to assure proper cooling. **Out of warranty** damage to the server can occur if this practice is not strictly followed.

GETTING HELP

If a problem arises with yours system during Installation or Operation, you should first ask your dealer for help as they have most likely configured your system. They generally have the best grasp of your issues and the fastest response for your symptoms. If your dealer is near your location, it is recommended that you first bring your system to them to have it serviced instead of attempting to solve the problem yourself.
If those options don't work for you, IWILL also provides some helpful resources to help you.

1.Visit IWILL website at www.iwill.net and navigate to this product¡¦s page which contain links to product updates such as Jumper settings or BIOS updates.

2.The FAQ (Frequently Asked Questions) sections in the IWILL website are often helpful since other users often have the same questions.

3.Email us at: support@iwill.net and we will try to answer your questions within 24 hours.

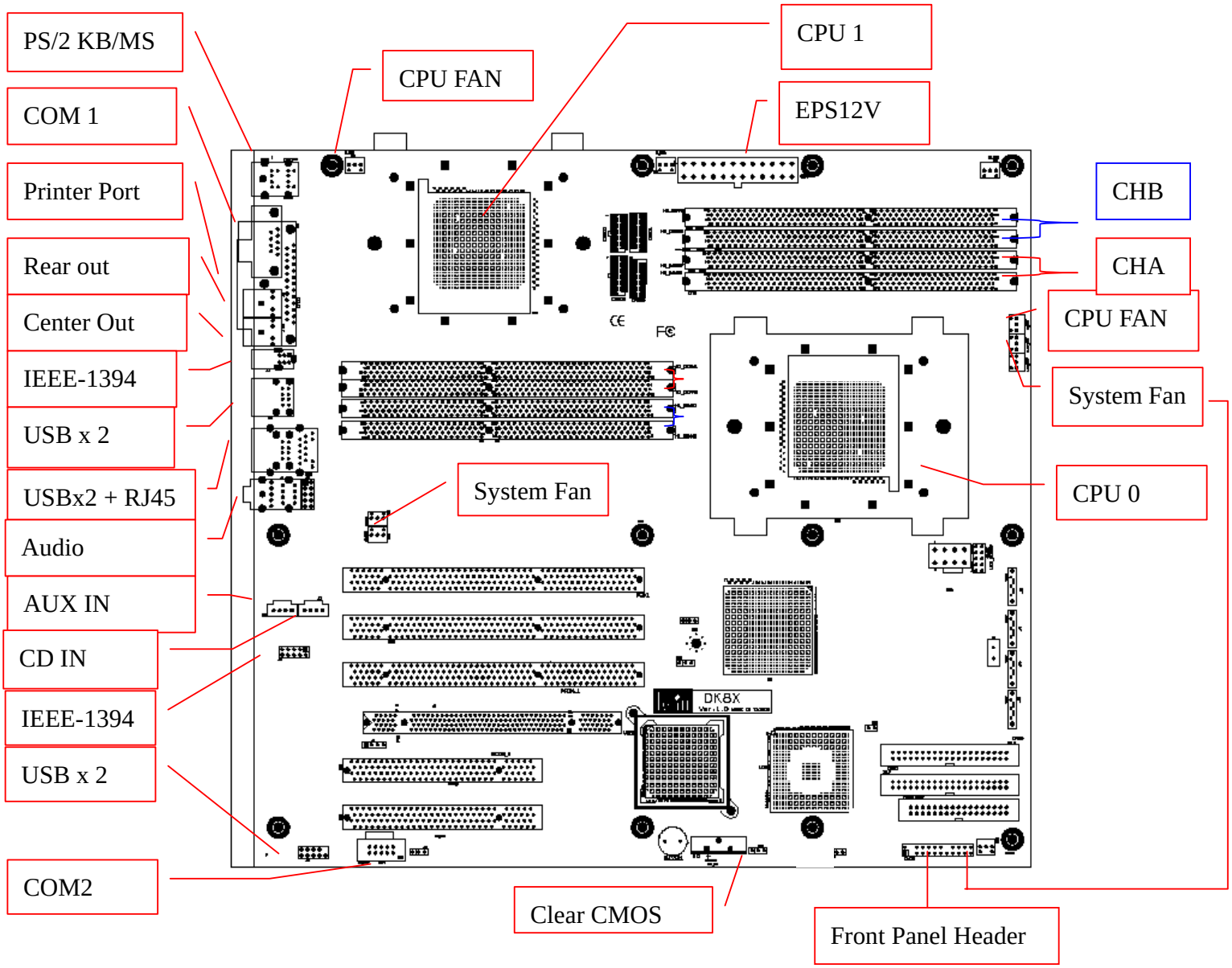
WORKSTATION BOARD SPECIFICATIONS

Processor	AMD Dual Opteron Socket 940 CPUs * Supports 1.8 GHz and faster * HyperTransport of 6.4 GB/s bandwidth * Built-In Memory Controller Hub (MCH)
Chipset	* AMD 8111 (HyperTransport I/O Hub) * AMD 8151 (AGP Tunnel) * AMD 8131 (PCI-X Tunnel)
Memory	* 4 + 4 socket for 184-pin DDR DIMM sockets * Uses Registered PC2700/PC2100 ECC DDR memory * Supports total system memory size of up to 16 GB
Internal I/O connector	* 34-pin Floppy Connector * 4-pin CD-In and Aux-In audio input connectors
Accelerated Graphics Port	8x AGP Pro slot
IDE Bus	* 2x 40-pin IDE connectors, supports up to four (4) Enhanced IDE devices * Dual Channel Master Mode * Ultra DMA 133/100/66/33
On-Board LAN	Integrated single 3com 3C940 Gigabit Ethernet Controller
Audio	Integrated Realtek ALC-65, Professional 6-channel Audio * AC '97 CODEC
USB	Integrated NEC with four (4) USB 2.0 ports
Expansion Slots	2x PCI 32 bit / 33 MHz 1x PCI 64 bit / 66 MHz 2x PCI-X 100/133 MHz
Rear Panel I/O	PS/2 mouse and keyboard connectors with Wake-Up function 1 x UART 16550 serial port (COM1) 1 x 25-pin parallel port with ECP/EPP support 2 x onboard USB 1.1 ports 4 x USB 2.0 ports (2 x external, 2 x internal) 1 x GigaBit Ethernet LAN RJ-45 port Audio Phone Jacks - Speaker Out, Mic In, Line-In.

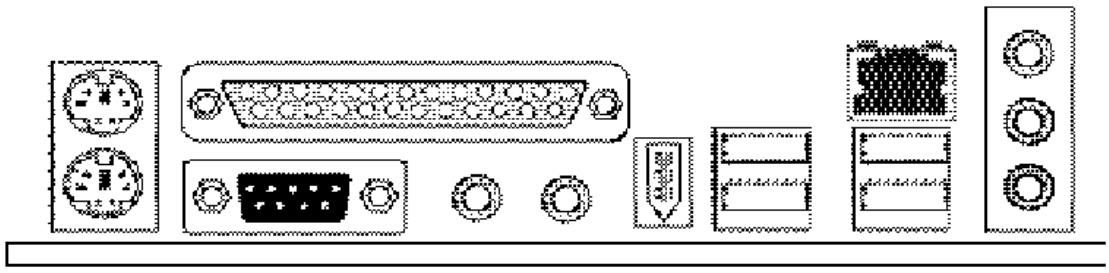
	1x IEEE-1394 port Center Out, Rear Out
System Management	Hardware Monitor (CPU Thermal, Fan, Voltage, Intrusion) Super I/O NS87366
System BIOS	4Mb Flash EEPROM with Phoenix BIOS I2C support. SMBIOS 2.3 and DMI 2.0 compliant Soft Power-Down Secure Boot, Multiple Boot support
Form Factor	Extended ATX form factor (12¡¨ x 9.6¡¨) EPS 12V power connectors (24 pin + 8 pin)
Serial ATA	Silicon Image Sil3114 chipset * 4 Serial ATA ports with RAID 0, 1, 5 and 10
IEEE 1394	Integrated TI TSB43AB22 for IEEE 1394 port (1x onboard, 1x header)

MAINBOARD MAP

DK8X



I/O PORT ARRAY



PS/2 Mouse
PS/2 KBD
Parallel Port
COM1
Rear Out
Center Out
IEEE 1394
USB 1.1 Ports (2)
USB 2.0 Ports (2)
GigE LAN
Audio Jacks: Line-In Spk-Out Mic-In

Hardware Installation

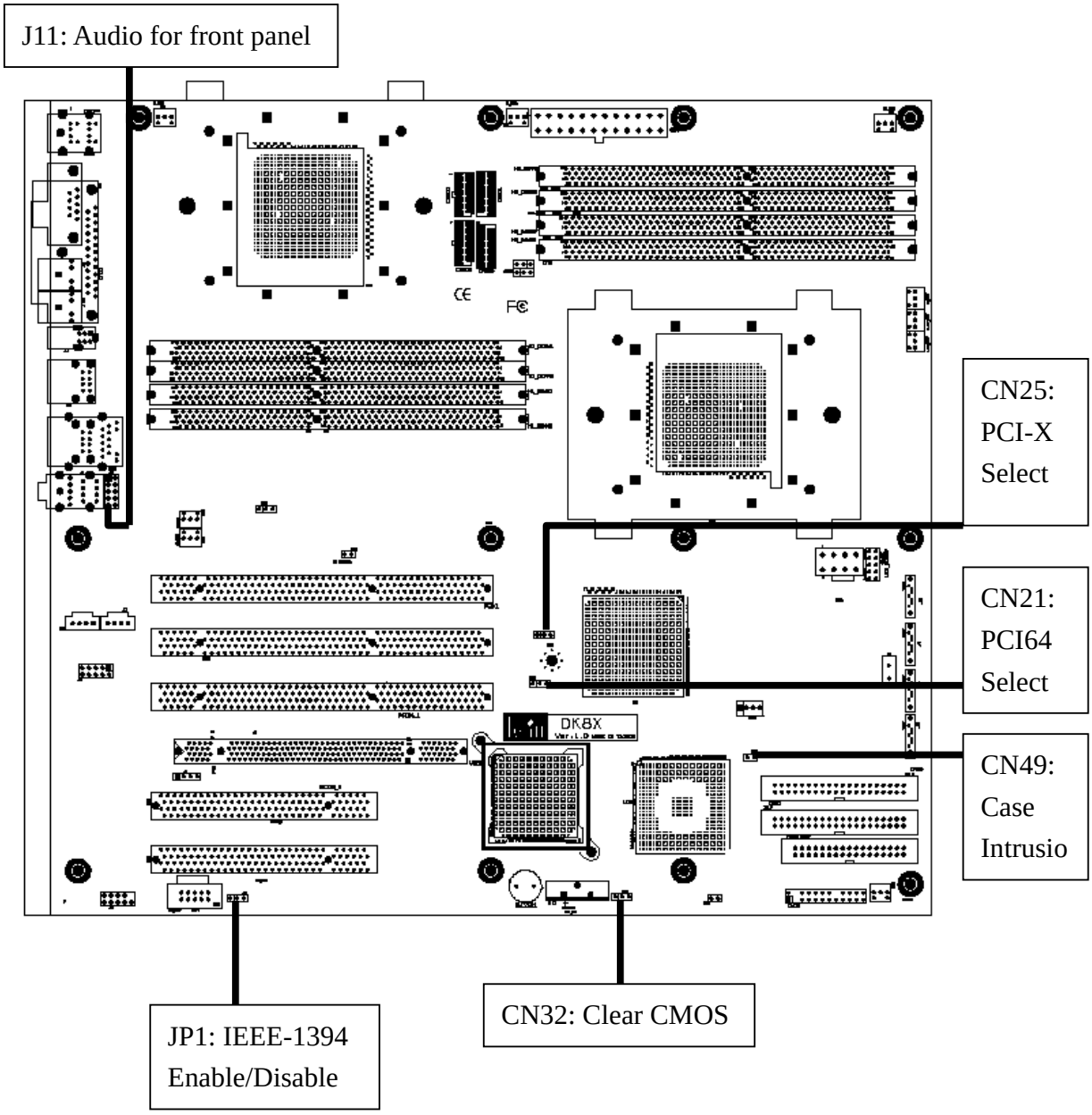
this section, we detail the procedures for how to install processors and other hardware components in your MainBoard. Please go to the specific sections to read more about section you are interested

