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4. BIOS CONFIGURATION

1. INTRODUCTION

1.1. PREFACE

Welcome to use the **6WMMC7/(-1)/(-2)** motherboard. It is a Celeron™ Socket 370 processor based PC / AT compatible system with PCI 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 Celeron™ Socket 370 Processor based PC / AT compatible main board.
- Socket 370 Pins ZIF white socket on board.
- Built-in AC 97-Link software audio.
- Aureal AU8810 Hardware audio (Optional).
- Supports Celeron™ Socket 370 processor.
- INTEL FW82810 chipset, Supports SDRAM / Ultra DMA66(optional)/33 IDE / Keyboard and PS/2 Mouse Power On / ACPI features.
- Supports 2xDIMMs using 3.3V SDRAM DIMM module.
- Supports 4MB SDRAM Display cache (Optional).
- Supports external Modem Ring-On on COMA and internal Modem Ring-On.
- Supports PC100 SDRAM 16MB~512MB memory on board.
- Supports Wake-up on LAN.
- Supports Suspend To RAM Function.
- Supports AMR Interface.
- Supports feature connector for TV-Out or DFP (Digital Flat Panel) (Optional).
- 3xPCI Bus slots.
- Supports 2 channels Ultra DMA66(optional)/33 IDE ports for 4 IDE Devices.
- Supports 1x Line in, 1x Line Out, 1x Mic in, 1x CD Line in,1x GAME Port 1 x TEL, 1x AUX in, 1x SPDIF OUT (Optional).
- Supports 1xCOM (16550), 1xLPT (EPP / ECP/ SPP), 1x1.44MB Floppy port.
- Supports 2XUSB port & PS/2 Mouse/ Keyboard port.
- Licensed AWARD BIOS, 4M bits Flash RAM.

- 24.3 cm x 19 cm Micro ATX 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 — Intel® Celeron™ 466MHz Socket 370 processor
- DRAM — (128x 1) MB SDRAM (SEC KM48S8030CT-GA)
- CACHE SIZE — 128 KB included in CPU
- DISPLAY — Onboard Intel Corporation 810 Graphics Controller Hub)
- STORAGE — Onboard IDE (IBM DTNA-371800)
- O.S. — Windows NT™4.0 SPK5
- DRIVER — Display Driver at 1024 x 768 x 64k colors x 75Hz.

