

USER'S MANUAL

RHINO PRO 1



Copyright Notice

© Copyright 1996 Ocean Office Automation Ltd.

All rights reserved.

Ocean Office Automation Ltd.

5th Floor, Kader Industrial Building,

22 Kai Cheung Road, Kowloon Bay,

Kowloon, Hong Kong.

All of the information contained in this manual is copyrighted and all rights reserved. No part of this document, in whole or in part, may be reproduced or copied in any form without prior consent in writing from Ocean Office Automation Ltd..

For updated BIOS, drivers, or product release information, please visit Octek home page at: <http://www.oceanhk.com>

Limitations of Liability

While the information in this manual has been carefully reviewed and is believed to be accurate, Ocean Office Automation Ltd. (Ocean) assumes no responsibility in the event that any inaccuracies are found. In no event shall Ocean be held liable for any loss or expenses whether directly or indirectly caused by the support materials provided with this product. It is further acknowledged that Ocean is under no obligation to update the manual or to notify purchasers of any forthcoming updates.

Trademarks

Intel Pentium and Intel are registered trademarks of Intel Corporation.

Octek is a registered trademark of Ocean Office Automation Ltd.

XT, AT, PS/2, OS/2, & IBM are registered trademarks of International Business Machines Corporation.

All other brand and product names mentioned in this manual are trademarks or copyrights of their respective holders.

REVISION 1.0 Jan 1997

Table of Contents

Chapter 1: General Specification Overview

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

Chapter 2: Installation and Upgrade

2.1	CPU Installation.....	5
2.2	System Memory.....	6
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 PRO 1 Main Board.....	27
B.2	Back Panel Connections.....	28
B.3	System Component Map.....	28
B.4	Jumper Settings.....	29

CHAPTER 1

General Specifications Overview

Processor:

- ◆ Processor Type Intel Pentium Pro CPU.
- ◆ External CPU clock 60/66 Mhz
- ◆ CPU Voltage 2.1V to 3.5V Pentium Pro processors

Form Factor:

- ◆ Outer Dimensions Standard ATX v2.0 guidelines
12" × 9.6" (30.48cm × 24.38cm)

Chipset:

- ◆ Motherboard chipset Intel 82440FX chipset

Memory Subsystem:

- ◆ DRAM SIMM sockets 4 x 72 pin 4MB / 8MB / 16MB / 32MB / 64MB
DRAM modules
- ◆ Max. Memory Size 256MB
- ◆ DRAM Type Fast Page Mode (FPM) or Extended Data Out
EDO DRAM with or without parity bit.
- ◆ Enhancement Mix of Fast Page Mode or EDO DRAM
supported
ECC and Parity capability.

Input/Output Subsystem

- ◆ PCI bus slots 3 x 32-bit PCI Bus slots (3 masters)
PCI 2.1 compliance
- ◆ ISA bus slots 3 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)

Integrated IDE, Super I/O Subsystem

- ◆ IDE support Chipset built-in PCI IDE support up to
4 IDE Drives, bus mastering.
- ◆ On board I/O 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)
IRDA (Infra-red) support

USB Interface

- ◆ USB support

2 USB ports Support via Jumper Header and USB module
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
Sleep Switch for power saving

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
- ◆ Flash EEPROM

Support Plug & Play for easy installation
Use Flash EEPROM to allow easy BIOS update

System Support Functions

- ◆ System functions
- ◆ Support functions
- ◆ Clock

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

Other Features

- ◆ Size
- ◆ Auto power off
- ◆ Power Supply
- ◆ Power /On switch

ATX platform 9.6" (W) x 12" (L)
Automatic power off when Win95 shutdown option selected. (function with ATX power supply only)
Supports both AT and ATX power supply connector.
Support Power/ON switch when ATX power supply is plugged.

□ NOTE

128MB SIMMs using the 16Mb technology are not qualified for use on the Rhino Pro 1 motherboard due to electrical loading characteristics. 128MB technology have not been qualified, however, they will be supported by the motherboard when they become available, depending upon the individual characteristics of the memory module.

