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Ocean Office Automation Ltd.
5th Floor, Kader Industrial Building,
22 Kai Cheung Road, Kowloon Bay,
Kowloon, Hong Kong.

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CHAPTER 1 GENERAL SPECIFICATIONS OVERVIEW

1.1 GENERAL SPECIFICATIONS OVERVIEW

Processor:

- Processor Type: Intel Pentium II CPU.
- External CPU clock: 66 Mhz
- CPU Socket: 242 pins Slot 1 on board.
- Coprocessor: Included in Pentium processor.

Form Factor:

- Outer Dimensions: Standard ATX v2.0 guidelines
- Size: 12" x 8.6" (30.48cm x 21.8cm)

Chipset:

- Motherboard chipset: Intel 82440LX chipset

Cache Memory:

- 1st cache memory: 32KB
- 2nd cache memory: 1st cache memory included in CPU
- Cache mode: 256KB/512KB 2nd cache in CPU. Support Write Back cache mode for both L1/L2 Cache.

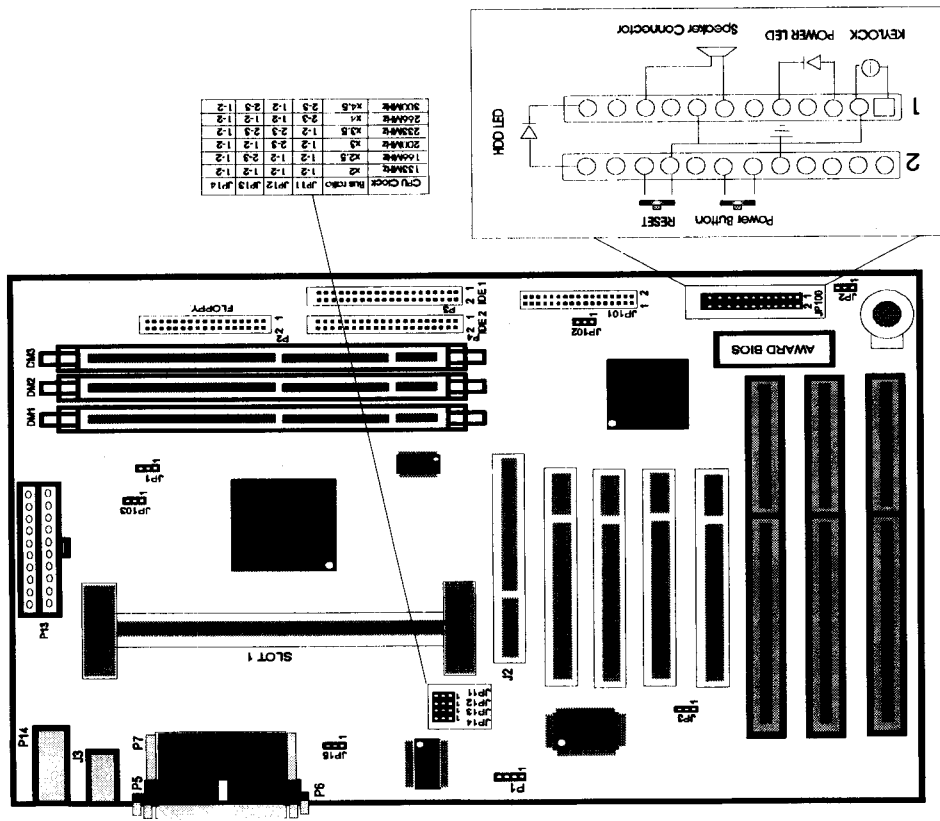
Memory Subsystem:

- SDRAM DIMM sockets: 3 x 168 pin 8MB / 16MB / 32MB / 64MB / 128MB
 - EDO DIMM sockets: Synchronous DRAM modules / EDO DRAM Modules
 - Max. Memory Size: 3 x 168 pin 8MB / 16MB / 32MB / 64MB
 - DRAM Type: EDO DRAM (3.3V)
 - Enhancement: 384MB (SDRAM) 192MB (EDO)
- Extended Data Out (EDO) DRAM with or without parity bit, or Synchronous DRAM. Mix of SDRAM or EDO DRAM supported. (Not recommended)

Input / Output Subsystem

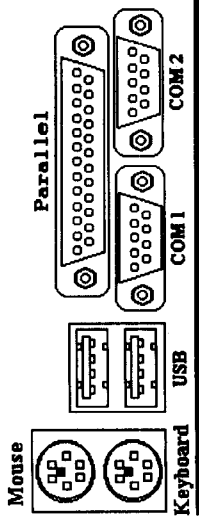
- PCI bus slots: 3 x 32-bit PCI Bus slots (3 masters) PCI 2.1 compliance
- ISA bus slots: 2 x 16-bit ISA slots
- shared bus slots: 1 x 32 bit PCI bus slot (master) OR 1x 16-bit ISA slot
- I/O bus speed: Up to 33MHz (PCI bus)
- AGP bus slots: 1 x AGP Bus slot for High performance graphical display and application.

APPENDIX-C: Quick Reference



B.2 Back Panel Connections

The back panel provides external access to PS/2 style keyboard and mouse connectors as well as two serial ports and one parallel port.