- **WARNING**

This motherboard contains sensitive electronic components that can be easily damaged by static electricity. Follow the instructions carefully to ensure correct Installation and to avoid static damage.

MAP OF JUMPERS

Refer to the following illustration to find the location of the MainBoard's jumpers



CN32: Clear CMOS Header

The onboard button cell battery powers the CMOS RAM. It contains all the BIOS setup information. Keep the jumper connected to pins 1-2 (Default) to retain the RTC data as shown below.

1-2	2-3
Normal (default)	Clear CMOS

Under certain circumstances, you will need to reset system settings. Follow these instructions to clear the CMOS RTC data:

1. Turn off the computer.
2. Short pins 2 and 3 with a jumper for a few seconds.
3. Replace the jumper to pins 1 and 2.
4. Turn on your computer by pressing the power-on button.
5. Hold down <F2> during boot and select either <Load Optimal Defaults> or <Load Failsafe Defaults> in the “Exit” section. Then go through the BIOS setup to re-enter user preferences. Refer to Chapter 2 BIOS SETUP for more information.

CN21: PCI 64 Bit Slot Speed Select Jumper

This header lets you determine the bus speed of the PCI-X 64-bit slots. The speed can be set to either 64 MHz (default) or 33 MHz

1-2	2-3
66MHz	33MHz

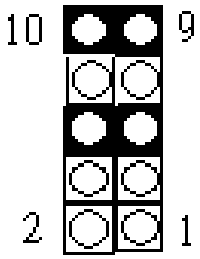
CN25: PCI-X Slot Speed Select Jumper

This header lets you determine the bus speed of the PCI-X slots. The speed can be set to either 133 MHz (default) or 100 MHz.

1-2	2-3
PCIX-133	PCIX-100

J11: Audio for Front Panel

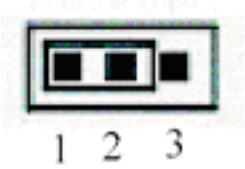
This jumper, J11, allows users to switch audio function to the front panel if front panel is installed.



5-6 9-10 (Default)	Open
Audio function in rear panel	Switch audio function to front panel

JP1: IEEE-1394 Enable/Disable

This jumper allows users to enable/disable IEEE-1394 function of onboard header.



1-2	2-3
Enable	Disable

CN49: Chassis Intrusion Switch Connector

This feature uses a mechanical switch on the chassis that connects to the chassis intrusion connector on the motherboard. The motherboard circuitry will detect the intrusion when the chassis cover is removed.

INSTALLING MEMORY

This MainBoard uses Dual Inline Memory Modules (DIMM). Four DIMM socket memory banks are available, two memory bank for each CPU socket. The DIMM sockets accommodate 184-pin PC2100/PC2700 (DDR266/DDR333) and Double Data Rate (DDR) memory modules in 128MB, 256MB, 512MB, 1GB and 2GB size combinations. Total installed memory size is between a minimum of 128MB to a maximum of 16GB.

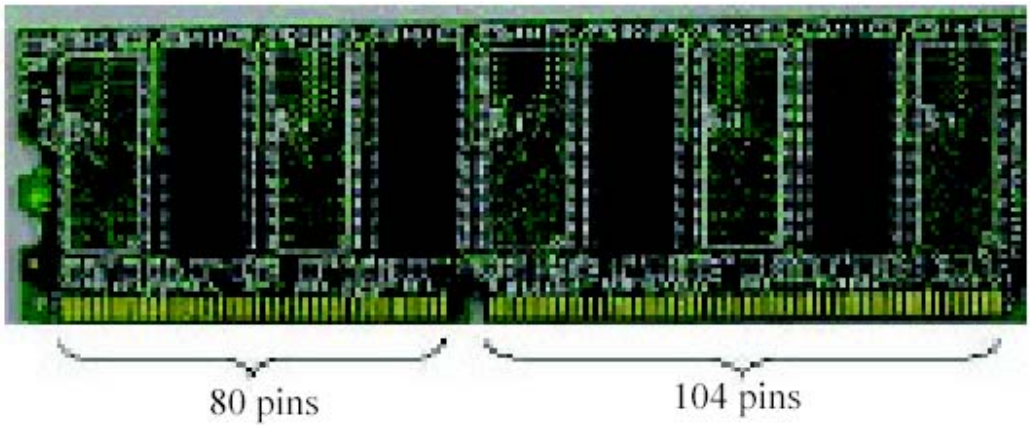
IMPORTANT

* The MainBoard has strict memory and timing requirements. Before buying DDR (Double Data Rate) DIMMs for use with the MainBoard, it is recommended that you consult your local reseller for the best and most compatible memory to use.
* This MainBoard only supports Registered PC2100/PC2700 (DDR266/DDR333) compliant modules.

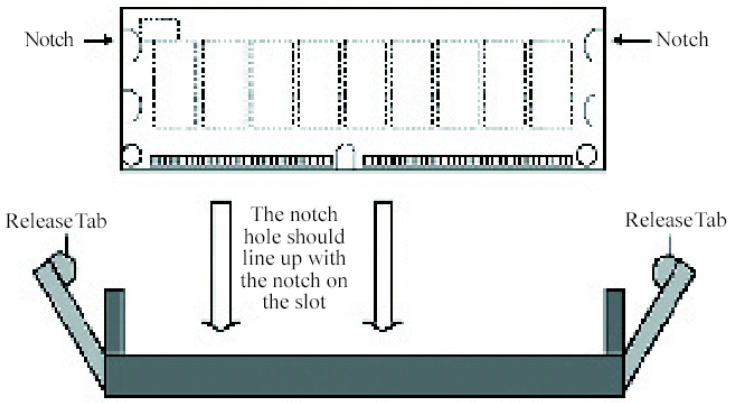
Memory Installation Procedures

This section outlines how to install Registered PC2100/PC2700 DDR DIMMs into the MainBoard.

1. Locate the Memory Bank on the MainBoard, where you will be installing the DIMMs.
2. Make sure the DIMM¡¦s pins are facing down, and check that the pin arrangement on the memory module resembles the one pictured below.



3. Insert the module into the DIMM socket and press down evenly on both ends firmly until the DIMM module is securely in place. (The tabs of the DIMM socket will close-up to hold the DIMM in place when the DIMM is properly installed on the socket¡¦s bottom.)



4. Repeat step 1 to step 3 for all additional DIMM modules.

IMPORTANT

* The Opteron features a 128-bit wide DDR memory interface. To take advantage of the 128-bit interface, you must install DIMMs in pairs of two (2). DIMM slots A1 and B1 are paired, and slots A2 and B2 are paired. If you are only installing two DIMMS into a Memory Bank, it is recommended that you install them in slots A1 and B1 to get the full bandwidth.
* To ensure compatibility, only use DIMM pairs of the same exact type and size and made by the same company.

RECOMMENDED MEMORY CONFIGURATIONS

The AMD Opteron processors have very specific memory module requirements, and due to the design of the MainBoard, there are certain configurations of memory that work best to make the most effective use of the memory bandwidth.

The AMD Opteron features 128-bit DDR memory channels. DDR Memory Modules are only 64-bit. In order to benefit from the full bandwidth, you should always install the DIMMs in pairs. The MainBoard is designed to pair up DIMM slots A0/B0, A1/B1, A2/B2 and slots A3/B3 for the 128-bit pathway.

The DIMM memory banks are shared over the dual CPU sockets. It is possible to operate a system with two CPUs and only a pair of DIMMs in the memory bank.

The Opteron does support 64-bit only operation, but due to the design of the DIMM banks, the single DIMM must be inserted in either DIMM slot A0 or DIMM slot A1 or A2 or A3 to function. The system will NOT boot otherwise.

The following is our recommended DIMM installation path based on the number of DIMMS being installed (Remember to check that the DIMMS are 2.5V Registered ECC DDR PC2100/PC2700/DDR266/DDR333 DIMMs)

If you have...	You should install them in...
1 DIMM	Slot A0 or slot A1 or A2 or A3 (Note: this configuration only provides 64-bit memory access)
2 DIMMs	Slots A0/B0 or Slots A1/B1 or Slots A2/B2 or Slots A3/B3
4 DIMMs	Slots A0, B0, A1, B1 or Slots A1, B1, A2, B2 or Slots A2, B2, A3, B3 or Slots A0, B0, A3, B3
8 DIMMs	Slots A0, B0, A1, B1, A2, B2, A3, B3

INSTALLING THE PROCESSOR AND HEATSINK

The MainBoard accommodates AMD Opteron micro-PGA Socket 940 processors and a HyperTransport bandwidth of 6.4 GB/s. You must first insert a CPU into CPU socket 1 (CPU1) before installing one in CPU socket 2 (CPU2).

Processor (CPU) Installation

This section outlines how to install a CPU into the MainBoard

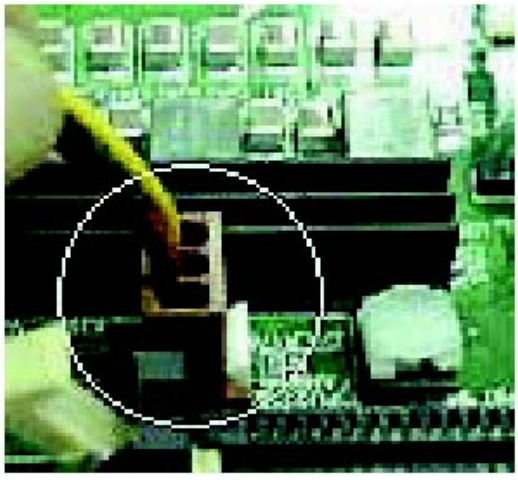
1. Locate Pin 1 on the CPU socket and Pin 1 on the CPU itself.