CHAPTER 2 INSTALLATION AND UPGRADE

2.1 CPU Installation

The CPU is composed of pins that can easily be bent during installation, causing permanent damage to the processor. It is therefore very important that you make sure the pins are straight before installing the CPU onto the socket. To properly align the CPU with the socket, align pin 1 of the CPU with pin 1 of the CPU socket as demonstrated below.

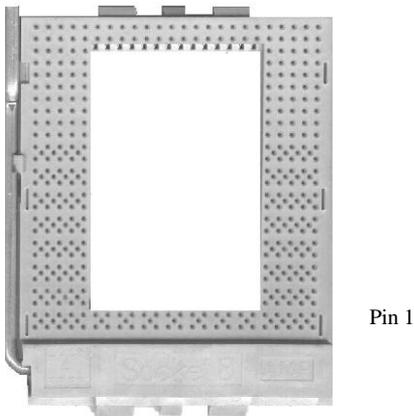
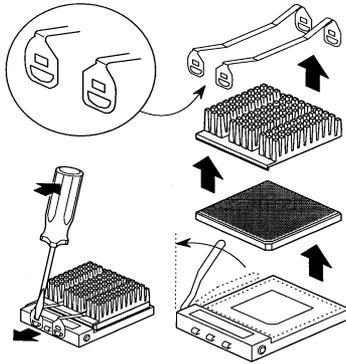


Figure 1. Socket 8 for Pentium CPU

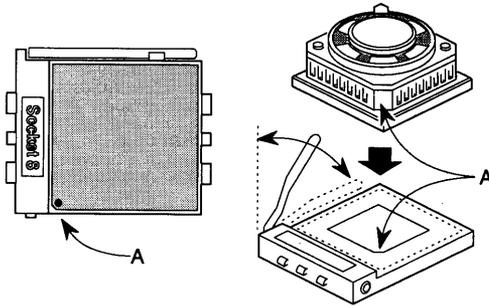
The OverDrive processor comes with a heat sink and fan mounted on top.

To install the upgrade, do the following:

1. We recommend you take the following steps to reduce the risk of electronic discharge damage to the processor and mother board components:
 - Touch the metal chassis before touching the processor or motherboard. Keep part of your body in contact with metal chassis to dissipate the static charge while handling the processor.
 - Avoid moving around needlessly.
2. Turn off all peripheral devices connected to the system, and turn off the system.
3. You must first remove the clamps over the heat sink and microprocessor. Insert a small flat-bladed screwdriver into the slot on the end of the clamp. Release the clamp by pushing outward on the blade of the screwdriver. As you move the clamp away from the socket, erase the clamp up and away from the processor and heat sink. When you remove the clamp, the heat sink will slide off the processor.



2. Push the lever on the processor socket down and out until it pull up freely. Lift the lever until it stands straight up freely. Lift the lever until it stands straight up. Remove the processor from the socket. Do not touch or bend the pins.



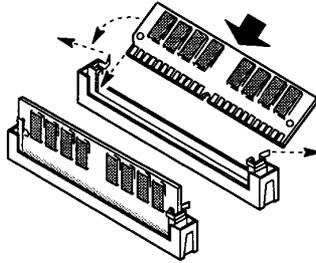
3. Place the processor in a piece of conductive foam and store it in an antistatic package.
4. Remove the upgrade processor from its antistatic package; do not touch or bend the pins.
5. With the processor in place, lower it gently, being careful not to bend the pins. Push the lever on the ZIP socket forward until it snaps into place.
6. If the upgrade processor has a fan power cord, attach the cord to the microprocessor fan connector

2.2 System Memory

The Rhino Pro 1 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 SIMMS (x36).

To install SIMMs, do the following procedure:

1. Holding the SIMM only by the edges, remove it from its antistatic package.
2. Position the SIMM at about a 45° angle relative to the motherboard. Make sure the small notch in the middle of the bottom edge of the SIMM aligns with the notch in the SIMM socket.