B.3 System Component Map

Jumper Connectors	Function
P5	COM 1 Port Connector
P6	COM 2 Port Connector
P7	PRINTER Port Connector
P14	PS/2 MOUSE Connector
P14	PS/2 KEYBOARD Connector
JP100	Reset
JP100	Keylock & Power LED
JP100	Power ON
JP100	Speaker
JP100	IDE LED Connector
P3	Primary IDE Connector
P4	Secondary IDE Connector
P2	Floppy Connector
BT1	External Battery Connector
J3	USB Connector
P1	Infra Red Connector

Other Features

- Size
 - Auto power off
 - Power Supply
 - Power /On switch
- ATX platform 8.6" (W) x 12" (L)
 Automatic power off when Win95 shutdown option selected. (function with ATX power supply only)
 Supports ATX power supply connector.
 Support Power/ON switch when ATX power supply is plugged.

A.2 COOLING FAN CONNECTORS

A.2.1 FAN1 Connector(JP102)

Pin	Signal Name
1	GND
2	+12V
3	FAN1

A.2.2 FAN2 Connector(JP103)

Pin	Signal Name
1	GND
2	+12V
3	FAN2

Assembled S.E.C Cartridge, Heat Sink, Retention Mechanism.

The Pentium II processor will also be offered as an Intel Boxed processor. Intel Boxed processor are intended for system integrators who build systems from motherboards and standard components. The Boxed Pentium II processor will be supplied with an attached fan / heatsink.

Hold the processor so that the fan shroud is facing toward the pegs on the motherboard. Slide the processor into the retention mechanism and slide the supports onto the pegs. Ensure that the pegs on the motherboard slide into the holes in the heatsink support and that the alignment notch in the processor fits over the plug in Slot 1. Push the processor down firmly, with even pressure on both side of the top, until it is seated. As show in (Figure 3).

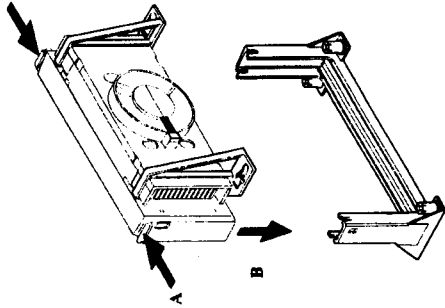


Figure 3. Slot 1 Pentium II CPU

The CPU cooling fan can improve the ventilation of the motherboard in the case. The conduction of the airflow can enhance the cooling effect to the voltage regulator and onboard heatsink by continuously keeping the air-stream flows.

The airflow of the fan/heatsink is into the center and out of the sides of the fan/heatsink. The large arrows in the Figure 4 denote the direction of airflow.

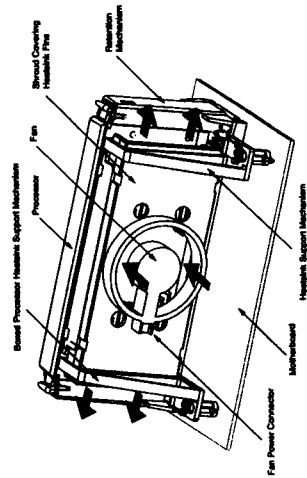


Figure 4 Airflow of fan/heatsink

APPENDIX-A CONNECTORS PINOUT

A.1 FRONT PANEL CONNECTORS

A.1.1 Power Button (JP100)

Pin	Signal Name
12	5V standby
14	ATX Power on

A.1.2 Hard Drive LED (JP100)

Pin	Signal Name
23	LED-
24	LED+

A.1.3 Reset Connector (JP100)

Pin	Signal Name
18	Ground
20	Reset

A.1.4 Speaker Connector (JP100)

Pin	Signal Name
13	+5V
15	GND
17	NC
19	Speaker Data_Out

A.1.5 Keylock Connector (JP100)

Pin	Signal Name
1	KB Lock
3	Ground

A.1.6 ATX Power Connector (P13)

PIN	Signal Name	Pin	Signal Name
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	Remote Power On
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power Good	18	-5V
9	5V STB	19	+5V
10	+12V	20	+5V

CHAPTER 3 CMOS SETUP CONFIGURATION

BIOS SETUP

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery backed CMOS RAM so data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless there is configuration change in the system, such as hard drive replacement or new equipment change.

It is possible that CMOS had a battery failure which cause data lose in CMOS_RAM. If so, reenter system configuration parameters become necessary.

This chapter explains the information contained in the Setup program and tell you how to modify the setting according to your system configuration.

The BIOS supports Software Turbo Speed features. Instead of processing the Turbo Speed Button on the front panel, simply press the <Ctrl>, <Alt>, and <+> keys at the same time to enable the Turbo Speed feature; and press the <Ctrl>, <Alt>, and <-> keys at the same time to disable the feature.

3.1 CMOS Setup Utility

Power on the computer and press key immediately will bring you into BIOS CMOS SETUP UTILITY.

ROM PCI/ISA BIOS CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURE SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PNP/PCI CONFIGURATION	EXIT WITHOUT SAVING
INTEGRATED PERIPHERALS	
LOAD SETUP DEFAULTS	
ESC: Quit	↑↓→← : SELECT Item
F10: Save & Exit Setup	(Shift)F2: Change Color
	Time, Date, Hard Disk Type..