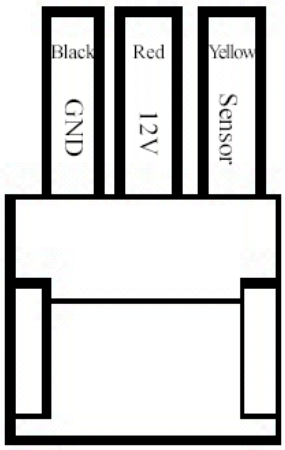
2. Lift up the lever on the CPU Socket 940. Then line up Pin 1 on the CPU with the Pin 1 marking on the socket before inserting the CPU into the Socket 940. Check that the CPU is flush in the socket, and lower the lever to lock the CPU in place.

3. Apply Thermal Compound (Thermal grease) to the top of the CPU.

4. Mount the Heatsink on top of the installed CPU by attaching it to the motherboard with the included screws (first on one side, then the other).

5. Connect the 3-wire fan cable to the CPU_Fan1 connector on the motherboard.





6. Repeat steps 1 thru 5 to install a second CPU (CPU2)

THE AGP PRO SLOT

The MainBoard does not feature an integrated video solution. Therefore, you will need to install a video card to use the MainBoard. The Accelerated Graphics Port Pro (AGP Pro) slot is specifically designed to support a new generation of AGP graphics cards with ultra-high memory bandwidths (up to 8x).

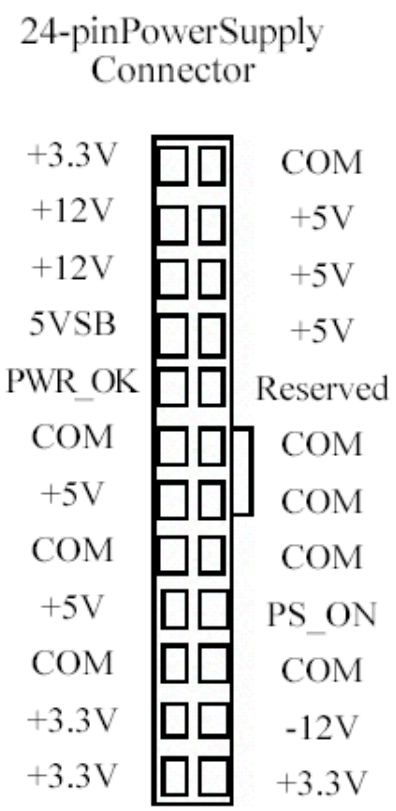
This mainboard supports 4x/8x (1.5V) and 3.3V AGP video cards. The MainBoard will automatically supply extra voltages as necessary to adapt to the installed AGP card.

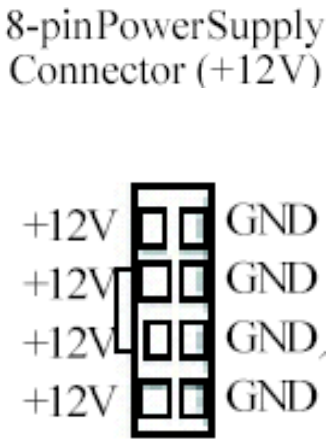
IMPORTANT

* Both 1.5V and 3.3V AGP cards are supported by this 8x AGP Pro slot. Refer to the documentation that came with your AGP card for more information on Card Settings..

EPS12V POWER CONNECTORS

Find the proper orientation of the connectors and push down firmly to make sure that the pins are aligned (the connector will only insert properly when properly aligned). The 8-pin connector is a dedicated power connector to supply power for the CPUs. For Wake on LAN support, the 5-volt Stand-by lead (+5VSB) from the ATX power supply must supply at least 2A.





IMPORTANT

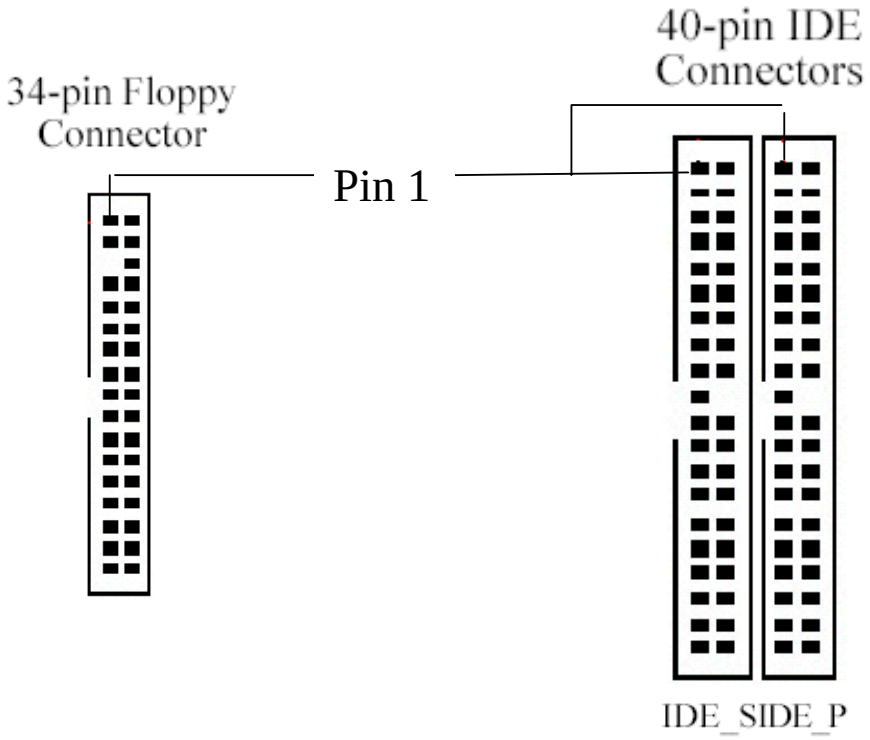
It is recommended that you use an ATX Power Supply that complies with the Intel ATX 2.03 specification.

FLOPPY DISK DRIVE CONNECTOR

This 34-pin connector supports the standard floppy disk drive ribbon cable. Connect the single connector end to the MainBoard. Then, plug the other end of the ribbon into the floppy drive. Make sure you align the Pin 1 on the connector with the Pin 1 alignments on the MainBoard and the floppy drive.

PRIMARY IDE CONNECTORS

The two 40-pin IDE connectors (primary and secondary channels) support 80-conductor IDE ribbon cables. Connect the single connector end to the MainBoard. Then, connect the two connectors at the other end to your IDE device(s). If you connect two hard disks to the same cable, you must set the second drive as a Slave through its jumpers settings. Refer to the IDE device's documentation for the specific jumper settings. (Pin 20 is removed to prevent the connector from being insertied in the wrong orientation when using ribbon cables with pin 20 plugged in). The BIOS supports Ultra DMA 33/66/100/133.

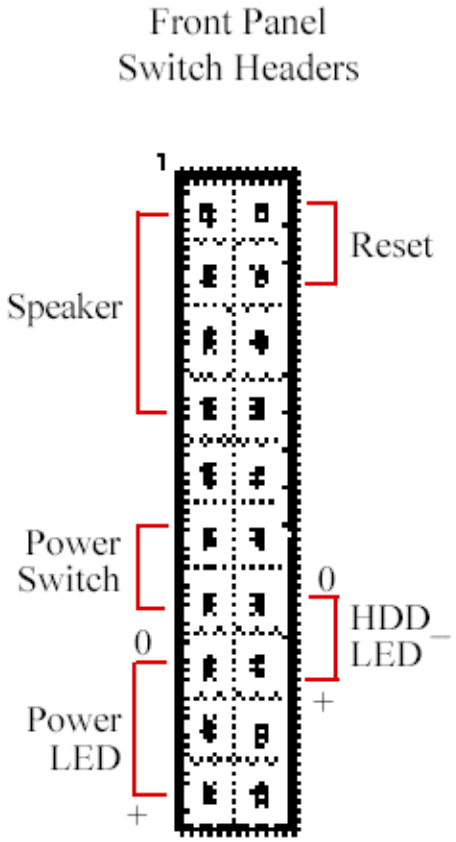


IMPORTANT

Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. IDE ribbon cables must be less than 46 cm (18 inches) long, with the second drive connector no more than 15 cm (6 inches) away from the first connector.

FRONT PANEL SWITCHES

The front panel switches header connects the front control panel buttons and LEDs to the MainBoard.



Reset Switch (2-pin RST)

This 2-pin connector connects to the chassis-mounted reset switch for rebooting your computer without turning your power switch off and on. This is a preferred method of rebooting your system to prolong the life of your system¡¦s power supply.

Hard Disk Activity LED (2-pin HDD_LED)

This connector supplies power to the chassis's HDD/IDE activity LED. Read and Write activity by devices connected to the Primary or Secondary IDE connectors will cause the front panel LED to light up.

Speaker Connector (4-pin SPEAKER)

There is one jumper over pin1 and pin2 (default setting) for the internal buzzer. If you want to use the external case-mounted speaker instead of the internal buzzer, remove the jumper and connect the speaker wire to the 4-pin connector.

ATX Power Switch / Soft Power Switch (2-pin PWR_SW)

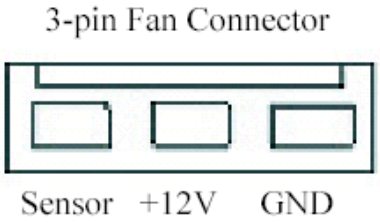
A momentary switch connected to this 2-pin connector controls the system power. Pressing the button once will switch the system between ON and SLEEP mode. The system power LED shows the status of the system¡¦s power.

System Power LED (3-pin PWR_LED)

This 3-pin connector connects to the chassis-mounted system power LED, which lights up when the system is powered on.

FRONT/BACK/CPU/AUX FAN CONNECTORS

There are nine 3-pin fan connectors in the MainBoard motherboard. Four fans are used for CPU0 and CPU1; five are for system and front. These connectors support cooling fans of 500mA (6W) or less. Depending on the fan manufacturer, the wiring and plug may be different. Connect the fan's plug to the MainBoard with respect to the polarity of the fan connector.