1. Insert the bottom edge of the SIMM into the SIMM socket and make sure it is seated firmly.
2. When the SIMM seats correctly, hold it at each end and gently push the top edge towards the retaining clips of the connector until the SIMM snaps into place. If the SIMM does not install correctly, gently spread the retaining clips just enough so that you can pull away the top edge of the SIMM and try again.

Below is some of the possible configuration for Rhino Pro 1.

BANK 1	BANK 2	TOTAL
1MX36 (4MB)	-----	8MB
1MX36 (4MB)	1MX36 (4MB)	16MB
2MX36 (8MB)	-----	16MB
1MX36 (4MB)	2MX36 (8MB)	24MB
2MX36 (8MB)	2MX36 (8MB)	32MB
4MX36 (16MB)	-----	32MB
1MX36 (4MB)	4MX36 (16MB)	40MB
2MX36 (8MB)	4MX36 (16MB)	48MB
4MX36 (16MB)	4MX36 (16MB)	64MB
8MX36 (32MB)	-----	64MB
1MX36 (4MB)	8MX36 (32MB)	72MB
2MX36 (8MB)	8MX36 (32MB)	80MB
4MX36 (16MB)	8MX36 (32MB)	96MB
8MX36 (32MB)	8MX36 (32MB)	128MB
16MX36 (64MB)	-----	128MB
1MX36 (4MB)	16MX36 (64MB)	136MB
2MX36 (8MB)	16MX36 (64MB)	144MB
8MX36 (32MB)	16MX36 (64MB)	192MB
16MX36 (64MB)	16MX36 (64MB)	256MB
32MX36 (128MB)	32MX36 (128MB)	512MB

Table 1 Memory Configuration Table

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 (JP8).

Chapter 3 Overview of Award Bios Setup Menu Screens

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, re_enter 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 BIOS FEATURES SETUP CHIPSET FEATURE SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC: QUIT F10: Save & Exit Setup	↑↓→← : SELECT ITEM (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.

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.					Base Memory: 640K			
Drive B : None					Extended memory: 5360K			
Video : EGA/VGA					Other Memory: 16384K			
Halt On : All Errors					Total Memory: 16384K			
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.

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	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000 - CBFFF Shadow	: Disabled
CPU Level 2 Cache	: Enabled	CC000 - CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000 - D3FFF Shadow	: Disabled
Boot Sequence	: A, C	D4000 - D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000 - DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	DC000 - DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On		
Boot Up System Speed	: High		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup	ESC : Quit	↑↓→← : Select Item
PCI/VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/- : Modify
OS Select For DRAM > 64MB	: Non-OS2	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.

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.

CPU Level 2 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.

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 may not contain this field. If the field is present, leave at Disabled.

OS Select for DRAM > 64MB

Select OS/2 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 hardwire 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.

3.4 Chipset Feature Setup

ROM PCI/ISA BIOS CMOS SETUP UTILITY CHIPSET FEATURE SETUP			
Auto Configuration	: Enabled	8 Bit I/O Recovery Time	: 1
DRAM Speed Selection	: 70ns	16 Bit I/O Recovery Time	: 1
DRAM RAS# Precharge Time	: 3	Memory Hole At 15M-16M	: Disabled
MA Additional Wait State	: Disabled	DRAM Fast Leadoff	: Disabled
RAS# To CAS# Delay	: Enabled	Passive Release	: Enabled
DRAM Read Burst (B/E/F)	: x2/3/4	Delayed Transaction	: Disabled
DRAM Write Burst (B/E/F)	: x3/3/4		
ISA Bus Clock	: PCICLK/3		
DRAM Refresh Queue	: Enabled		
DRAM RAS Only Refresh	: Enabled		
DRAM ECC/PARITY Select	: Disabled		
Fast Dram Refresh	: Disabled		
Read-Around-Write	: Enabled		
PCI Burst Write Combine	: Enabled	ESC : Quit	↑↓→← : Select Item
PCI-To-DRAM Pipeline	: Enabled	F1 : Help	PU/PD/+/- : Modify
CPU-To PCI Write Post	: Enabled	F5 : Old Values (Shift)	F2 : Color
System BIOS Cacheable	: Enabled	F6 : Load BIOS Defaults	
Video RAM Cacheable	: Enabled	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.