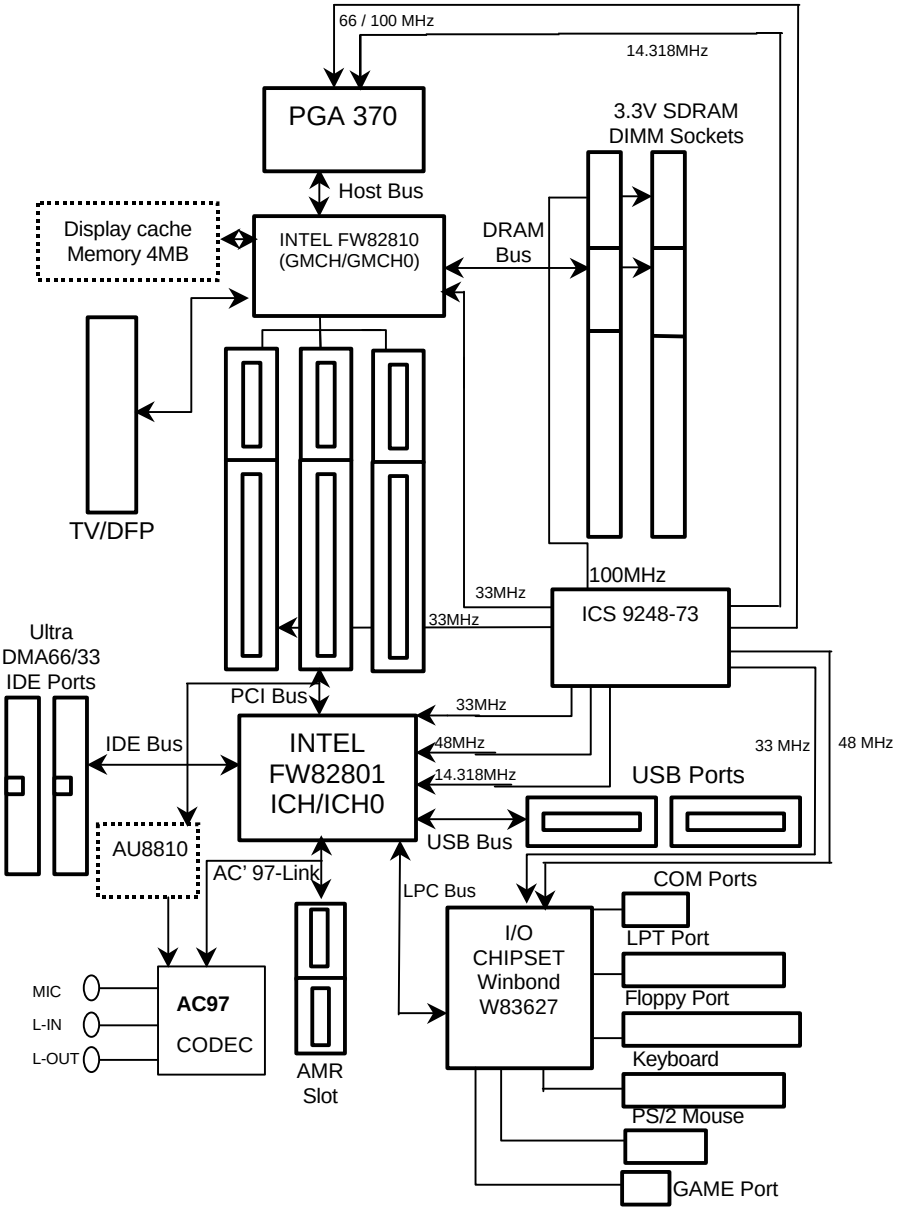
Processor	350MHz (100x3.5)	500MHz (66x7.5)
Winbench99 (Ver1.1)		
CPU mark99	30	37.2
FPU Winmark	1880	2680
Business Disk	3380	3140
Hi-End Disk	5890	5350
Business Graphics	125	139
Hi-End Graphics	286	364
Winstone99 (Ver1.0)		
Business	24.8	27.2

Hi-End	19.7	21.9

- CPU Celeron 433 OC 450 (100*4.5)
- DRAM (64x 2) MB SDRAM (MITSUBISHI M2V64S40BTP)
- STORAGE Onboard IDE (IBM DJNA-352030) (ATA66)

Windows98 SE2 English Ver(FAT32), DirectX 6.1, Driver 4.11.01 1185 PV 1.1 1024*768*16 bit (75Hz)		
Motherboard	**6WMMC7**	**6WMMC7-1/ 6WMMC7-2**
ICH **GMCH**	**82810DC100** **82801AA**	**82810** **82801AB**
WINBENCH 99		
CPU mark32	878	878
FPU Winmark	2410	2400
Business Disk	4010	2950
Hi-End Disk	14100	7690
Business Graphics	141	145
Hi-End Graphics	392	394
3D WINBENCH 99 3D WINMARK	386	292
Final Reallity		
AGP	137.09	134.52
OVERALL	4.17	3.99
3D MARK99 Max		
3D MARKS	2811	2298
CPU 3DMARK	4229	4271
WINDOWS NT4.0+ SPK5 4.11.01.1185 PV1.1 1024*768 65536 colors(75Hz)		
WINSTONE 99		
BUSINESS	27.7	26.6
HI-END	22.9	22.1