The menu displays all the major selection items and allow user to select any one of shown item. The selection is made by moving cursor (press any direction key) to the item and press 'Enter' key. An on-line help message is displayed at the bottom of the screen as cursor is moving to various items which provides user better understanding of each function. When a selection is made, the menu of selected item will appear so the user can modify associated configuration parameters.

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Port 1/2

Select a logical COM port name and matching address for the first and second serial ports.

USB Keyboard Support

Select Enabled if your system using a Universal Serial Bus (USB) Keyboard and you have USB peripherals.

Onboard Parallel Port

Select a logical LPT port name and matching address for the physical parallel (printer) port.

Parallel Port Mode

Select an operating mode for the onboard parallel port. Select Compatible or Extended unless you are certain both your hardware and software support EPP (Enhanced Parallel Port) or ECP (Extended Capabilities Port) mode.

SPP PC AT Standard parallel port

EPP Fast, bidirectional port used primarily by non-printer peripherals, CD ROM, tape, hard drive, network adapters, etc.

ECP Fast, buffered port, used primarily by new generation of printers and scanners.

3.8 Load Setup Defaults

Load the system default data directly from ROM and initialize associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

3.9 Supervisor/ User Password

When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory. Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup.

System Enter a password each time the system boots and when ever you enter Setup.

Setup Enter a password when ever you enter Setup.

NOTE: To clear the password simply press Enter when asked to enter a password. Then the password function is disabled.

SECTOR:

The sector number of each track defined on the hard disk. The range is from "1" to "64".

MODE:

Select "Auto" to detect the mode type automatically. If your hard disk supports the LBA mode, select "LBA" or "Large". However, if your hard disk cylinder is more than 1024 and does not support the LBA function, you have to set at "Large".

Select "Normal" if your hard disk supporting cylinders is below 1024.

3.3 BIOS Features Setup

ROM PCI/ISA BIOS	
BIOS FEATURES SETUP AWARD SOFTWARE, INC.	
Virus Warning	: Disabled
CPU Internal Cache	: Enabled
External Cache	: Enabled
Quick Power On Self Test	: Enabled
Boot Sequence	: A, C, SCSI
Swap Floppy Drive	: Disabled
Boot Up Floppy Seek	: Disabled
Boot Up NumLock Status	: On
Boot Up System Speed	: High
Gate A20 Option	: Fast
Typematic Rate Setting	: Disabled
Typematic Rate (Chars/Sec)	: 6
Typematic Delay (Msec)	: 250
Security Option	: Setup
PCI/VGA Palette Snoop	: Disabled
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
ESC : Quit	↑↓←→ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values (Shift) F2 : Color	
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

Moving around the BIOS and Chipset Features (refer to the next section) Setup programs shown works the same way as moving around the Standard CMOS Setup program. User are not encouraged to run the BIOS and Chipset Features Setup programs. Your system should have been fine-tuned before shipping. Improper Setup may cause the system to fail, consult your dealer before making any changes.

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

Resources Controlled By

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play compatible devices. If you select Auto (Manufacture default), all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assign them.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

IRQ n Assigned to

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

DMA n Assigned to

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

PCI IDE IRQ Map to

This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary.

Primary/Secondary IDE INT#

Each PCI peripheral connection is capable of activating up to four interrupts: INT# A, INT# B, INT# C and INT# D. By default, a PCI connection is assigned INT# A. Assigning INT# B has no meaning unless the peripheral device requires two interrupt services rather than just one. Because the PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary and secondary IDE INT# fields default to values appropriate for two PCI IDE channels, with the primary PCI IDE channel having a lower interrupt than the secondary.

Typematic Rate (Chars/Sec)

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24 or 30 characters per second.

Typematic Delay (Msec)

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

PCI/VGA Palette Snoop

Your BIOS Setup many not contain this field. If the field is present, leave at Disabled.

OS Select for DRAM > 64MB

Select OS2 only if you are running OS/2 operating system with greater than 64 MB of RAM on your system.

Shadow

Software that resides in a read-only memory (ROM) chip on a device is called firmware. The Award BIOS permits shadowing of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals, such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardware shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS Shadow

Video BIOS shadows into memory area C0000-C7FFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

V/H SYNC+Blank System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.

DPMS Support Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.

Blank Screen System only writes blanks to the video buffer.

Video Off After As system moves from lesser to greater power-saving modes, select the mode in which you want the monitor to blank.

Modem Use IRQ This feature allows you to select the IRQ# to meet your modem's IRQ#.

HDD Power Management

HDD Off After After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active. Selecting Suspend tells the drive to power down immediately.

Doze Mode After the selected period of system inactivity (1 minute to 1 hour), the CPU clock runs at slower speed while all other devices still operate at full speed.

Standby Mode After the selected period of system inactivity (1 minute to 1 hour), the fixed disk drive and the video shut off while all other devices still operate at full speed.

Suspend Mode After the selected period of system inactivity (1 minute to 1 hour), all devices except the fixed disk drive and CPU shut off.

Throttle Duty Cycle When the system enters Doze mode, the CPU clock runs only part of the time. You may select the percent of time that the clock runs.

