

TABLE OF CONTENTS

1. INTRODUCTION

1.1. PREFACE 1-1

1.2. KEY FEATURES 1-1

1.3. PERFORMANCE LIST 1-2

1.4. BLOCK DIAGRAM 1-3

1.5. INTRODUCE THE Pentium® II Processor & AGP 1-4

1.6. What is AGP? 1-6

2. SPECIFICATION

2.1. HARDWARE 2-1

2.2. SOFTWARE 2-2

2.3. ENVIRONMENT 2-3

3. HARDWARE INSTALLATION

3.1. UNPACKING 3-1

3.2. MAINBOARD LAYOUT 3-2

3.3. QUICK REFERENCE FOR JUMPERS & CONNECTORS 3-2

3.4. CPU SPEED SETUP 3-5

3.5. DRAM INSTALLATION 3-6

3.6. CMOS RTC & ISA CFG CMOS SRAM 3-7

3.7. VGA Monitor INSTALLATION 3-7

3.8. PERIPHERAL DEVICE INSTALLATION 3-7

3.9. KEYBOARD & PS/2 MOUSE INSTALLATION 3-8

4. BIOS CONFIGURATION

4.1. ENTERING SETUP 4-1

- 4.2. CONTROL KEYS 4-1
- 4.3. GETTING HELP 4-2
 - 4.3.1. Main Menu 4-2
 - 4.3.2. Status Page Setup Menu / Option Page Setup Menu 4-2
- 4.4. THE MAIN MENU 4-2
- 4.5. STANDARD CMOS SETUP MENU 4-4
- 4.6. BIOS FEATURES SETUP 4-8
- 4.7. CHIPSET FEATURES SETUP 4-13
- 4.8. POWER MANAGEMENT SETUP 4-17
- 4.9. PNP/PCI CONFIGURATION 4-21
- 4.10. LOAD BIOS DEFAULTS 4-23
- 4.11. LOAD PERFORMANCE DEFAULTS 4-24
- 4.12. INTEGRATED PERIPHERALS 4-25
- 4.13. SUPERVISOR / USER PASSWORD 4-31
- 4.14. IDE HDD AUTO DETECTION 4-32
- 4.15. SAVE & EXIT SETUP 4-33
- 4.16. EXIT WITHOUT SAVING 4-34
- APPENDIX A: ATi Rage Pro SPECIFICATION A-1**

1. INTRODUCTION

1.1. PREFACE

Welcome to use the **6Z0Z** motherboard. It is a Pentium® II/ Celeron Processor based PC / AT compatible system with AGP / PCI / ISA Bus, and has been designed to be the fastest PC / AT system. There are some new features allow you to operate the system with just the performance you want.

This manual also explains how to install the motherboard for operation, and how to set up your CMOS CONFIGURATION with BIOS SETUP program.

1.2. KEY FEATURES

- ❑ Intel Pentium® II/ Celeron Processor based PC / AT compatible mainboard.
- ❑ Slot 1 supports Pentium® II/ Celeron processor running at 233-633 MHz.
- ❑ Intel 440ZX chipset, Supports SDRAM / Ultra DMA/33 IDE / Keyboard and PS/2 Mouse Power On / ACPI features.
- ❑ Built-in **AGP ATi 3D RAGE PRO 3D** graphics acceleration chip.
- ❑ Built-in **YAMAHA** PCI audio chip. (Optional)
- ❑ Built-in **INTEL SB82558B** LAN chip. (Optional)
- ❑ Supports 2xDIMMs using 3.3V SDRAM DIMM module.
- ❑ 2x PCI Bus Slot, 1XISA Bus Slot.
- ❑ Supports 8 MB - 256 MB SDRAM memory on board.
- ❑ Supports 2 channels Ultra DMA/33 IDE ports for 4 IDE Devices.
- ❑ Supports 1x Line in, 1x Line Out, 1x Mic in, 2x CD Line in, 1x GAME Port, 1x TEL Port.
- ❑ Supports 2xCOM (16550), 1xLPT (EPP / ECP), 1x Floppy port.
- ❑ Supports 2xUSB ports, 1xPS/2 Mouse / Keyboard.
- ❑ Licensed AWARD BIOS, 2Mbits FLASH RAM.
- ❑ 25.8 cm x 20.6 cm Mini NLX SIZE form factor, 4 layers PCB.