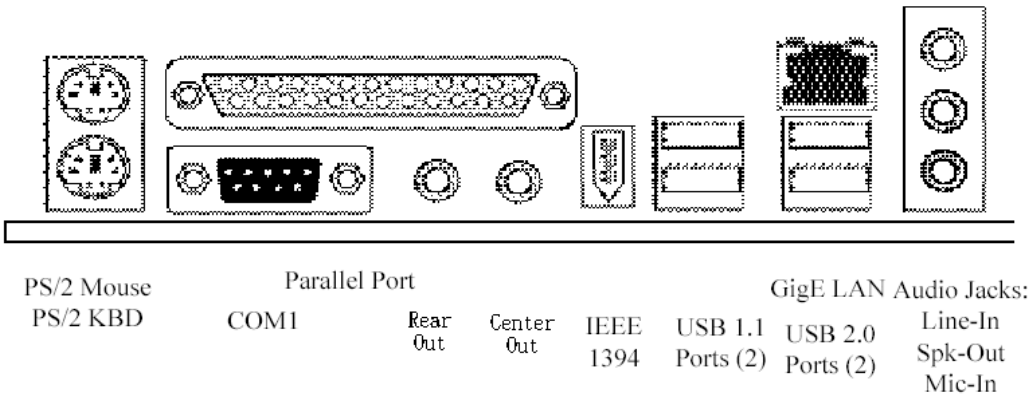


WARNING

The CPU and/or motherboard will overheat if there is not enough airflow across the CPU and onboard heatsink. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. These are NOT jumpers, do NOT place jumper caps over these pins.

REAR PANEL I/O PORTS

This is an illustration of the MainBoard rear I/O port array



PS/2 Mouse Connector (6-pin Female)

The system will direct IRQ12 to the PS/2 mouse if one is detected. If no mouse is detected, IRQ12 will be free for expansion cards to use.

PS/2 Keyboard Connector (6-pin Female)

This connection is for standard keyboards using a PS/2 (mini DIN) plug. This connector will not accept standard AT size (large DIN) keyboard plugs. You may need a DIN to mini DIN adapter for standard AT keyboards.

Universal Serial Bus Ports (4-pin Female)

Two (2) onboard external USB 2.0 ports and two (2) onboard external USB 1.1 ports are available for connecting USB devices. Refer to USB 2.0 Ports & Header for more information.

IEEE 1394 / FireWire Connector (6-pin Male)

Depending on your MainBoard model, you may have one (1) onboard IEEE 1394 connector port for connecting FireWire devices. Refer to IEEE 1394 Ports & Header for more information.

Serial Port (COM1) Connector (9-pin Male)

The COM1 serial port can be used for pointing devices or other serial devices. See BIOS for more on serial port setup.

Parallel Printer Connector (25-pin Female)

You can enable the parallel port and choose an IRQ through the BIOS. You can choose between ECP and EPP support through the BIOS setup.

Onboard LAN Port (RJ-45)

This MainBoard uses the 3COM 3C940 Gigabit Ethernet Controller. The controller consists of both the Media Access Controller (MAC) and Mbps Physical Layer (PHY) interface. Refer to the ¡§Onboard LAN User Guide¡¨ for further information.

Audio Jacks (Phone Jacks)

The interface with the onboard RealTek ALC-655. It has 3 phone jacks for Speaker-Out, Microphone In, and Line-In. Besides, there are two phone jacks for Rear Out and Center Out.

ADDITIONAL I/O CONNECTORS

The MainBoard also contains connectors for adding additional ports and devices to the MainBoard.

CD_In & Aux_In Audio Inputs (4-pin)

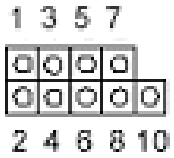
There are both CD-In and Aux-In 4-pin connectors to connect your internal sound devices to the Sound Card. See Audio for setup information.

4-pin Onboard Audio Header

Audio Pin Assignments	
Pin	Description
1	Audio- L
2	Ground
3	Ground
4	Audio - R

USB 2.0 PORTS AND HEADER

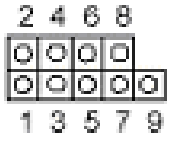
The Serial Version of this MainBoard features the NEC chip integrated into the board. This chip supports four (4) USB 2.0 ports. USB 2.0 supports transfer rates of up to 480MB/s. All four ports show up on the on-board I/O array.



Pin	Assignment	Pin	Assignment
1:	+5V	2:	+5V
3:	USB DATA −	4:	USB DATA −
5:	USB DATA +	6:	USB DATA +
7:	GND	8:	GND
9:	NC	10:	NC

IEEE 1394 (FIREWIRE) PORTS AND HEADER

This MainBoard features an integrated Texas Instrument TSB43AB22 chip which supports two (2) IEEE 1394 (Firewire) ports. IEEE 1394 (FireWire) supports transfer rates of up to 400MB/s. One port is installed on the on-board I/O array, and a header completes the last port for external installation.



Pin	Assign	Pin	Assign
1:	TPB1+	2:	TPB1-
3:	GND	4:	GND
5:	TPA1+	6:	TPA1-
7:	+12V	8:	+12V
9:	NC	10:	NC

INSTALLING EXPANSION CARDS

This outlines the procedure for adding expansion cards to your MainBoard. Remember to read the documentation for your expansion cards and make the necessary hardware and software setting changes (i.e. jumper settings).

The MainBoard features two (2) PCI-32 (32-bit, 33MHz) slots, one (1) PCI-64 (64-bit, 66/33MHz) slot and two (2) PCI-X (100/133MHz) slots to accomodate PCI expansion cards.

1. Remove the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
2. Insert the PCI card into the correct slot on the MainBoard, pushing down with your thumbs evenly on both sides of the card.
3. Secure the card on the slot with the screw you removed above.
4. Assign IRQs for PCI expansion card: An IRQ number is automatically assigned to PCI expansion card. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that contains a card requiring an IRQ.

WARNING

Completely power OFF your power supply when adding or removing any expansion cards or other system components. Failure to do so may cause severe damage to both your MainBoard and expansion cards.

SILICON IMAGE CHIPSET AND SERIAL ATA

The Serial version of this MainBoard is equipped with an integrated SIlicon Inage Sil3114 Serial ATA chipset. This chipset supports up to 4 SATA devices at transfer rates of up to 150MB/s.

The Silicon Image Chipset also supports RAID configurations. RAID stands for "Redundant Array of Independent Devices" and provides different levels of safety, redundancy and performance. This chipset supports RAID 0, 1, 5, and 10, which are defined as follows:

RAID Type	Description
RAID 0	Striping: high performance, designed ot connect multiple drives to act as one
RAID 1	Mirroring: writes data to two drives at once in case one drive fails, the other one will be a complete replica and can continue on. Full fail-over
RAID 5	Data are striped across three or more drives for performance, and parity bits are used for fault tolerance.
RAID 10	Combination of RAID 0 and 1: over 4 drives, The drives are split in half and striped together, and the 2 new striped drives are then mirrored.

This MainBoard features four (4) Serial ATA ports for 4 Serial ATA devices. Refer to the documentation that came with the drives for more information about settings and installation.

Serial ATA Drive Connectors

SerialATAPinAssignments	
Pin	Description
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

POWERING ON YOUR SYSTEM

Follow these instructions to power on the computer after you have installed the MainBoard and all system devices.

1 .Be sure that all switches are off (in some systems, Off is marked by “O”).

2. After double-checking all jumper settings and connections, close the system chassis cover.

3. Connect the power cord to the power cord connector located on the power supply at the back of your system chassis and plug the power cord into a power outlet that is equipped with a surge protector.

4. Turn on your devices in the following order:

- Monitor
- External SCSI devices (starting with the last device on the chain if connected)
- System power

For ATX power supplies, you need to switch On the power supply, then press the ATX power switch on the front of the chassis the first time you start up the system.

5. The power LED on the front panel of the system case will light up. For ATX power supplies, the system LED will light up when the ATX power switch is pressed. The monitor LED may light up after the system’s LED if it complies with “Green” standards or if it has a power standby feature. The system will first run its “power-on” tests. While the tests are running, additional messages will appear on the screen. If you do not see anything on the screen within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Re-check your jumper settings and connections. Contact your retailer/dealer for assistance if everything else fail.

6. During power-on, hold down <F2> to enter BIOS setup. Follow the instructions in BIOS for further setup information.

BIOS Setup

This chapter discusses the AMIBIOS Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration.

The BIOS is the Basic Input / Output System used in all IBM PC, XT, AT, and PS/2 compatible computers. The AMIBIOS flash chip stores the system parameters, such as type of disk drives, video displays, etc. in the CMOS. When the computer is turned off, a back-up battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the computer is powered-on the computer is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot-up.

The AMIBIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

STARTING THE BIOS SETUP

The AMIBIOS is immediately activated every time you power on the system. The BIOS reads the system information contained in the CMOS and begins the process of checking the system and configuring it. After configuring the system, the BIOS will follow the Boot Order to seek out an operating system. The BIOS then turns control of the system over to the operating system.

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility.

1. Power on the System.

Note: Normally, the only visible POST (Power On Self Test) routine is the memory test.

2. As the memory is being tested, you can access the BIOS Setup Utility by pressing the <F2> key when “Press < F2> to enter SETUP” appears briefly at the bottom of the screen.

From the main menu of the BIOS Setup Utility, you can access the other setup screens, such as the Security and Power menus.

USING THE BIOS SETUP UTILITY

Navigating through the BIOS Setup Utility is straight forward. Use the arrow keys to highlight items, press <Enter> to select items in menus, and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Up ArrowKey	Move to the previous item
Down Arrow Key	Move to the next item
Left Arrow Key	Move to the previous menu
Right Arrow Key	Move to the next menu
<Esc> key	In the Submenu: Exit the submenu. In the BIOS main menu: Jump to the Exit Menu
<Enter> Key	Select the highlighted item. When available, a pop-up list will display for you to select the item value or select a submenu
<PgUp> Key	Previous page on Scrollable menus or Jump to the first interactive item listed
<PgDn> Key	Next page on Scrollable menus or Jump to the last interactive item listed
<F1> Key	General Help on Setup navigation keys.
<F2>/<F3> Key	Change Colors
<F7> Key	Discard Changes

<F8> Key	Load Failsafe Defaults
<F9> Key	Load Optimal Defaults
<F10> Key	Save and Exit
Home	Go to Top of Screen
END	Go to Bottom of Screen
ESC	Exit

IMPORTANT

The BIOS does NOT automatically save values that you have modified. If you do not save your values before you exit the BIOS Setup Utility, all your changes will be lost.