ZZ Active In Suspend When Enabled, the ZZ signal is active during Suspend mode.

VGA Active Monitor When Enabled, any video activity restarts the global timer for Standby mode.

Soft-Off by PWR-BTTON When set to Delay 4 Sec, ATX power-button work as a system power-off button after pressed for less than 4 seconds
Set as Instant-off may cause the power-button work as instantaneous power-off the system.

EDO RAS# Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before EDO DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the EDO DRAM may fail to retain data.

EDO DRAM Read Burst Set the timing for burst-mode reads from EDO DRAM. The lower the timing numbers, the faster the system addresses memory.

EDO DRAM Write Burst Set the timing for burst-mode writes from EDO DRAM. The lower the timing numbers, the faster the system addresses memory.

CPU-To-PCI IDE Posting Select Enabled to post write cycles from the CPU to the PCI IDE interface. IDE accesses are posted in the CPU to PCI buffers, for cycle optimization.

System BIOS Cacheable Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable Selecting Enabled allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.

Video RAM Cacheable Enable this field to activate a new caching technology for the video memory of the processor.

8/16 Bit I/O Recovery Time The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.

These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.

Memory Hole at 15M-16M You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

Passive Release When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

Delay Transaction The chipset has embedded 32-bit posted write buffer to support delay transaction cycles. Select Enabled to support compliance with PCI specification version 2.1.

AGP Aperture Size (MB)

AGP graphic display card memory-mapped, the size of graphics data structures can reside in a Graphics Aperture.

SDRAM RAS-TO-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Lower value gives faster performance; and upper value gives more stable performance.

SDRAM RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before EDO DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the EDO DRAM may fail to retain data.

SDRAM CAS Latency Time

Leave on default setting

CPU Warning Temperature

This field set the upper bound of the CPU temperature warning signal. The system performance will be reduced while the CPU's temperature is higher than the value that is set in CMOS setup.

Current CPU Temperature

This field enable monitor the current CPU temperature.

Current System Temperature

This field monitor the current motherboard temperature, and only appear when LM78 module plug into the motherboard.

Fan 1 or 2 Speed :

This two field able to detect the current CPU Fan and Chassis Fan Speed in Speed in Rotation Per Minute (RPM). To active this field, you should have LM78 module plug into the motherboard. Otherwise, this field disappear.

Voltage Monitor: (+12V /-12V /+5V /-5V)

This field able to detect the voltages output by the on-board regulator circuit. This only appear when LM78 module plug into the motherboard.

3.5 Power Management Setup

ROM PCI/ISA BIOS	
POWER MANAGEMENT SETUP	CMOS SETUP UTILITY
Power Management : Disabled	** Reload Global Time Events **
PM Control by APM : Yes	IRQ[3-7,9-15], NMI : Enabled
Video Off Method : V/H SYNC+Blank	Primary IDE 0 : Disabled
Video Off After : Standby	Primary IDE 1 : Disabled
MODEM Use IRQ : 3	Secondary IDE 0 : Disabled
Doze Mode : Disabled	Secondary IDE 1 : Disabled
Standard Mode : Disabled	Floppy Disk : Disabled
Suspend Mode : Disabled	Serial Port : Enabled
HDD Power Down : Disabled	Parallel Port : Disabled
Throttle Duty Cycle : 62.5%	
ZZ Active In Suspend : Disabled	ESC : Quit ↑↓→← : Select Item
VGA Active Monitor : Enabled	F1 : Help PU/PD/+/- : Modify
Soft-off by PWR-BTTN : Delay 4 Sec.	F5 : Old Values (Shift) F2 : Color
CPUFAN off in suspend : Enabled	F6 : Load BIOS Defaults
Resume by Ring : Disabled	F7 : Load Setup Defaults
IRQ8 Break Suspend : Disabled	

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section PM Timers for a brief description of each mode.

This table describes each power management mode:

Max Saving Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.

User Define Set each mode individually. Select time-out periods in the PM Timers section, following.

Min Saving Minimum power savings. Inactivity period is 1 hour in each mode.

PM Control by APM

If Advanced Power Management (APM) is installed on your system, selecting Yes gives better power savings.

Video Off Method

Determines the manner in which the monitor is blanked.

3.4 Chipset Features Setup

ROM PCI/ISA BIOS	
CMOS SETUP UTILITY	
CHIPSET FEATURES SETUP	
Auto Configuration	: Enabled
DRAM Speed Selection	: 60ns
MA Wait State	: Slow
EDO RAS# To CAS# Delay	: 3
EDO RAS# Precharge Time	: 4
EDO DRAM Read Burst	: x333
EDO DRAM Write Burst	: x333
DRAM Data Integrity Mode	: Enabled
CPU-To-PCI IDE Posting	: Enabled
System BIOS Cacheable	: Enabled
Video BIOS Cacheable	: Enabled
Video RAM Cacheable	: Disabled
8 Bit I/O Recovery Time	: 1
16 Bit I/O Recovery Time	: 1
Memory Hole At 15M-16M	: Disabled
Passive Release	: Enabled
Delayed Transaction	: Enabled
AGP Aperture Size (MB)	: 64
SDRAM RAS-to-CAS Delay	: Fast
SDRAM RAS Precharge Time	: Fast
SDRAM CAS Latency Time	: 2
CPU Warning Temperature	: Disabled
Current CPU Temperature	: 25°C/57°F
Current System Temp.	: 28°C/82°F
Fan 1 Speed	: 4272 RPM
Fan 2 Speed	: 0 RPM
Vcore	: 2.80V
VCC3	: 3.34V
+12V	: 12.30V -12V : -12.26V
-5V	: -5.14V +5V : 5.14V
ESC : Quit	↑↓←→ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values (Shift) F2	: Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