1.4. BLOCK DIAGRAM



1.5. INTRODUCE THE INTEL â Celeron™ Socket 370 Processor

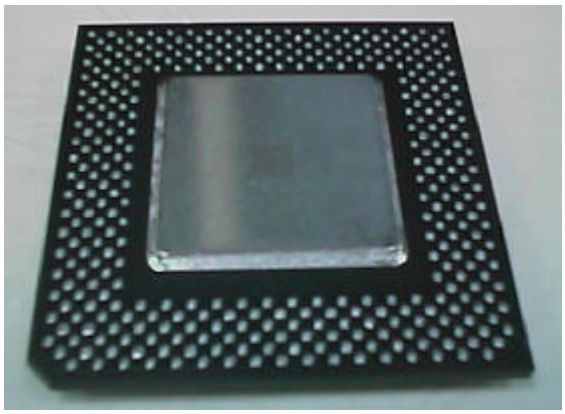


Figure 1: INTEL® Celeron™ Socket370 Processor

1.6 INTRODUCE AMR

The Audio Modem Riser (AMR) is a new port that supports both audio and modem. The main purpose of the AMR port is to provide lower cost and higher levels of integration at all levels of the PC platform.
The backbone of the AMR interface is on AC' 97 compliant AC-Link with support for codes. Motherboard support for an AMR interface are not only capable of achieving the lowest possible cost for basic PC audio and modem, but have also introduced increased motherboard flexibility enabling robust, cost effective scalability.
The AMR is done through software and controlled by the motherboard' s I/O Controller Hub (ICH). There are two types of AMR, one defined as primary and another defined as secondary. If the motherboard with onboard sound Aureal AU8810, the AMR must be used primary.

2. SPECIFICATION

2.1. HARDWARE

- CPU
  - Celeron™ Socket 370 processor.
  - 66/100MHz Socket 370 on board.
- 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).
- SPEED
  - 66/100 MHz system speed.
  - 33 MHz PCI-Bus speed.
  - 8 MHz AT bus speed.
- DRAM MEMORY
  - 2 banks 168 pins DIMM module sockets on board.
  - Use 16 / 32 / 64 / 128 / 256MB DIMM module DRAM.
  - Supports PC-100 SDRAM 16MB~512MB.
- CACHE MEMORY
  - 32 KB 1st cache memory included in CPU.
  - 128KB L2 cache memory included in CPU.
  - Supports DIB speed mode for L2 Cache.
- I/O BUS SLOTS
  - 3 33MHz Master / Slave PCI-BUS.
- IDE PORTS
  - 2 Ultra DMA66(optional)/33 Bus Master IDE channels on board.(Using IRQ14,15)
  - Supports Mode 3,4 IDE & ATAPI CD – ROM.
- I/O PORTS
  - Supports 1 16550 COM ports.
  - Supports 1 EPP/ECP LPT port.
  - Supports 1 1.44/2.88 MB Floppy port.
  - Supports 2 USB ports.
  - Supports PS/2 Mouse & Keyboard.

- DISPLAY CACHE – 4MB SDRAM Display cache (Optional).
- Audio Ports
  - 1x Line in
  - 1x Line out
  - 1x Mic in
  - 1x Game Port
  - 1x CD Line in
  - 1x TEL
  - 1x SPDIF Out (Optional)
  - 1x AUX In.
- GREEN FUNCTION
  - Suspend mode support.
  - Green switch & ACPI LED support.
  - IDE & Display power down support.
  - Monitors all IRQ / DMA / Display / I/O events.
- BIOS – Supports Plug & Play, DMI Function.
- DIMENSION – Micro ATX Form Factor, 4 layers PCB.

2.2. SOFTWARE

- DRIVER
  - IUCD (Bus Master + Sound Driver + LDCM + Utility)
  - INTEL 82810 Driver.
- 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 – 4.75 V to 5.25 V. (Max. 20A current at 5V.)

3. HARDWARE INSTALLATION

3.1. UNPACKING

The main board package should contain the following:

- The **6WMMC7/(-1)/(-2)** main board.
- USER'S MANUAL for main board.
- Cable set for IDE, Floppy devices.
- CD for main board Utility. [IUCD (Bus Master + Sound Driver + LDCM + Utility), INTEL 82810 Driver.]