1.3. PERFORMANCE LIST

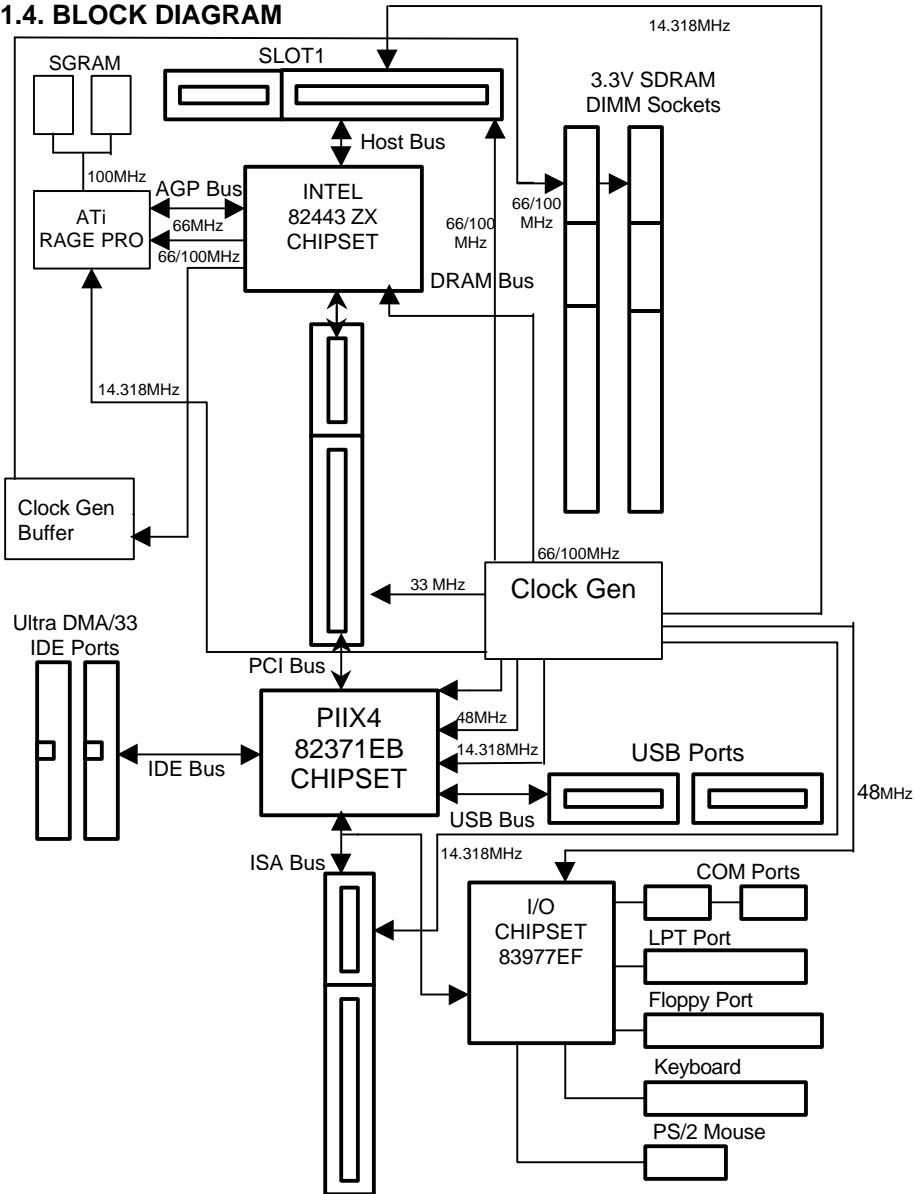
The following performance data list is the testing results of some popular benchmark testing programs.

These data are just referred by users, and there is no responsibility for different testing data values gotten by users. (The different Hardware & Software configuration will result in different benchmark testing results.)