Auto Configuration

Auto Configuration selects predetermined optimal values of chipset parameters. When Disabled, chipset parameters revert to setup information stored in CMOS. Many fields in this screen are not available when Auto Configuration is Enabled.

DRAM Speed Selection

The value in this field must correspond to the speed of the DRAM installed in your system. DO NOT change the default setting of this field, as determined by the system board manufacturer for the installed DRAM. This value is access speed, so a lower value means a faster system.

MA Wait State

Selecting Enabled inserts an additional wait state before the beginning of a memory read. The setting of this parameter depends on the board design. Do not change from the manufacturer's default unless you are getting memory addressing errors.

EDO RAS# to CAS# Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when EDO DRAM is written to, read from, or refreshed. Disabled gives faster performance; and Enabled gives more stable performance.

Resume By Ring

This field allows to turns the ATX power supply ON when the modem receives a call. While the computer is OFF.

IRQ8 Break Suspend

Enable real-time to wake up system.

Reload Global Timer Events

When Enabled, an event occurring on each device listed below restarts the global time for Standby mode.

IRQ[3-7,9-15], NMI
 Primary IDE 0 /IDE 1
 Secondary IDE 0/IDE1
 Floppy Disk
 Serial Port
 Parallel Port

3.6 PnP/PCI Configuration

ROM PCI/ISA BIOS	
PCI CONFIGURATION SETUP	
AWARD SOFTWARE, INC.	
PNP OS Installed	: No
Resources Controlled By	: Manual
Reset Configuration Data	: Disabled
IRQ-3 assigned to	: Legacy ISA
IRQ-4 assigned to	: Legacy ISA
IRQ-5 assigned to	: PCI/ISA PnP
IRQ-7 assigned to	: Legacy ISA
IRQ-9 assigned to	: PCI/ISA PnP
IRQ-10 assigned to	: PCI/ISA PnP
IRQ-11 assigned to	: PCI/ISA PnP
IRQ-12 assigned to	: PCI/ISA PnP
IRQ-14 assigned to	: Legacy ISA
IRQ-15 assigned to	: Legacy ISA
DMA-0 assigned to	: PCI/ISA PnP
DMA-1 assigned to	: PCI/ISA PnP
DMA-3 assigned to	: PCI/ISA PnP
DMA-5 assigned to	: PCI/ISA PnP
DMA-6 assigned to	: PCI/ISA PnP
DMA-7 assigned to	: PCI/ISA PnP
PCI IDE IRQ Map To	: PCI-AUTO
Primary IDE INT#	: A
Secondary IDE INT#	: B
Used MEM base addr	: N/A
ESC : Quit	↑↓←→ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values (Shift) F2	: Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g., Windows 95).

CPU Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU.

External Cache

The External Cache field may not appear if your system does not have external cache memory.

Quick Power On Self Test

Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

Boot Sequence

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, modern computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive.

Swap Floppy Drive

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

Boot Up Floppy Seek

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

Boot Up System Speed

Select High to boot at the default CPU speed; select Low to boot at the speed of the AT bus. Some add-in peripherals or old software (such as old games) may require a slow CPU speed. The default setting is High.

Typematic Rate Setting

When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system.

When Enabled, you can select a typematic rate and typematic delay.

3.7 Integrated Peripherals

ROM PCI/ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.	
IDE HDD Block 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
On-Chip Primary PCI IDE	: Enabled
On-Chip Secondary PCI IDE	: Enabled
USB Keyboard Support	: Disabled
KBC input clock	: 8MHz
Onboard FDC Controller	: Enabled
Onboard Serial Port 1	: 3F8/IRQ4
Onboard Serial Port 2	: 2F8/IRQ3
UR 2 Mode	: Standard
ESC	: Quit
F1	: Help
F5	: Old Values (Shift) F2 : Color
F6	: Load BIOS Defaults
F7	: Load Setup Defaults

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

IDE Primary/Secondary Master/Slave UDMA

The integrated peripheral controller contains an IDE interface with support for DMA33 mode. select auto to active each channel separately.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.

KBC input clock

Keyboard controller input clock rate 8MHz or 12MHz, Default value 8MHz.