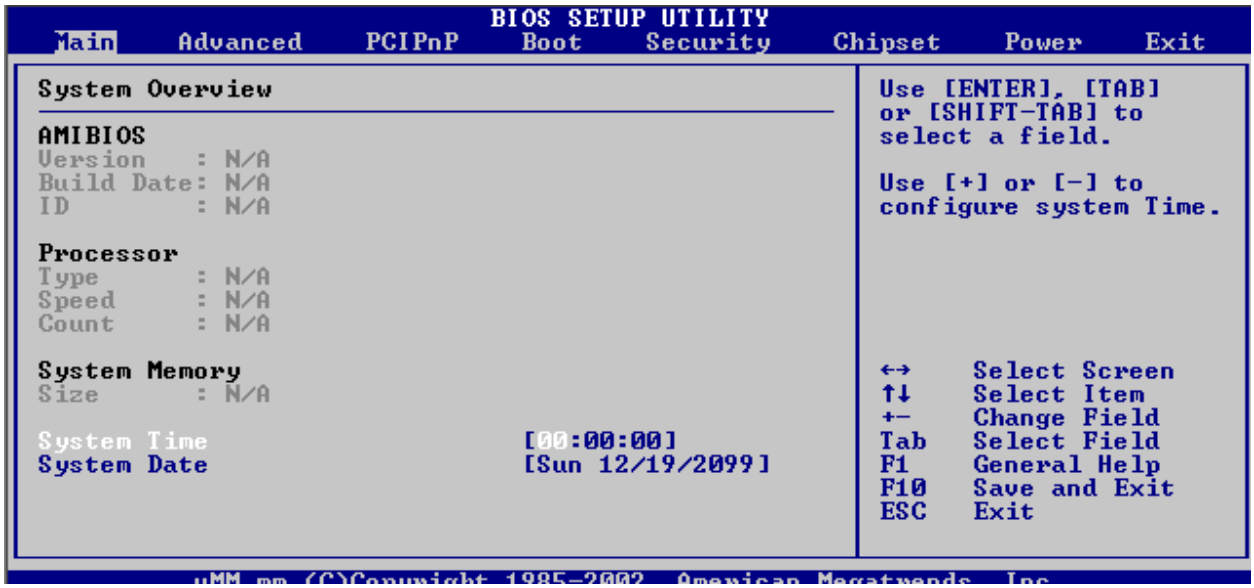
If after making and saving system changes with the BIOS Setup Utility, you discover that your computer is no longer able to boot, the AMIBIOS supports an override, which will reset your system to the Failsafe defaults. If that fails, it is possible to manually clear the present CMOS information through the "Clear CMOS Header" on the motherboard (Refer to Jumper Settings for more information).

The best advice is to ONLY alter settings which you thoroughly understand. The default settings have been carefully chosen by AMIBIOS to provide the maximum system performance and reliability. Even a slight change to the chipset setup may cause potential and unpredictable failure to the system.

Main Menu

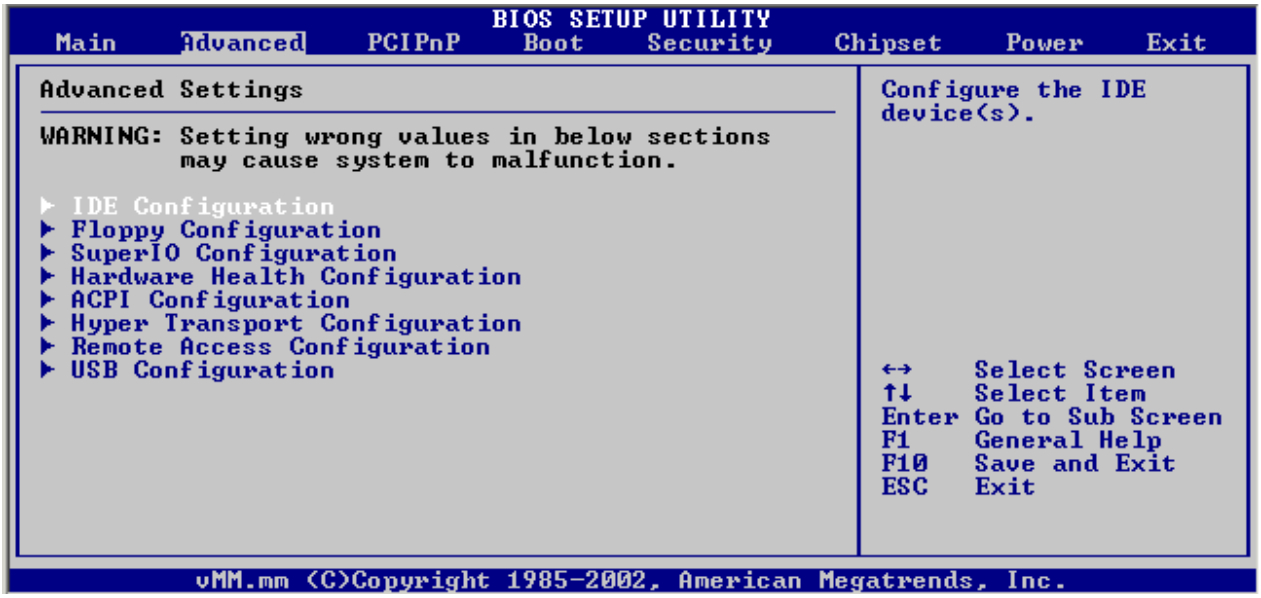
This is the first screen that is displayed when you enter the BIOS Setup Utility.

Each tab lined on the top of the screen represents each different menu. The following picture shows the main menu. Main menu shows the information of BIOS version, date and ID; processor type, speed and count; system size. In addition, system time and date is adjustable using + / - key or number keys.



Advanced Menu

This is the Advanced Menu screen.



You can make these modifications on the Advanced Menu. Select the Submenus to modify those settings.

Feature	Option	Description
Floppy Configuration	Disabled 360 KB, 5 1/2” 1.2 MB, 5 1/2” 720 KB, 3 1/2” 1.44 MB, 3 1/2” 2.88 MB, 3 1/2”	Select Floppy A or Floppy B and then selects floppy-diskette type installed in your system.
Hardware Health Configuration	H/W health function and H/W thermal throttling Disabled/Enabled	1. Enable/Disable H/W health function 2. Thermal throttling allows the user to reduce CPU duty cycle to a user

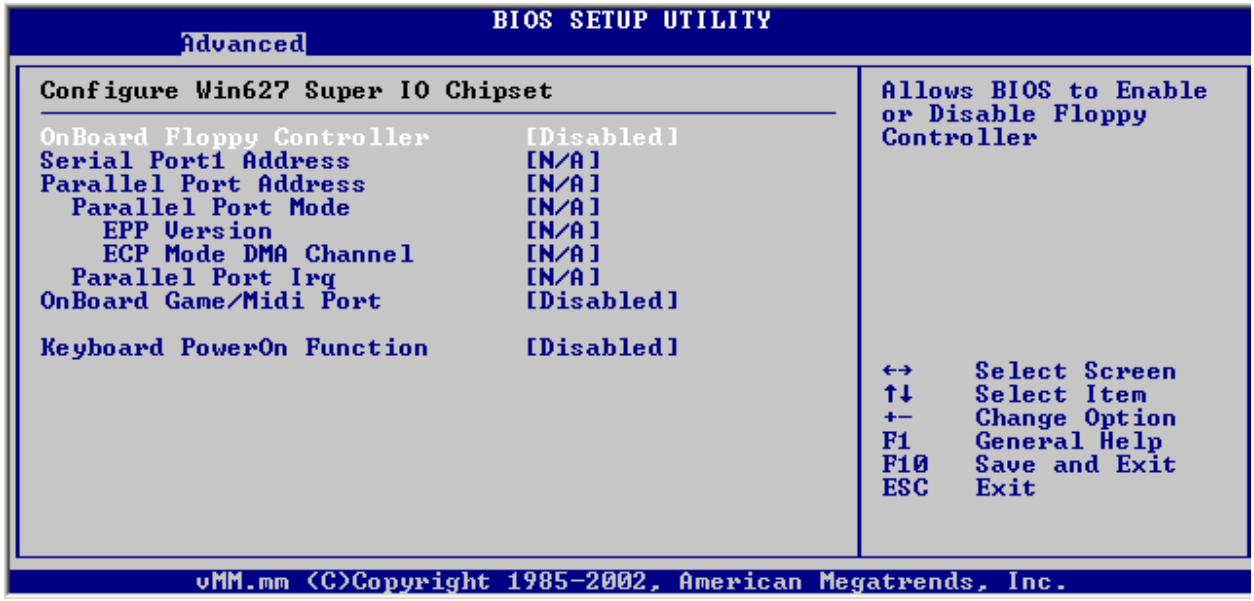
Feature	Option	Description
		defined percentage when the temperature reaches a user defined value 3. H/W health event
ACPI Configuration	ACPI Aware O/S Yes/No	Enable: If O/S supports ACPI Disable: If O/S doesn't support ACPI
Hyper Transport Configuration	CPU0 : CPU1 HT Link Speed/Width	Hyper Transport link speed/width is adjustable
Remote Access Configuration	Disable Serial	Selects Remote Access type
USB Configuration	Legacy USB Support Disabled/Enabled/Auto USB Mass Storage Device Configuration	1. Enables support for legacy USB. Auto option disables legacy support if no USB devices are connected 2. Configure the USB mass storage class devices

IDE Configuration Submenu

Feature	Option	Description
Onboard PCI IDE Controller	Disabled Primary Secondary Both	Disabled: disables the integrated IDE controller Primary: enables only the Primary IDE controller Secondary: enables only the secondary IDE controller Both: enables both IDE controllers
Hard Disk Write Protect	Disabled Enabled	Disable/Enable device write protection. This will be effective only device is accessed through BIOS

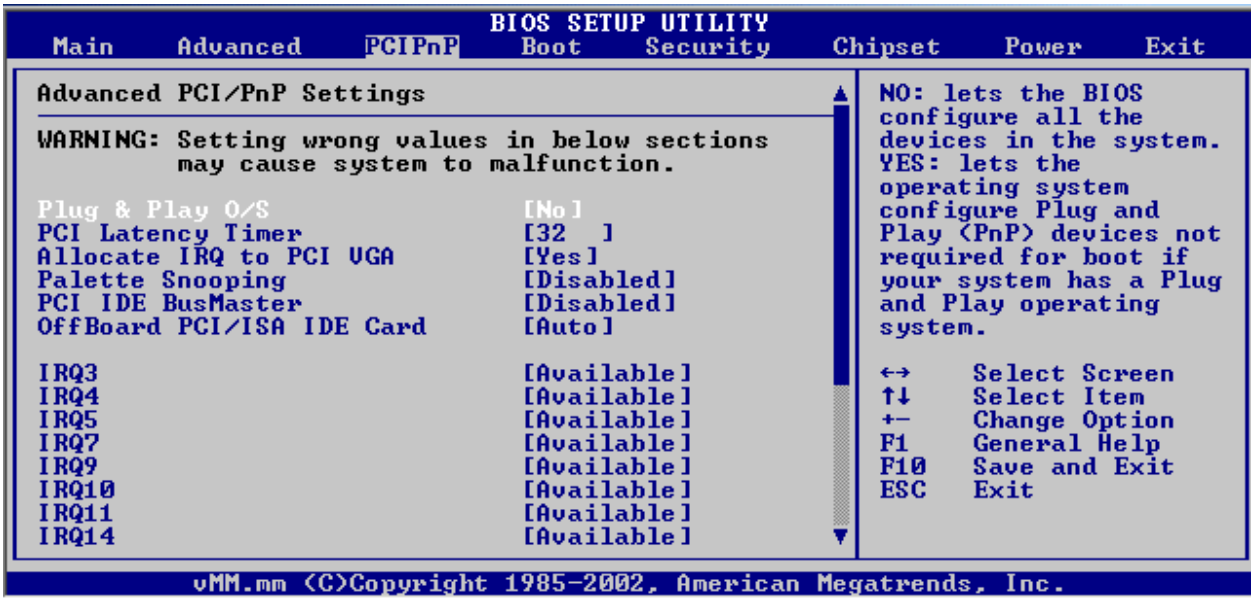
IDE Detect Time Out (Sec)	0, 5, 10, 15, 20, 25, 30, 35	Select the time out value for detecting ATA/ATAPI device
ATA(PI) 80Pin Cable Detection	Host & Device Host Device	Select the mechanism for detecting 80 pin cable