- CPU Pentium® II 450MHz / Celeron™ 366 MHz processor
- DRAM (128 x 1) MB SDRAM (SEC KM48S8030BT-GH)
- CACHE SIZE Included in CPU
- DISPLAY On-Board ATi 3D RAGE Pro 2X AGP Display
(4MB SGRAM)
- STORAGE Onboard IDE (Seagate ST34520A)
- O.S. Windows® NT 4.0 (SPK4)
- DRIVER Display Driver at 1024 x 768 x 64 colors x 75Hz.
Triones Bus Master IDE Driver 3.70

Processor	Intel Pentium® II 450MHz (100×4.5)	Intel Celeron™ 366MHz (66×5.5)
Winbench99		
CPU mark32	1110	772
FPU Winmark	2300	1970
Business Disk	4370	4240
Hi-End Disk	10500	10400
Business Graphics	142	126
Hi-End Graphics	333	299
Winstone99		
Business	29.5	26
Hi-End	28.8	24.4

1.4. BLOCK DIAGRAM



1.5. INTRODUCE THE Pentium® II Processor & AGP



Figure 1:Retention Mechanism & attach Mount



Figure 2:OEM Pentium® II Processor

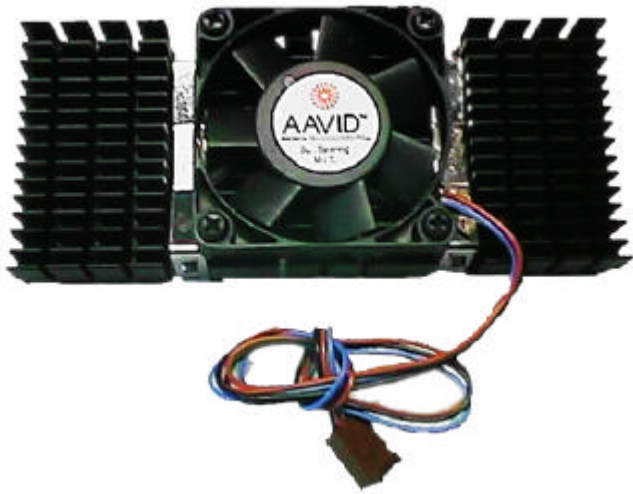


Figure 3:Heatsink / FAN & Heat sink support for OEM Pentium® II Processor

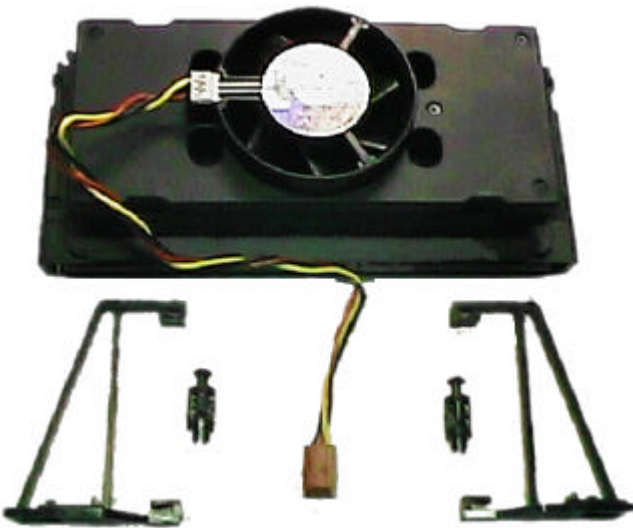


Figure 4:Boxed Pentium® II Processor & Heat sink support

1.6. What is AGP?

The Accelerated Graphics Port (AGP) is a new port on the Host-To-PCI bridge device that supports an AGP port. The main purpose of the AGP port is to provide fast access to system memory.

The AGP port can be used either as fast PCI port (32-bits at 66MHz vs. 32-bits at 33MHz) or as an AGP port which supports 2x data-rate, a read queue, and side band addressing. When the 2x-data rate is used, the port can transmit data at 533MB/sec ($66.6 \times 2 \times 4$). The read-queue can be used to pipeline reads – removing the effects of the reads-latency. Side band addressing can be used to transmit the data address on a separate line in order to speed up the transaction.