3.2 Standard CMOS Setup

ROM PCI/ISA BIOS										
STANDARD CMOS SETUP										
AWARD SOFTWARE, INC.										
Date (mm:dd:yy) : Wed, May 8 1996										
Time (hh:mm:ss) : 15:38:55										
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE		
Primary Master	:Auto	0	0	0	0	0	0	Auto		
Primary Slave	:Auto	0	0	0	0	0	0	Auto		
Secondary Master	:Auto	0	0	0	0	0	0	Auto		
Secondary Slave	:Auto	0	0	0	0	0	0	Auto		
Drive A :	1.44M, 3.5 in.									
Drive B :	None									
Video :	EGA/VGA									
Halt On :	All Errors									
ESC: Quit	↑↓→← : Select Item Pu/PD+/- : Modify									
F1 : Help	(Shift)F2: Change Color									

The Standard CMOS Setup screen is displayed above. System BIOS automatically detects memory size, thus no changes are necessary. It has a few items for setting. Each item may have one or more option settings. It allows you to change the system Date and Time, IDE hard disk, floppy disk drive types for drive A; and B; boot up video display mode, and POST error handling selection. Use the arrow keys to highlight the item and then use the <PgUp>, or <PgDn> keys to select the value you want in each item.

Hard Disk Configurations

TYPE:

Select from "1" to "45" to fill remaining fields with predefined values of disk drives. Select "User" to fill the remaining fields. Select "Auto" to detect the HDD type automatically.

SIZE:

The hard disk size. The unit is Mega Bytes.

CYLS:

The cylinder number of the hard disk.

HEAD:

The read/write head number of hard disk. The range is from "1" to "16".

PRECOMP:

The cylinder number at which the disk drive changes the write timing.

LANDZ:

The cylinder number that the disk drive heads (read/ write) are seated when the disk drive is paked.

3.10 IDE HDD Auto Detection

ROM PCI/ISA BIOS																																																											
STANDARD CMOS SETUP																																																											
AWARD SOFTWARE, INC.																																																											
HARD DISKS TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE																																																											
Primary Master :																																																											
<table border="1"> <tr> <td colspan="10">Select Primary Master Option (N=Skip): N</td> </tr> <tr> <td>OPTIONS</td> <td>SIZE</td> <td>CYLS</td> <td>HEAD</td> <td>PRECOMP</td> <td>LANDZ</td> <td>SECTOR</td> <td>MODE</td> <td></td> <td></td> </tr> <tr> <td>2(Y)</td> <td>540</td> <td>524</td> <td>32</td> <td>0</td> <td>1047</td> <td>63</td> <td>LBA</td> <td></td> <td></td> </tr> <tr> <td>1</td> <td>540</td> <td>1048</td> <td>16</td> <td>65535</td> <td>1047</td> <td>63</td> <td>NORMAL</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>540</td> <td>524</td> <td>32</td> <td>65535</td> <td>1047</td> <td>63</td> <td>LARGE</td> <td></td> <td></td> </tr> </table>										Select Primary Master Option (N=Skip): N										OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE			2(Y)	540	524	32	0	1047	63	LBA			1	540	1048	16	65535	1047	63	NORMAL			3	540	524	32	65535	1047	63	LARGE		
Select Primary Master Option (N=Skip): N																																																											
OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE																																																				
2(Y)	540	524	32	0	1047	63	LBA																																																				
1	540	1048	16	65535	1047	63	NORMAL																																																				
3	540	524	32	65535	1047	63	LARGE																																																				
Note: Some Oses (like SCO-UNIX) must use "NORMAL" for installation																																																											

The IDE Hard Disk Drive Auto Detection feature automatically configurations your new hard disk. Use it for a quick configuration of new hard drives. This feature allows you to set the parameters of up to four IDE HDDs. The option with " (Y) " are recommended by the system BIOS. You may also keys in your own parameters instead of setting by the system BIOS. After all setting, press ESC key to return the main menu. For confirmation, enter the Standard CMOS Setup feature.

3.11 Save and Exit Setup

After you have made changes under Setup, press <ESC> to return to the main menu. Move cursor to "Save and Exit Setup" or press "F10" and then press "y" to change the CMOS Setup. If you did not change anything, press <ESC> again or move cursor to "Exit Without Saving" and press "y" to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility:

SAVE to CMOS and EXIT (Y/N)?

3.12 Exit without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications:

Quit Without Saving (Y/N)?

2.2 System Memory

The LX ATX supports 60ns, faster Fast Page Mode(FPM) or Extended Data Out (EDO) DRAMs. It is recommended to populate Bank 1 first. Memory error checking and correction, ECC, is supported through parity DIMMS (x72). To install DIMMs, do the following procedure:

1. Holding the DIMM only by the edges, remove it from its antistatic package.
2. Position the DIMM at about a 90° angle relative to socket on the motherboard. Make sure the small notch in the middle of the bottom edge of the DIMM aligns with the notch in the DIMM socket.
3. Insert the bottom edge of the DIMM into the DIMM socket and make sure it is seated firmly.
4. When the DIMM seats correctly, hold it at each end and gently press the top edge towards the retaining clips of the connector until the DIMM snaps into place. If the DIMM does not install correctly, gently spread the retaining clips just enough so that you can pull away the top edge of the DIMM and try again.