DRAM RAS# Precharge Time

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

MA Additional 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.

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. Disabled gives faster performance; and Enabled gives more stable performance.

DRAM Read Burst (B/E/F)

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

DRAM Write Burst (B/E/F)

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

ISA Bus Clock

Set the speed of the ISA bus here. The settings are tied to the speed of the PCI bus. If the PCI bus operates at 33 MHz, a setting of PCICLK/4 (default) would yield an ISA bus speed of approximately 8 MHz, the standard speed of the ISA bus. While most devices operate at higher ISA bus speeds, try a slower bus speed if your ISA device does not function properly at a high bus speed.

DRAM Refresh Queue

Enabled permits queuing up to four DRAM refresh requests, so DRAM can refresh at optimal times. Disabled makes all refreshes priority requests. Installed DRAM must support this feature; most do.

DRAMRAS Only Refresh

An alternate to CAS-before-RAS refresh. Leave Disabled unless your DRAM requires this older method of refresh generation.

DRAMECC/Parity Select

Select Parity, ECC, or Disabled, depending on the type of DRAM installed in your system.

Fast DRAM Refresh

The cache DRAM controller offers two refresh modes, Normal and Hidden. In both modes, CAS takes place before RAS but the Normal mode requires a CPU cycle for each. On the other hand, a cycle is eliminated by "hiding" the CAS refresh in Hidden mode. Not only is the Hidden mode faster and more efficient, but it also allows the CPU to maintain the status of the cache even if the system goes into a power management "suspend" mode.

Read-Around-Write

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM.

PCI Burst Write Combine

When this option is Enabled, the chipset assembles long PCI bursts from the data held in these buffers.

PCI-To-DRAM Pipeline

DRAM optimization feature: If Enabled, full PCI-to-DRAM write pipelining is enabled. Buffers in the chipset store data written from the PCI bus to memory. When Disabled, PCI writes to DRAM are limited to a single transfer per write cycle.

CPU-To-PCI Write Post

When this field is Enabled, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

CPU-To-PCIIDE 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-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video RAM 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.

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.

DRAM Fast Leadoff

Select Enabled to shorten the leadoff cycles and optimize performance.

3.5 Power Management Setup

ROM PCI/ISA BIOS CMOS SETUP UTILITY POWER MANAGEMENT SETUP	
Power Management : Disabled	** Power Down & Resume Events
PM Control by APM : Yes	IRQ3 (COM2) : ON
Video OFF Method : V/H SYNC+Blank	IRQ4 (COM1) : ON
MODEM Use IRQ : 3	IRQ5 (LPT 2) : OFF
	IRQ6 (Floppy Disk) : OFF
Doze Mode : Disabled	IRQ7 (LPT 1) : ON
Standard Mode : Disabled	IRQ8 (RTC Alarm) : OFF
Suspend Mode : Disabled	IRQ9 (IRQ2 Redir) : OFF
HDD Power Down : Disabled	IRQ10 (Reserved) : OFF
** Wake Up Events In Doze & Standby **	IRQ11 (Reserved) : OFF
IRQ3 (Wake-Up Event) : ON	IRQ12 (PS/2 Mouse) : ON
IRQ4 (Wake-Up Event) : ON	IRQ13 (Coprocessor) : ON
IRQ8 (Wake-Up Event) : ON	IRQ14 (Hard Disk) : ON
IRQ12 (Wake-Up Event) : ON	IRQ15 (Reserved) : ON
	ESC : Quit ↑↓→← : Select Item
	F1 : Help PU/PD/+/- : Modify
	F5 : Old Values (Shift) F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

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.

- 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.

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.

PCI Masters

When Enabled, any PCI bus master activity wakes up the system or resets the inactivity timer.