2. SPECIFICATION

2.1. HARDWARE

- CPU
 - Pentium® II/ Celeron processor 233 – 633 MHz.
 - 242 pins 66/100 MHz slot1 on board.
- SPEED
 - 66 / 100MHz system speed.
 - 66 MHz AGP-Bus speed. (2X mode 133MHz)
 - 33 MHz PCI-Bus speed.
 - 8 MHz AT bus speed.
- PROTECTION
 - Speaker Alarm when detect "CPU FAN Failure" or "CPU Overheat".
 - Automatically slow down CPU speed when "CPU Overheat".
 - H/W monitor power status (+5V, ±12V, VGTL,5VSB, CPU voltage & CMOS battery voltage).(Optional)
- DRAM MEMORY
 - 2 banks 168 pins DIMM module sockets on board.
 - Use 8 / 16 / 32 / 64 / 128 / 256 MB DIMM module DRAM.
 - 8 ~ 256 MB SDRAM.
 - Supports 3.3V SDRAM type DRAM.
- CACHE MEMORY
 - 32 KB 1st cache memory included in CPU.
 - 256KB/512 KB 2nd cache in CPU.
 - Supports DIB speed mode for L2 Cache.
- I/O BUS SLOTS
 - 2 33MHz Master / Slave PCI-BUS.
 - 1 8MHz 16 bits ISA BUS.
- IDE PORTS
 - 2 Ultra DMA/33 Bus Master IDE channels on board.(Using IRQ14,15)
 - Support Mode 3,4 IDE & ATAPI CD – ROM.
- I/O PORTS
 - Supports 2 16550 COM ports.
 - Supports 1 EPP/ECP LPT port.
 - Supports 1 1.44/2.88 MB Floppy port.
 - Supports 2 USB ports.

- LAN (Optional)
 - Supports PS/2 Mouse/ Keyboard.
 - Built-in INTEL SB82558B LAN chip.
 - Supports Wake On LAN.
- VGA
 - Built-in ATi 3D RAGE PRO 3D graphics acceleration chip.
 - Built-in 2M high speed SGRAM.
 - For AGP 1.0 Interface compliant.
- SOUND(Optional)
 - Built-in YAMAHA PCI audio chip.
 - Supports Line Out, Line In, MIC, Joystick and CD-Line, TEL Port.
- GREEN FUNCTION
 - Suspend mode support.
 - Green switch & ACPI LED support.
 - IDE & Display power down support.
 - Monitor all IRQ / DMA / Display / I/O events.
- BIOS
 - 2M bits FLASH RAM.
 - Supports Plug & Play, DMI, ACPI Function.
- DIMENSION
 - Mini NLX Form Factor, 4 layers PCB.

2.2. SOFTWARE

- DRIVER
 - Bus Master IDE Driver.
 - INTEL Patch 95.
 - VGA Utility Driver.
 - Intel LAN Utility Driver (Optional).
 - YAMAHA Sound Utility Driver (Optional).
- BIOS
 - Licensed AWARD BIOS.
 - AT CMOS Setup, BIOS / Chipset Setup, Green Setup, Hard Disk Utility included.
- O.S.
 - Operation with MS-DOS®, Windows®95, Windows®98, WINDOWS™ NT, OS/2, NOVELL and SCO UNIX.

2.3. ENVIRONMENT

- Ambient Temp. – 0°C to +50°C (Operating).
- Relative Hum. – 0 to +85% (Operating).
- Altitude – 0 to 10,000 feet (Operating).
- Vibration – 0 to 1,000 Hz.
- Electricity – 4.9 V to 5.2 V. (Max. 20A current at 5V.)

3. HARDWARE INSTALLATION

3.1. UNPACKING

The mainboard package should contain the following:

- The **6ZOZ** mainboard.
- The Retention Mechanism & Attach Mount.
- USER'S MANUAL for mainboard.
- Cable set for IDE; Floppy and Joystick. (Optional), Riser Card. (Optional).
- Diskette or CD for Mainboard; VGA; Mouse and LAN Utility (Optional).

The mainboard contains sensitive electric components, which can be easily damaged by static electricity, so the mainboard should be left in its original packing until it is installed.