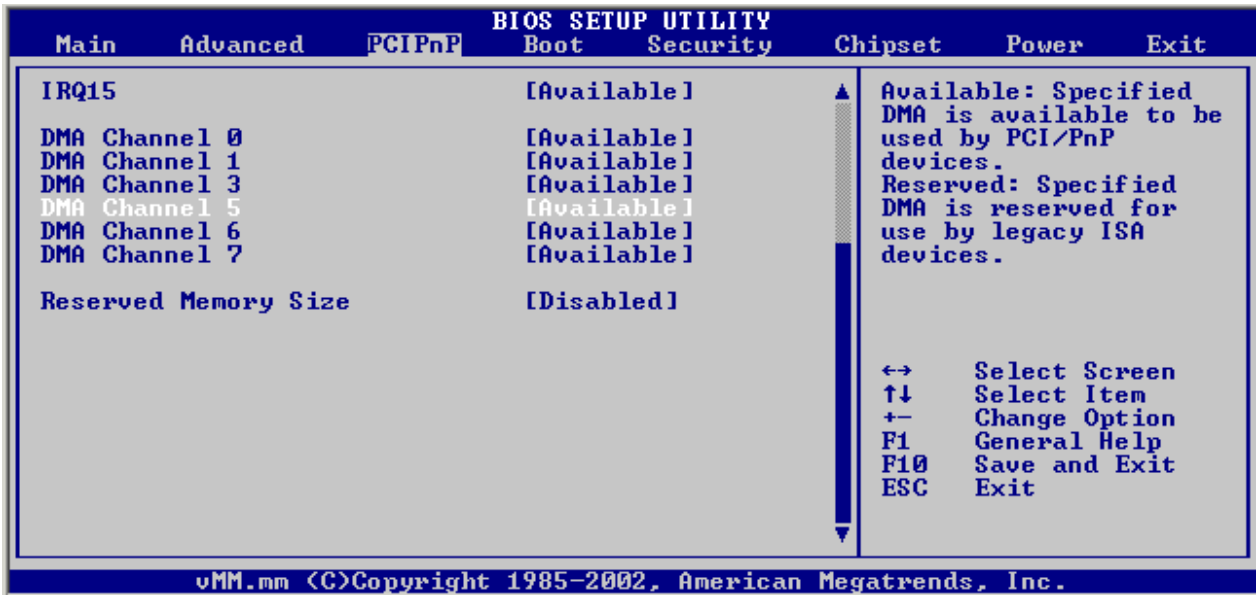
Super IO Configuration Submenu



Feature	Option	Description
Onboard Floppy Controller	Disabled Enabled	Allows BIOS to enable or disable floppy controller
Onboard Game/Midi Port	Disabled 200/300, 200/330 208/300, 208/330	Allows BIOS to enable or disable Game/Midi port
Keyboard PowerOn Function	Disabled Any Key	

PCIPnP Menu

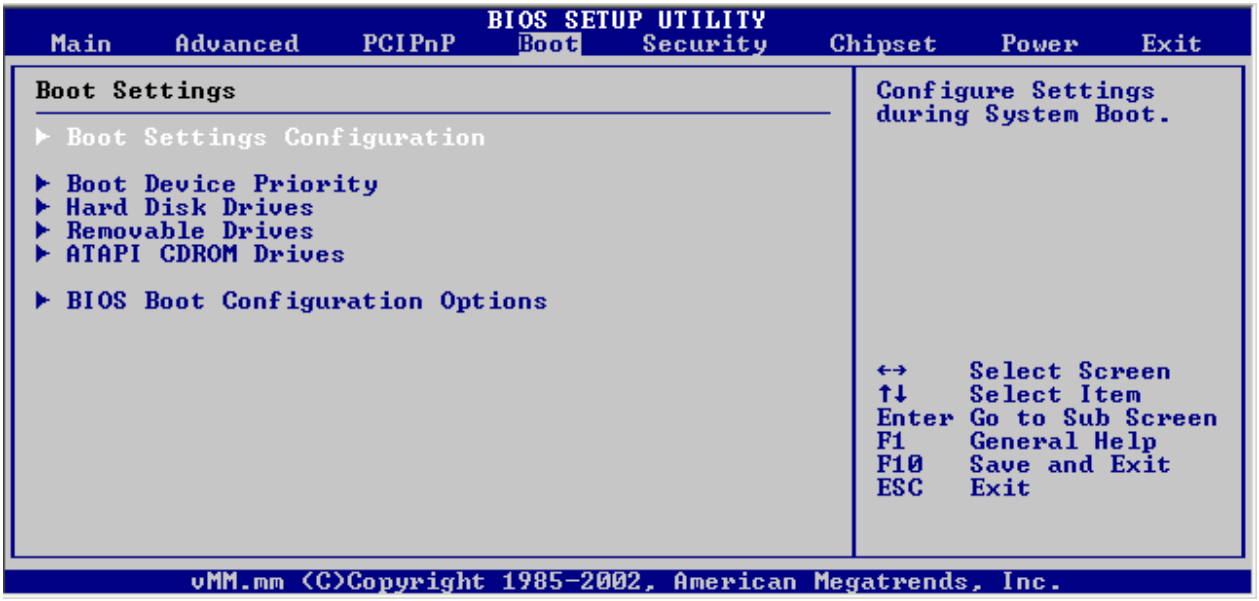

BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
Advanced PCI/PnP Settings
WARNING: Setting wrong values in below sections may cause system to malfunction.
Plug & Play O/S [No]
PCI Latency Timer [32]
Allocate IRQ to PCI VGA [Yes]
Palette Snooping [Disabled]
PCI IDE BusMaster [Disabled]
OffBoard PCI/ISA IDE Card [Auto]
IRQ3 [Available]
IRQ4 [Available]
IRQ5 [Available]
IRQ7 [Available]
IRQ9 [Available]
IRQ10 [Available]
IRQ11 [Available]
IRQ14 [Available]
NO: lets the BIOS configure all the devices in the system. YES: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.


BIOS SETUP UTILITY
Main Advanced PCIPnP Boot Security Chipset Power Exit
IRQ15 [Available]
DMA Channel 0 [Available]
DMA Channel 1 [Available]
DMA Channel 3 [Available]
DMA Channel 5 [Available]
DMA Channel 6 [Available]
DMA Channel 7 [Available]
Reserved Memory Size [Disabled]
Available: Specified DMA is available to be used by PCI/PnP devices. Reserved: Specified DMA is reserved for use by legacy ISA devices.
↔ Select Screen
↑↓ Select Item
+- Change Option
F1 General Help
F10 Save and Exit
ESC Exit
vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.

Feature	Option	Description
Plug & Play O/S	Yes No	Yes: lets the O/S configure PnP devices not required for boot if your system has a Plug and Play O/S
PCI Latency Timer	32, 64, 96, 128, 160, 192, 224, 248	Value in units of PCI clocks for PCI device latency timer register
Allocate IRQ to PCI VGA	Yes No	Yes: Assign IRQ to PCI VGA card if card requests IRQ No: Doesn't assign IRQ To PCI VGA cars even if card requests IRQ
Palette Snooping	Disabled Enabled	Enabled: informs the PCI devices that an ISA graphics device is installed in the system so the card will function correctly
PCI IDE BusMaster	Disabled Enabled	Enabled: BIOS uses PCI busmastering for reading/writing to IDE drives
Offboard PCI/ISA IDE card	Auto PCI Slot1 PCI Slot2 PCI Slot3 PCI Slot4 PCI Slot5 PCI Slot6	Some PCI IDE cards may require this to be set to the PCI slot number that is holding the card.

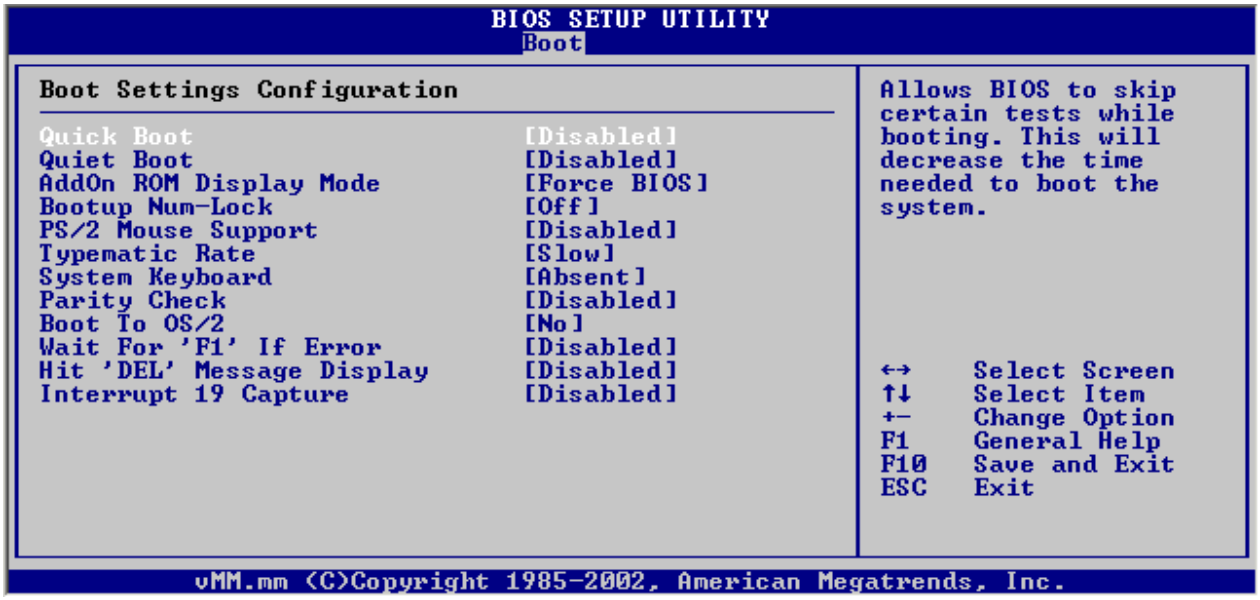
Feature	Option	Description
IRQ3~IRQ15	Available Reserved	Available: specified IRQ is available to be used by PCI/PnP devices Reserve: specified IRQ is reserved for use by legacy ISA devices
DMA Channel 0, 1, 3, 5, 6, 7	Available Reserved	Available: specified DMA is available to be used by PCI/PnP devices Reserve: specified DMA is reserved for use by legacy ISA devices
Reserved Memory Size	Disabled 16K 32K 64K	Size of memory block to reserve for legacy ISA devices