Local Devices

When Enabled, any local device activity wakes up the system or resets the inactivity timer.

IRQn

When Enabled, any activity from the selected IRQ wakes up the system or resets the inactivity timer. The following is a list of IRQs assigned to common system peripherals.

IRQ3 (COM 2)	IRQ10 (Reserved)
IRQ4 (COM 1)	IRQ11 (Reserved)
IRQ5 (LPT 2)	IRQ12 (PS/2 Mouse)
IRQ6 (Floppy Disk)	IRQ13 (Coprocessor)
IRQ7 (LPT 1)	IRQ14 (Hard Disk)
IRQ9 (IRQ2 Redir)	IRQ15 (Reserved)

3.6 PnP/PCI Configuration

ROM PCI/ISA BIOS PCI CONFIGURATION SETUP AWARD SOFTWARE, INC.			
Resources Controlled By	: Manual	PCI IRQ Activated By	: Level
Reset Configuration Data	: Disabled	PCI IDE 2nd Channel	: Enabled
		PCI IDE IRQ Map To	: PCI-AUTO
IRQ-3 assigned to	: Legacy ISA	Primary IDE INT#	: A
IRQ-4 assigned to	: Legacy ISA	Secondary IDE INT#	: B
IRQ-5 assigned to	: PCI/ISA PnP	Used MEM base addr	: N/A
IRQ-7 assigned to	: PCI/ISA PnP		
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	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit	↑↓→← : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift)	F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

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, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns 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 IRQ Activated by

Leave the IRQ trigger set at Level unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.

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.

3.7 Integrated Peripherals

ROM PCI/ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.	
IDE HDD Block Mode : Enabled	USB Controller : Enabled
IDE Primary Master PIO : Auto	
IDE Primary Slave PIO : Auto	
IDE Secondary Master PIO : Auto	
IDE Secondary Slave PIO : Auto	
On-Chip Primary PCI IDE : Enabled	
On-Chip Secondary PCI IDE : Enabled	
PCI Slot IDE 2nd Channel : Disabled	
Onboard FDC Controller : Enabled	
Onboard UART 1 : 3F8/IRQ4	
Onboard UART 2 : 2F8/IRQ3	
Onboard UART 2 Mode : Standard	
Onboard Parallel Port : 378/IRQ7	ESC : Quit ↑↓→← : Select Item
Parallel Port Mode : Normal	F1 : Help PU/PD/+/- : Modify
	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.

PCI Slot IDE 2nd Channel

You may separately disable the second channel on an IDE interface installed in a PCI expansion slot.

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.

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.

USB Controller

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

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.

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.

Compatible	PC AT parallel port
Extended	PS/2-compatible, bidirectional
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.

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 :								
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)?

APPENDIX-A CONNECTORS PINOUT

A.1 FRONT PANEL CONNECTORS

A.1.1 Remote On/Off (P4)

Pin	Signal Name
1	ATX-Power on
2	Ground

A.1.2 Sleep/Resume Switch (JP12)

Pin	Signal Name
1	Sleep Request
2	Ground

A.1.3 Infra-red (P12)

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

A.1.4 Hard Drive LED (P6)

Pin	Signal Name
1	Pull_Up_330
2	HD_LED-
3	HD_LED-
4	Pull_Up_330

A.1.5 Reset Connector (P1)

Pin	Signal Name
1	Ground
2	Reset

A.1.6 Speaker Connector (P5)

Pin	Signal Name
1	Speaker Data_Out
2	N.C.
3	Ground
4	+5V dc

A.1.7 Turbo LED Connector (P3)

Pin	Signal Name
1	Pull_Up_330
2	LED_Turbo

A.1.8 Keylock Connector (P2)

Pin	Signal Name
1	+5V dc
2	Mechanical Key

3	Ground
4	Keyboard Inhibit
5	Ground

A.1.9 External Battery Connector (P10)

Pin	Signal Name
1	+3.6V dc
2	N.C.
3	Ground
4	Ground

A.1.10 USB Connector (P11)

Pin	Signal Name	Pin	Signal Name
1	VCC	6	VCC
2	USB P1-	7	USB P0-
3	USB P1+	8	USB P0+
4	GND	9	GND
5	N.C.	10	N.C.