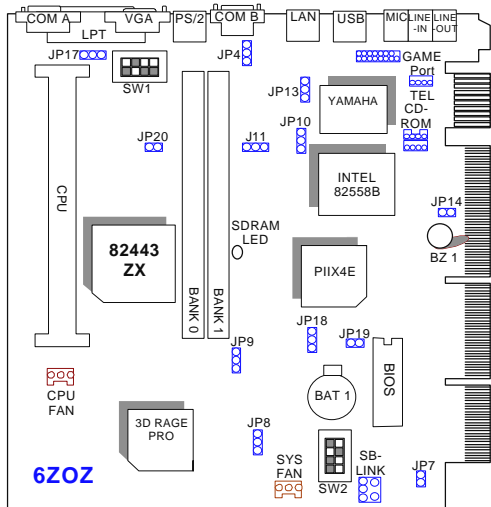
Unpacking and installation should be done on a grounded anti-static mat. The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the mainboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage. Press down on all of the socket IC's to make sure that they are properly seated. Do this only on with the board placed on a firm flat surface.

⚠ DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.

3.2. MAINBOARD LAYOUT



<Figure 3.1>

3.3. QUICK REFERENCE FOR JUMPERS & CONNECTORS

◆ I/O Ports Connector	
VGA	For VGA Port.
USB	For USB Connector.
LPT	For Printer port.
COMA	For Serial port1 (COM A).[Support Modem ring on]
COMB	For Serial port2 (COM B).[Support Modem ring on]
PS/2	For PS/2 Keyboard and Mouse port.
GAME Port	For Joystick / MIDI port. (Optional)
AUDIO Port	For MIC / LINE-IN / LINE-OUT/ TEL port. (Optional)
CD-ROM	For CD Line-In port. (Optional)
LAN	For LAN Connector port. (Optional)

◆ CPU	
For Pentium® II / Celeron processor installed	

◆ JP4 : Keyboard Power On Selection	

Pin No.	Function
1-2 short	Enabled Keyboard power on.
2-3 short	Disabled Keyboard power on.(Default)

◆ J7 : CPU FAN (CPU Cooling FAN Power Connector)

Pin No.	Function
1	GND.
2	+12V
3	SENSE

◆ J12 : SYSTEM FAN (System Cooling FAN Power Connector)

Pin No.	Function
1	GND.
2	+12V
3	SENSE

◆ JP17 : System Acceleration

1-2 short	For 100MHz Turbo and other frequencies.
2-3 short	For 100MHz Normal.(Default)

◆ JP13 : On-Board Sound Function (Optional)

Pin No.	Function
1-2 short	Disable On-Board Sound Function.
2-3 short	Enable On-Board Sound Function.(Default)

◆ JP6 : SB-LINK (For PCI Sound Card Connector)

Pin No.	Function
1	Signal
2	GND
3	NC
4	Signal
5	GND
6	Signal

◆ JP10 : On-Board LAN Function

Pin No.	Function
1-2 short	Disabled On-Board LAN Function.
2-3 short	Enabled On-Board LAN Function.(Default)

◆ JP18 : Clear COMS Function	
Pin No.	Function
1-2 short	Clear CMOS.
2-3 short	Normal Optional.(Default)

◆ J14 : Internal Buzzer	
Pin No.	Function
Short	Enabled Internal Buzzer.
Open	Disabled Internal Buzzer .

◆ JP8 : Release On-Board VGA from occupying IRQ Resource	
Pin No.	Function
1-2 short	Non Release On-Board VGA from occupying IRQ Resource.
2-3 short	Release On-Board VGA from occupying IRQ Resource.(Default)

◆ JP9 : On-Board VGA Function	
Pin No.	Function
1-2 short	Disabled On-Board VGA Function.
2-3 short	Enabled On-Board VGA Function.(Default)

◆ CN4 : CD Audio Line In (optional)	
Pin No.	Function
1	GND
2	Right
3	GND
4	Left

◆ J13 : CD Audio Line In (optional)	
-------------------------------------	--

Pin No.	Function
1	Left
2	GND
3	GND
4	Right

◆ JP7 : CASE OPEN Function	
Pin No.	Function
1	Signal
2	GND

◆ J11 : LAN Power On (Optional)	
Pin No.	Function
1-2 short	Enabled LAN Power On.
2-3 short	Disabled LAN Power On.(Default)

◆ JP20 : Suspend To RAM Function.(Optional)	
Pin No.	Function
Short	Enabled Suspend To RAM Function.
Open	Normal Operation.