Boot Menu



Feature	Description
Boot Device Priority	Specify the boot device priority sequence
Hard Disk Drives	Specify the boot device priority sequence from available hard drives
Removable Drives	Specify the boot device priority sequence from available removable drives
ATAPI CDROM Drives	Specify the boot device priority sequence from available ATAPI CDROM drives

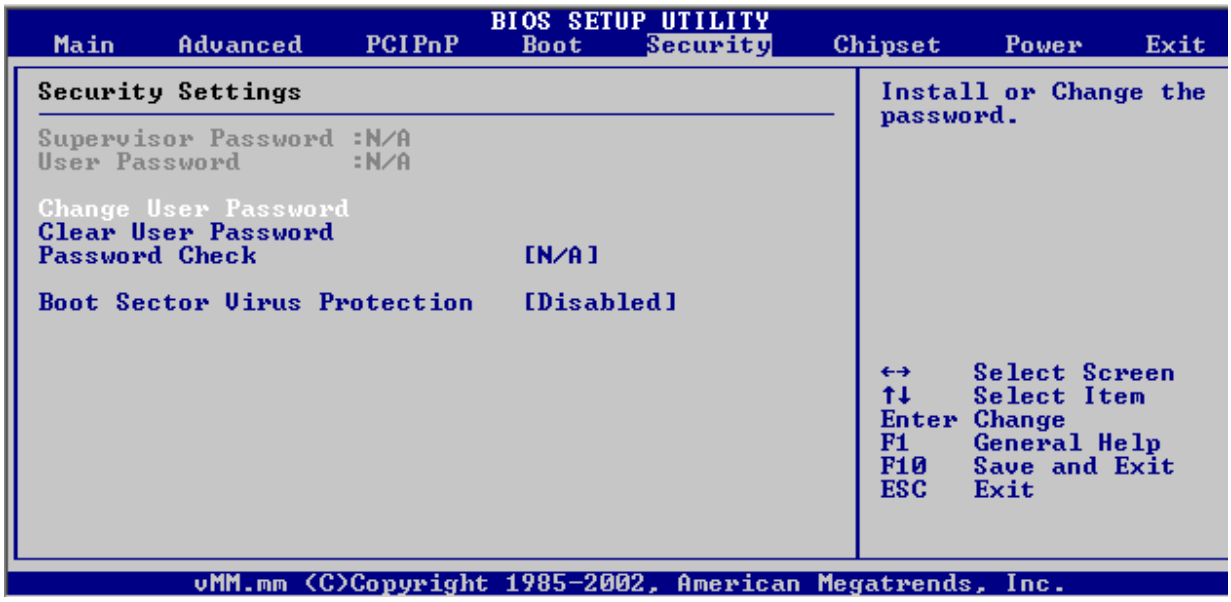
Boot Setting Configuration Submenu



Feature	Option	Description
Quick Boot	Disabled Enabled	Allows BIOS to skip tests while booting
Quiet Boot	Disabled Enabled	Disabled: display normal POST messages Enabled: display OEM logo
AddOn ROM Display Mode	Force BIOS Keep Current	Set display mode for option ROM
Bootup Num-Lock	Off On	Select power on state for NumLock
PS/2 Mouse Support	Disabled Enabled	Select support for PS/2 mouse
Typematic Rate	Slow Fast	Select keyboard typematic rate

System Keyboard	Absent Present	Enable/Disable all keyboards attached to the system
Parity Check	Disabled Enabled	Enable/Disable memory or parity error check
Boot to OS/2	No Yes	OS/2 compatibility mode
Wait for “F1” if error	Disabled Enabled	Wait for F1 key to be pressed if error occurs
Hit ‘DEL’ Message Display	Disabled Enabled	Display “Press DEL to run Setup” in POST
Interrupt 19 Capture	Disabled Enabled	Enabled: allows option ROMs to trap interrupt 19

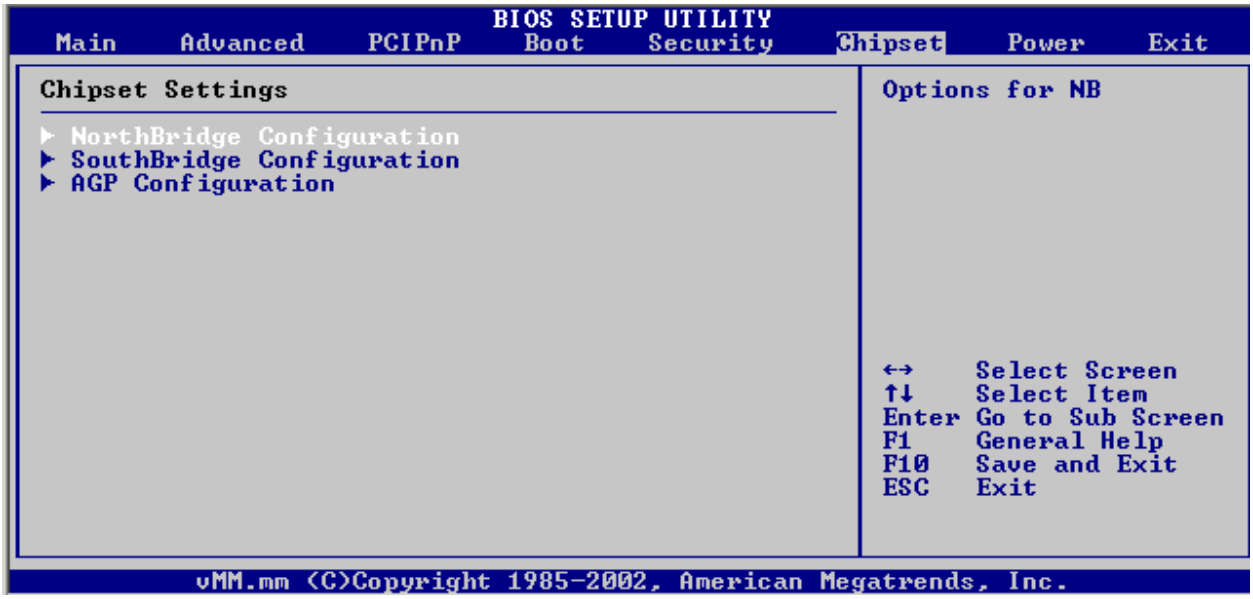
Security Menu



Feature	Option	Description
Change User Password		Install or change the password
Clear User Password		Immediately clears the User password
Password Check		Setup: check password while invoking setup Always: check password while invoking setup as well as on each boot
Boot Sector Virus Protection	Disabled Enabled	Enable/Disable Boot Sector Virus Protection

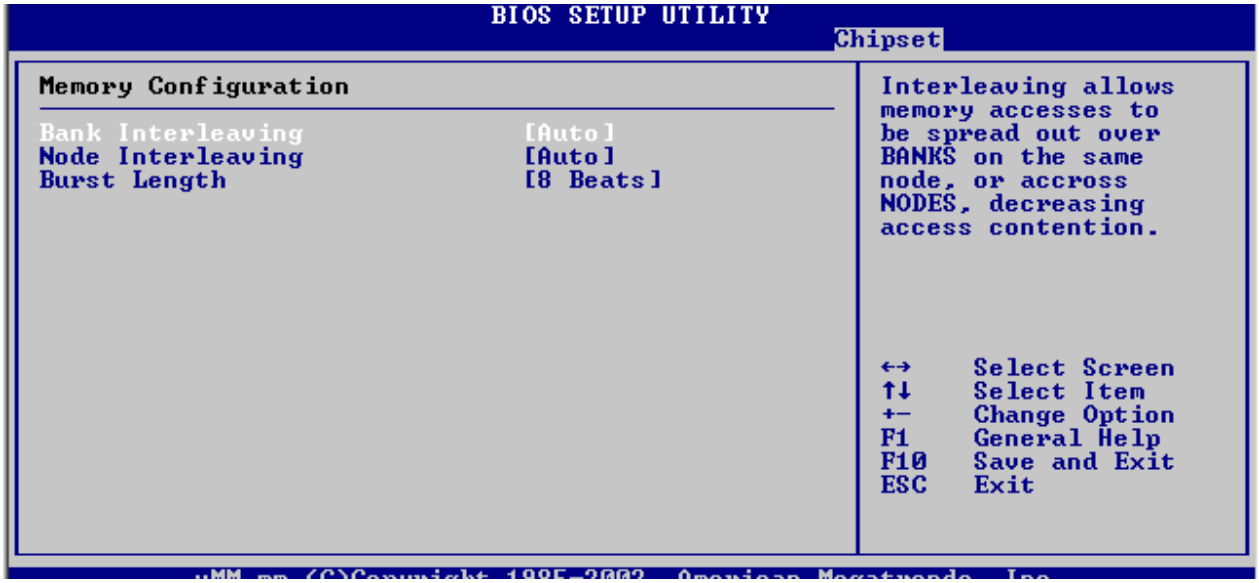
Chipset Menu

There are three submenus inside Chipset menu: NorthBridge Configuration, SouthBridge Configuration and AGP Configuration.