The main board contains sensitive electric components, which can be easily damaged by static electricity, so the main board 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.

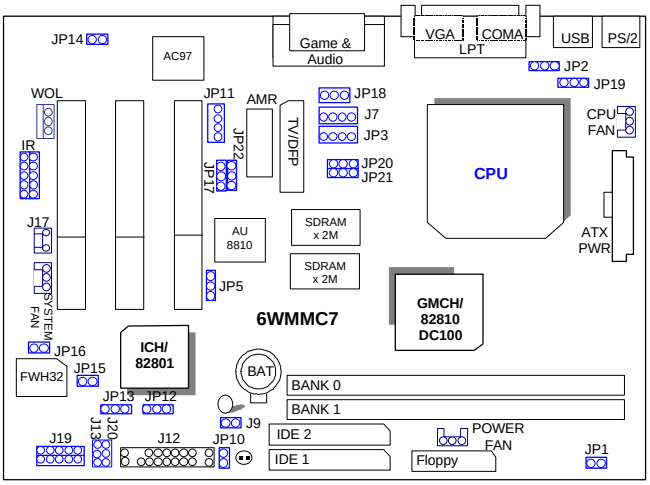
Inspect the main board carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the main board 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.

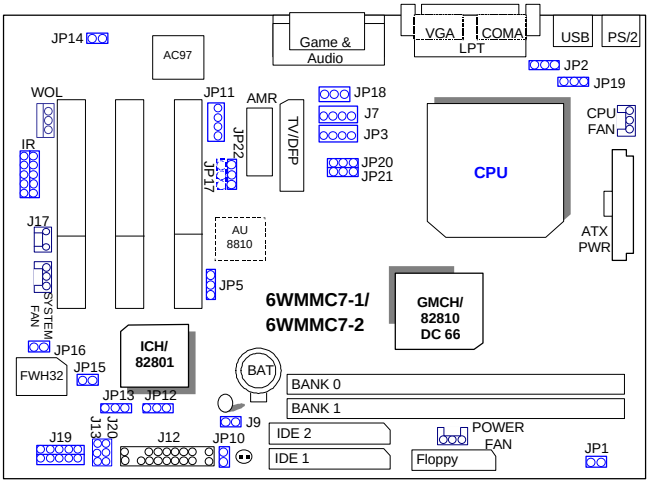
3.2. MAIN BOARD LAYOUT

6WMMC7



➹Figure 3.1➢

6WMMC7-1 / 6WMMC7-2



➹Figure 3.2➢

3.3. QUICK REFERENCE FOR JUMPERS & CONNECTORS

♦ I/O Ports Connector	
USB	USB port.
IDE1	For Primary IDE port.
IDE2	For Secondary IDE port.
PS/2	For PS/2 Mouse & Keyboard port.
FLOPPY	For Floppy port.
COMA	For Serial port1 (COM A){Support Modem Ring On}.
LPT	For LPT port.
VGA	For VGA Port.
ATX Power	For ATX Power Connector.
GAME & Audio	For Game & MIC LINE-IN, LINE-OUT,TEL Port ,CD-IN, AUX-IN, SPDIF OUT (Optional)

♦ Socket 370
For Celeron™ Socket 370 Processor installed

♦ IR : INFRARED Connector (IR / CIR) -- Function Option	
Pin No.	Function
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX
6	NC
7	CIRRX
8	VCC
9	NC
10	NC

♦ CPU FAN : CPU cooling FAN Power Connector	
Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ PWR FAN: Power FAN Connector	
Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ SYS FAN: System FAN Connector	
Pin No.	Function
1	GND.
2	+12V
3	SENSE

♦ J9:Buzzer Enable	
Pin No.	Function
Open	Internal Buzzer Disable
Close	Internal Buzzer Enable

♦ J17 RING PWR ON :Internal Modem Card Ring PWR On	
Pin No.	Function
1	Signal
2	GND

♦ JP2 : Keyboard Power On Selection	
Pin No.	Function
1-2 close	Enabled Keyboard Power On.
2-3 close	Disabled Keyboard Power On(Default).