3.4. CPU SPEED SETUP

The default system bus speed is 66 / 100MHz. The user can change the DIP SWITCH selection to set up the CPU speed for 233 - 633MHz processor. The CPU speed must match with the frequency RATIO. It will cause system hanging up if the frequency RATIO is higher than CPU's.

ON : ○

OFF: X

DIP SWITCH (SW)				FREQ. RATIO	EXT.CLK. MHz	INT.CLK. MHz	CPU Type
1	2	3	4				
OFF	OFF	ON	ON	3.5	66	233	Pentium® II 233 MHz (Celeron™ 233 MHz)
ON	ON	OFF	ON	4	66	266	Pentium® II 266 MHz (Celeron™ 266 MHz)
OFF	ON	OFF	ON	4.5	66	300	Pentium® II 300 MHz (Celeron™ 300 MHz)
ON	OFF	OFF	ON	5	66	333	Pentium® II 333 MHz (Celeron™ 333 MHz)
OFF	OFF	OFF	ON	5.5	66	366	Pentium® II 366 MHz (Celeron™ 366 MHz)
ON	ON	ON	OFF	6	66	400	Pentium® II 400 MHz (Celeron™ 400 MHz)
OFF	ON	ON	OFF	6.5	66	433	Pentium® II 433MHz (Celeron™ 433 MHz)
OFF	OFF	ON	ON	3.5	100	350	Pentium® II 350 MHz
ON	ON	OFF	ON	4	100	400	Pentium® II 400 MHz
OFF	ON	OFF	ON	4.5	100	450	Pentium® II 450 MHz
ON	OFF	OFF	ON	5	100	500	Pentium® II 500 MHz
OFF	OFF	OFF	ON	5.5	100	550	Pentium® II 550MHz
ON	ON	ON	OFF	6	100	600	Pentium® II 600MHz
OFF	ON	ON	OFF	6.5	100	650	Pentium® II 650MHz

- ⚡ The CPU is a sensitive electric component and it can be easily damaged by static electricity, so users must keep it away from metal surface when the CPU is installed onto mainboard.

3.5. DRAM INSTALLATION

The mainboard can be installed with 8 / 16 / 32 / 64 / 128 / 256 MB 168 pins DIMM module DRAM, and the DRAM speed must be 67~100 MHz for SDRAM when system bus speed is set to 66MHz. When system bus speed is set to 100MHz, 100MHz SDRAM is required. The DRAM memory system on mainboard consists of bank 0 & bank 1.

Since 168 pins DIMM module is 64 bits width, using 1 PCS which can match a

64 bits system. The total memory size is 8MB ~ 256MB SDRAM. The DRAM installation position refer to Figure 3.1, and notice the Pin 1 of DIMM module must match with the Pin 1 of DIMM socket. Insert the DRAM DIMM module into the DIMM socket at Vertical angle. If there is a wrong direction of Pin 1, the DRAM DIMM module couldn't be inserted into socket completely.

3.6. CMOS RTC & ISA CFG CMOS SRAM

The mainboard contains RTC & CMOS SRAM on board. They have a power supply from external battery to keep the DATA inviolate & effective. The RTC is a REAL-TIME CLOCK device, which provides the DATE & TIME to system. The CMOS SRAM is used for keeping the information of system configuration, so the system can automatically boot OS every time. Since the lifetime of internal battery is 5 years, the user can change a new Battery to replace old one when it has consumed.

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

3.7.VGA Monitor INSTALLATION

ATi RAGE PRO 3D graphics AGP accelerations was built-in the main board. It will auto detect whether the PnP monitor is installed or not. When plug-in the monitor, the Win95/98 will auto detect it and auto set the necessary settings in the system.

3.8. PERIPHERAL DEVICE INSTALLATION

After the I/O device installation and jumpers setup, the mainboard can be mounted into the case and fixed by screw. To complete the mainboard installation, the peripheral device could be installed now. The basic system needs a display interface card. If the PCI - Bus device is to be installed in the system, any two of PCI - Bus slots can be used.

3.9. KEYBOARD & PS/2 MOUSE INSTALLATION

The main board supports PS/2 Mouse. The BIOS will auto detect whether the PS/2 Mouse is installed or not & assign IRQ12 for PS/2 Mouse port if it is installed. After installing the peripheral device, the user should check everything again, and prepare to power-on the system.