A.1.11 ATX Power Connector (J3)

PIN	Signal Name	Pin	Signal Name
1	+3V	11	+3V
2	+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

A.1.12 PS/2 Mouse Connector (J9)

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

A.1.13 Keyboard Connector (J10)

Pin	Signal Name
1	KB DATA
2	N.C
3	GND
4	+5V
5	KB CLK
6	N.C

A.2 COOLING FAN CONNECTORS

A.2.1 FAN Connector (J2)

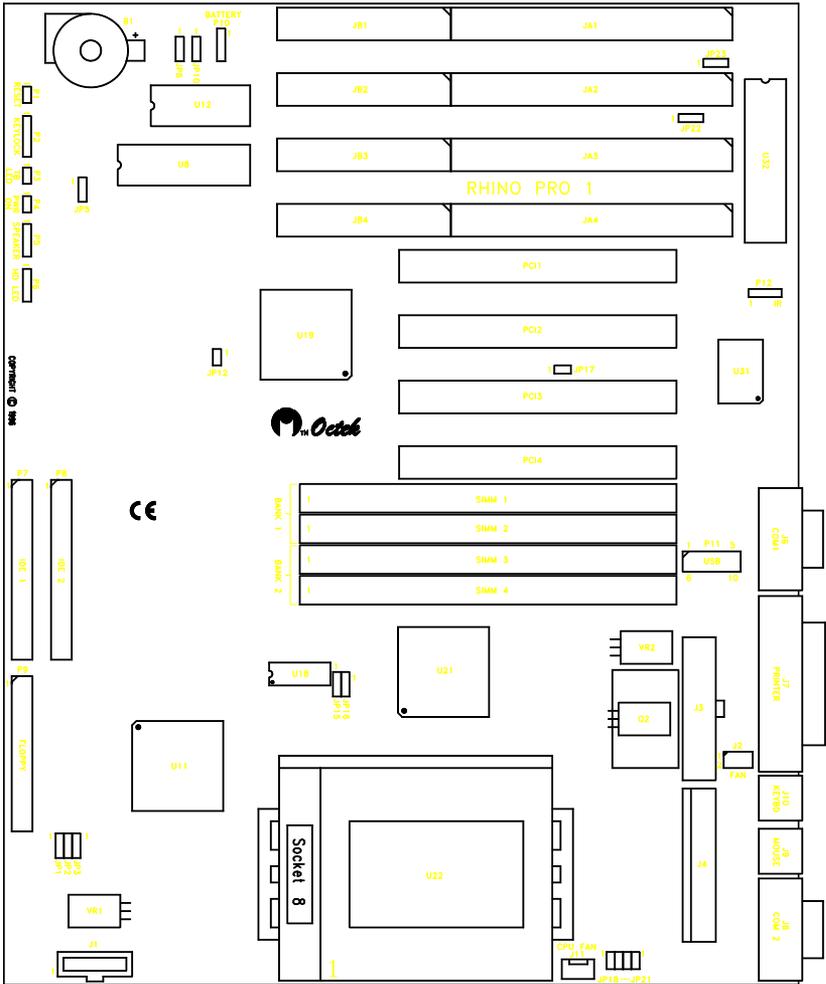
Pin	Signal Name	Pin	Signal Name
1	+12V	4	GND
2	N.C	5	N.C
3	GND	6	+12V

A.2.2 CPU FAN Connector (J11)