Install 168-Pin DIMM Module in any or all of the banks in any combination as following:

BANK 1(DIMM 1)	BANK 2(DIMM 2)	BANK 3(DIMM 3)	TOTAL
1MX64 (8MB)	1MX64 (8MB)	1MX64 (8MB)	8MB
2MX64 (16MB)	2MX64 (16MB)	2MX64 (16MB)	TO
4MX64 (32MB)	4MX64 (32MB)	4MX64 (32MB)	384MB
8MX64 (64MB)	8MX64 (64MB)	8MX64 (64MB)	
16MX64 (128MB)	16MX64 (128MB)	16MX64 (128MB)	

Table 1 Memory Configuration Table

*Note: Does not support x32 SDRAM DIMM on DM3 and x8 SDRAM DIMM on DM1 and DM2.

2.3 Keyboard Interface

PS/2* keyboard/mouse connectors are located on the back panel side of the board. It is recommended to turn off the system power before installing or removing a keyboard or mouse.

2.4 Real Time Clock, CMOS RAM and Battery

The integrated Real Time Clock (RTC) provides a time of day clock, and 100-year calendar with alarm features. These can be set in the BIOS SETUP program. The RTC also supports 242-byte battery-backed CMOS RAM for BIOS use. The CMOS RAM value can be cleared to the system defaults by using a jumper on (JP2).

A.1.7 Power LED (JP100)

Pin	Signal Name
5	LED-
7	NC (GND)
9	LED+

A.1.8 Infra-red (P1)

Pin	Signal Name
1	IRRx
2	GND
3	IRTx
4	+5V

A.1.9 PS/2 Keyboard Connector (P14)

Pin	Signal Name
1	KDATA
2	N.C
3	GND
4	+5V
5	KCLK
6	N.C

A.1.10 PS/2 Mouse Connector (P14)

Pin	Signal Name
1	MDATA
2	N.C
3	GND
4	+5V
5	MCLK
6	N.C

CHAPTER 2 INSTALLATION AND UPGRADE

2.1 CPU Installation

Slot 1 Processor

The Intel Pentium II Processor utilizes Single Edge Contact (S.E.C) cartridge packaging technology. The S.E.C cartridge allows the L2 cache to remain tightly coupled to the processor, while maintaining flexibility when implementing high performance processor into the systems. The S.E.C cartridge utilizes surface mount core components and a substrate with an edge finger connection. The S.E.C cartridge package (Figure 1) introduced on the Pentium II processor will also be used in the Deschutes and future Slot 1 processors.

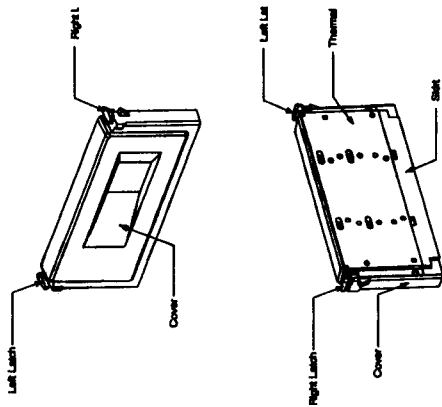


Figure 1. Intel Pentium II end-view.

Slot 1 Retention Mechanism and Attach Mount

The Intel enabled retention mechanism (Figure 2) holds the Slot 1 processor in place. The retention mechanism is keyed to the Slot 1 connector to ensure proper installation. The retention mechanism attach mount is pressed from the bottom of the motherboard and the retention mechanism is attached with captive nuts which are part of the retention mechanism assembly.

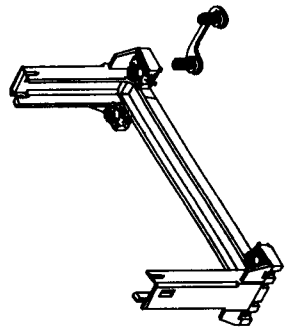
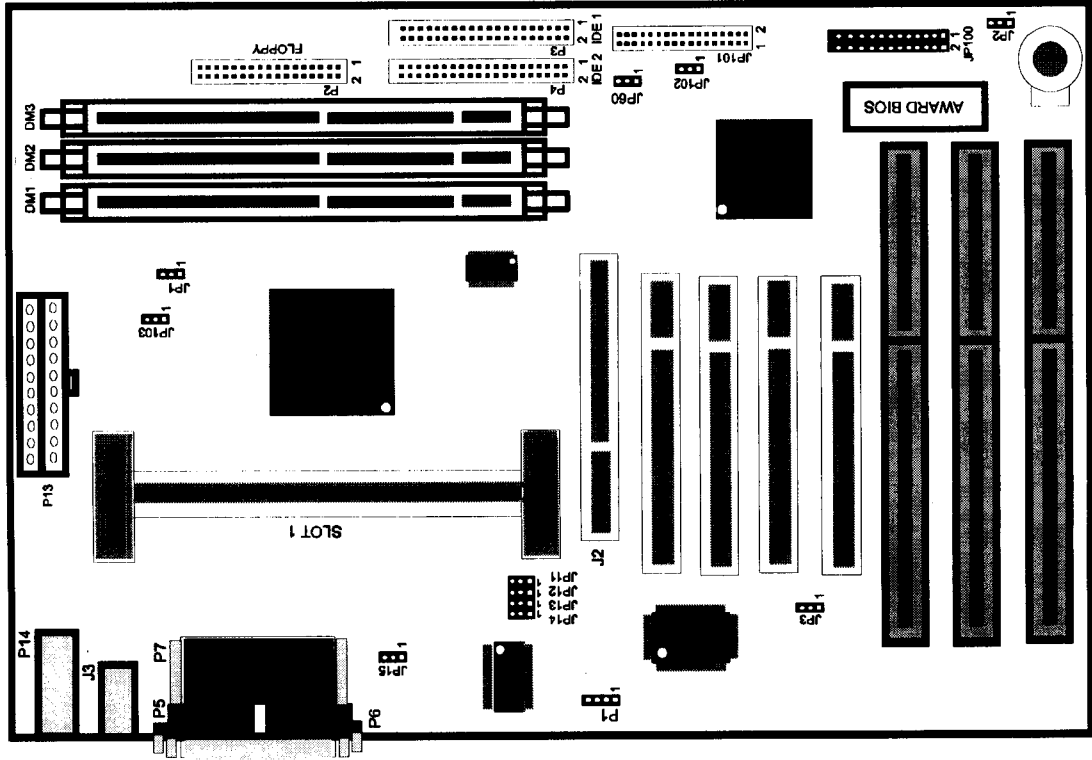