NothBridge Configuration Submenu

Memory Configuration Submenu

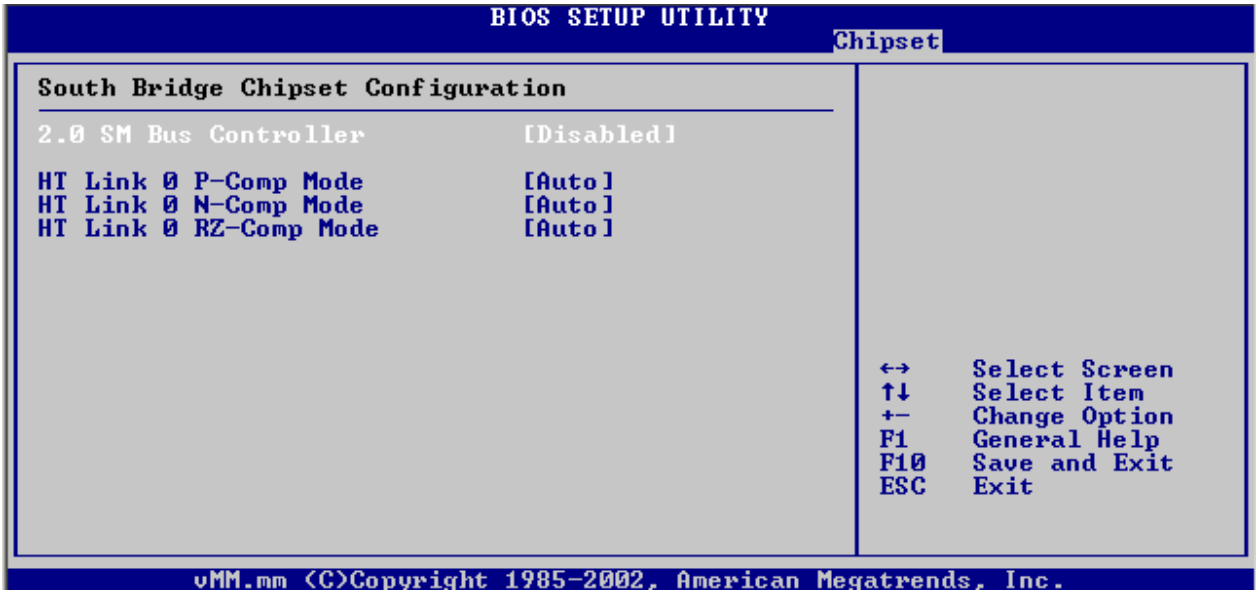


Feature	Option	Description
Bank Interleaving	Auto Disabled	Interleaving allows memory accesses to be spread out over BANKS on the same node, or across NODES, decreasing access contention
Node Interleaving	Auto Disabled	Interleaving allows memory accesses to be spread out over BANKS on the same node, or across NODES, decreasing access contention
Burst Length	8 Beats 4 Beats	Burst length can be set to 8 or 4 beats. 64 bit Dq must use the 4 beats

ECC Configuration Submenu

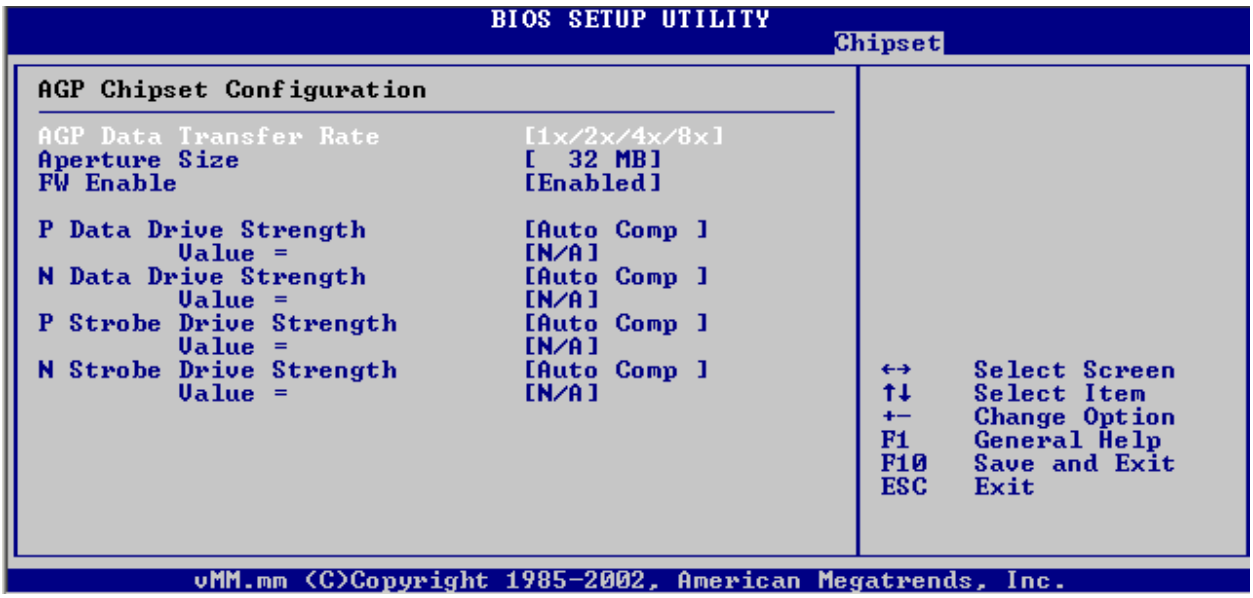
Feature	Option	Description
Master ECC Enable	Disabled Enabled	Master ECC Enables support on all nodes for ECC error detect and correction

SouthBridge Configuration



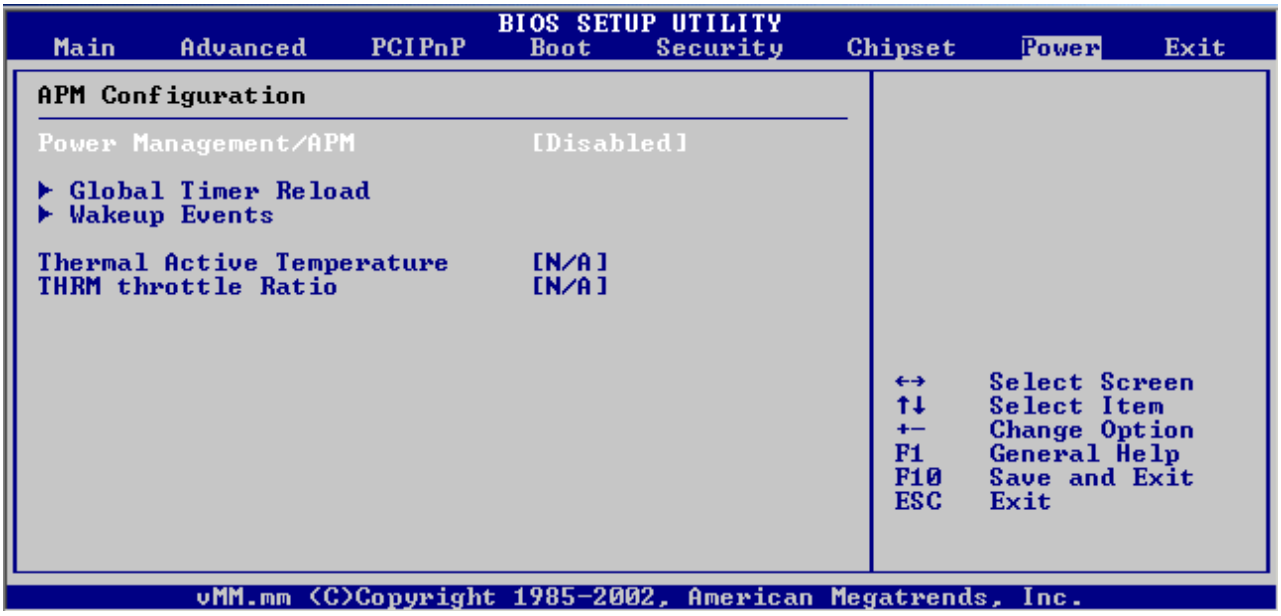
Feature	Option	Description
2.0 SM Bus Controller	Disabled Enabled	
HT Link 0 P-Comp Mode HT Link 0 N-Comp Mode HT Link 0 RZ-Comp Mode	Auto Data Calcomp+ Data Calcomp- Data	Auto causes hardware compensation vales. Other choices allow the user to override default compensation with an absolute value, add to the hardware generated value, or subtract a value from the generated value

AGP Configuration Submenu

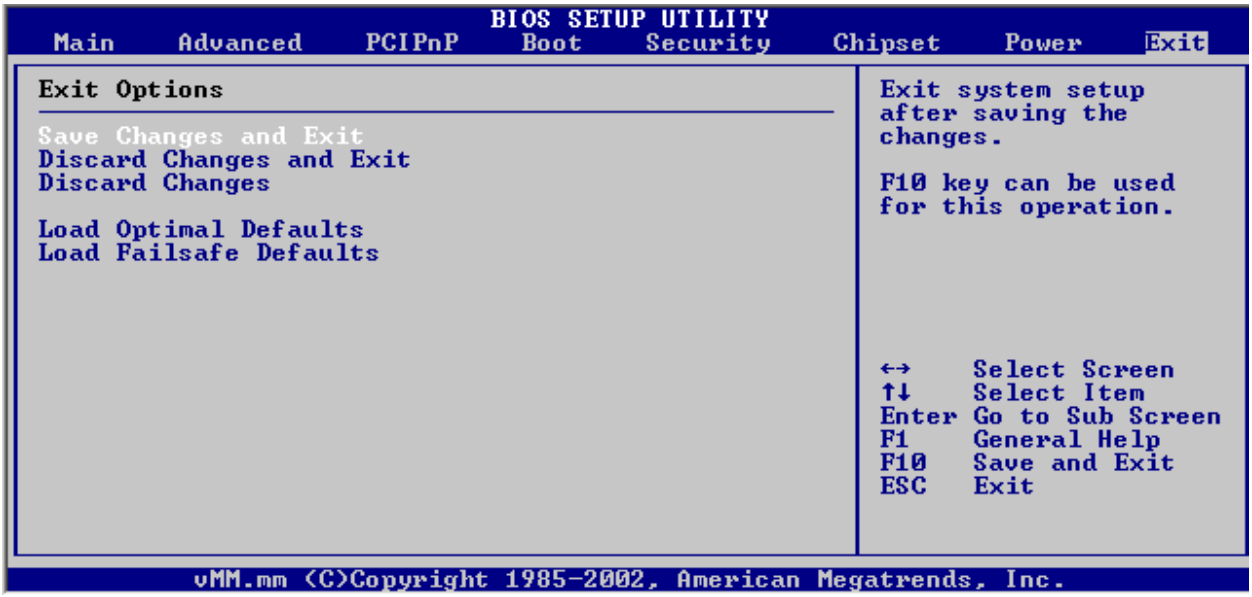


Feature	Option	Description
AGP Data Transfer Rate	1x / 2x / 4x / 8x 1x / 2x / 4x	
Aperture Size	32, 64, 128, 256, 512, 1024, 2056 MB	Aperture size defines a Window into system memory for the AGP video controller. It doesn't consume real system memory
FW Enable	Enabled Disabled	
P Data drive Strength N Data drive Strength P Strobe Drive Strength N Strobe Drive Strength	Auto Comp Fixed Comp Auto + Value Auto - Value	

APM Configuration Menu



Exit Menu



Feature	Description
Save Changes and Exit	Exit system setup after saving the changes. F10 key can be used for this operation
Discard Changes and Exit	Exit system setup without saving the changes. ESC key can be used for this operation
Discard Changes	Discard changes done so far to any of the setup questions. F7 key can be used for this operation
Load Optimal Defaults	Load optimal default values for all the setup questions. F9 key can be used for this operation
Load Failsafe Defaults	Load Failsafe default values for all the setup questions. F8 key can be used for this operation