Pin	Signal Name
1	GND
2	+12V
3	GND

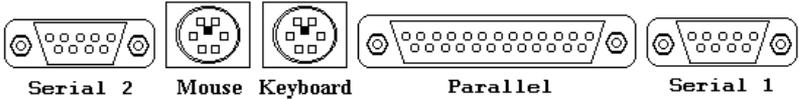
APPENDIX-B HARDWARE SETTINGS

B.1 Layout of RHINO PRO 1 Main Board



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
J6	COM 1 Port Connector
J8	COM 2 Port Connector
J7	PRINTER Port Connector
J9	PS/2 MOUSE Connector
J10	PS/2 KEYBOARD Connector
P1	Reset
P2	Keylock
P3	Turbo LED
P4	Power ON
P5	Speaker
P6	IDE LED Connector
P7	Primary IDE Connector
P8	Secondary IDE Connector
P9	Floppy Connector
P10	External Battery Connector
P11	USB Connector
P12	Infra Red Connector
JP12	External SMI

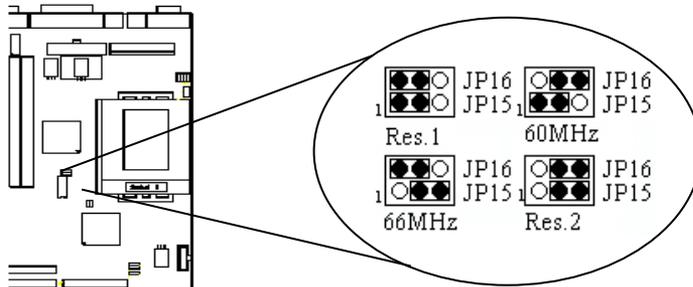
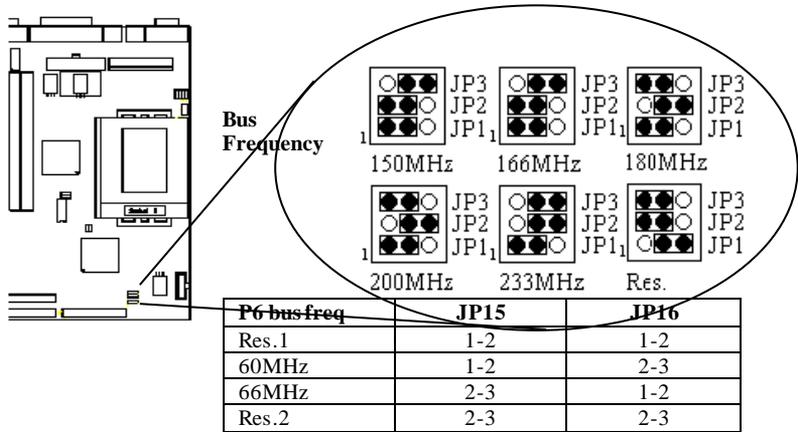
B.4 Jumper Settings

B.4.1 PENTIUM® PRO CPU SPEED

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

CPU CLOCK

CPU Clock	Bus ratio	JP1	JP2	JP3	JP15	JP16
150 MHz	× 2.5	1-2	1-2	2-3	1-2	2-3
166 MHz	× 2.5	1-2	1-2	2-3	2-3	1-2
180 MHz	× 3	1-2	2-3	1-2	1-2	2-3
200 MHz	× 3	1-2	2-3	1-2	2-3	1-2
233 MHz	× 3.5	1-2	2-3	2-3	2-3	1-2
Res.	× 4	2-3	1-2	1-2	2-3	1-2



Res 1 & Res 2 are Reserved Setting.

B.4.2 Miscellaneous

Power AUTO OFF by Windows 95 (JP22)

1-2	ENABLE
-----	--------

2-3	DISABLE
-----	---------

*** Note: After Windows 95 processing shut down, system will power off at the same time, when using ATX power supply.*

CMOS (JP8)

2-3	CLEAR
1-2	NORMAL

Battery (JP10)

1-2	Internal Battery
2-3	External Battery

VGA (JP17)

CLOSE	NORMAL
OPEN	SPECIAL VGA

*** Note: Try to change this Jumper setting if your system cannot display correctly.*

FLASH (JP5)

1-2	1M
2-3	2M

PS/2 Mouse

1-2	ENABLE
2-3	DISABLE