Figure 2. Slot 1 Mount diagram

APPENDIX-B HARDWARE SETTINGS

B.1 Layout of Rhino II LX Main Board



Integrated IDE, Super I/O Subsystem

- IDE support
 - Chipset built-in PCI IDE support up to 4 IDE Drives, bus mastering. (Using IRQ 14 & IRQ 15)
 - Support Mode 3, 4 IDE, LS-120 floppy driver & ATAPI CD-ROM.
 - Ultra DMA-33 support
 - One Floppy Port supporting 2 floppy drives of 360K / 720K / 1.2M / 1.44M / 2.88M
 - Two serial ports (16550 Fast UART compatibles)
 - One parallel Port (Standard, ECP, EPP support)
- On board I/O

USB Interface

- USB support
 - 2 USB connector on board.
 - Plug and Play peripherals easy to use up to 12M bit transfer rate

PS/2 Mouse/ Keyboard

- PS/2 Mouse/ Keyboard
 - 6-pin Mini-DIN connectors on board.

Power Management

- Green functions
 - Support various Power Management schemes Power On Suspend.
 - (Suspend to RAM and Suspend to Disk)

BIOS Subsystem

- BIOS Shadowing
- BIOS Features
 - Shadow RAM for System and Video BIOS
 - Built-in setup, Power-on self test, Drive table optimization, User-definable drive types, Password protection, Shadowing options

Plug & Play / BIOS Update

- Plug & Play BIOS
 - Support Microsoft Windows 95 Plug & Play and BIOS compliant
- Flash EEPROM
 - Use Flash EEPROM to allow easy BIOS update

System Support Functions

- System functions
 - 7 DMA channels, 16 level interrupts, Programmable timers
- Support functions
 - Fast A20 gate and Fast Reset
 - Enhanced real time clock/calendar with battery back-up

B.4 Jumper Settings

B.4.1 PENTIUM® II CPU SPEED

These jumpers allow the board to be configured for different speeds of the Pentium® II processor. The jumpers also affect the PCI and ISA clock speeds according to the following table:

CPU CLOCK

CPU Clock	Bus ratio	JP11	JP12	JP13	JP14
233 MHz	x 3.5	1-2	2-3	2-3	1-2
266 MHz	x 4	2-3	1-2	1-2	1-2
300 MHz	x 4.5	2-3	1-2	2-3	1-2
RES	x .5	2-3	2-3	1-2	1-2

RES is Reserved Setting.

NOTE: Manufacture default Bus frequency is 66MHz

B.4.2 Miscellaneous

Real Time Clock (RTC) (JP2)

1-2*	NORMAL
2-3	CLEAR

FLASH (JP3)

1-2*	+12V
2-3	+5V

*Manufacture Default

Modem Ring

JP15	Modem Ring Port
1-2	COM1
2-3*	COM2

*Manufacture Default

Table of Contents

Chapter 1: General Specification Overview

1. General Specification Overview.....	3
----------------------------------------	---

Chapter 2: Installation and Upgrade

2.1 CPU Installation.....	6
2.2 System Memory.....	8
2.3 Keyboard Interface.....	8
2.4 Real Time Clock, CMOS RAM and Battery.....	8

Chapter 3: Overview of the BIOS Setup Menu Screens

3.1 CMOS Setup Utility.....	9
3.2 Standard CMOS Setup.....	10
3.3 BIOS Features Setup.....	11
3.4 Chipset Features Setup.....	14
3.5 Power Management Setup.....	17
3.6 PnP / PCI Configuration.....	19
3.7 Integrated Peripherals.....	21
3.8 Load Setup Defaults.....	22
3.9 Supervisor / User Password.....	22
3.10 IDE HDD Auto Detection.....	23
3.11 Save & Exit Setup.....	23
3.12 Exit without Saving.....	23

Appendix-A: Connectors Pinout

A.1 Front Panel Connectors.....	24
A.2 Cooling Fan Connectors.....	26

Appendix-B: Hardware Settings

B.1 Layout of RHINO II LX Main Board.....	27
B.2 Back Panel Connections.....	28
B.3 System Component Map.....	28
B.4 Jumper Settings.....	29

Appendix-C: Quick Reference