♦ JP12 : CLEAR CMOS	
Pin No.	Function
1-2 close	Clear CMOS
2-3 close	Normal operation (Default).

♦ J7: CD Audio Line in	
Pin No.	Function
1	Left
2	GND
3	GND
4	Right

♦ JP11:AUX_IN	
Pin No.	Function
1	AUX_L
2	GND
3	GND
4	AUX_R

♦ J14:Wake on LAN	
Pin No.	Function
1	+5VSB
2	GND
3	Signal

♦ JP3:TEL --The connector for Modem with internal voice connector.	
Pin No.	Function
1	Phone-in
2,3	GND
4	Mono-out

♦ JP1:STR Enable	
Pin No.	Function
Close	STR Enable
Open	STR Disable

♦ JP14: Case Open	
Pin No.	Function
1	Signal
2	GND

♦ JP13 : System Boot Option	
Pin No.	Function
1-2 close	Normal
2-3 close	Safe Mode
1-2-3open	Recovery

♦ JP16: TABLE LOCK	
Pin No.	Function
Open	Table Lock
Close	Table Unlock (Default)

♦ JP15: Timeout Reboot	
Pin No.	Function
Open	Timeout Reboot.
Close	No Reboot on Timeout.

♦ JP17: Onboard Sound function (Optional)	
Pin No.	Function
1-2 close	Enabled Sound.(Default)
2-3 close	Disabled Sound.

♦ JP13/ JP20: USB Port Selection (Optional)	
Pin No.	Function
1-2 close	Front Panel USB Port Enabled.
2-3 close	Back Front Panel USB Port Enabled.

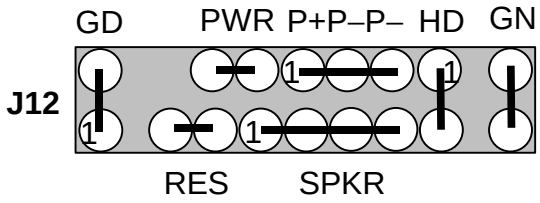
♦ J19: Front Panel USB Port (Optional)	
Pin No.	Function
1,4,5,10	NC
2	+5V
3,7,9	GND
6	USB P0+
8	USB P0-

♦ JP18: SPDIF (Optional)	
Pin No.	Function
1	VCC
2	SPD OUT
3	GND

♦ JP19: USB Keyboard Wake-up	
Pin No.	Function
1-2 close	Disable USB Keyboard Wake-up (Default).
2-3 close	Enable USB Keyboard Wake-up.

♦ JP20/JP21:Quad Speaker (Optional)	
Pin No.	Function
1-2 close	LINE_IN
2-3 close	QUAD OUT

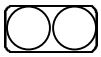
J12 : For 2X11 PINs Jumper



Soft PWR: Soft Power Connector

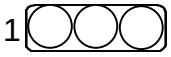
Open: Normal Operation
Short: Power On/Off

RES: Reset Switch



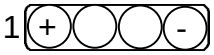
Open: Normal Operation
Short: For Hardware Reset System

P+P- P- : Power LED



PIN 1 : LED anode (+)
PIN 2 : LED cathode (–)
PIN 3 : LED cathode (–)

SPKR: Speaker Connector



PIN 1 : VCC (+)
PIN 2 : NC
PIN 3 : NC
PIN 4 : Data (–)

HD: IDE Hard Disk Active LED

PIN 1: LED anode (+)
PIN 2: LED cathode (-)

GN: Green Function Switch

Open : Normal operation
Short : Entering Green Mode

GD: Green LED

PIN 1 : LED anode (+)
PIN 2 : LED cathode (-)

3.4. DRAM INSTALLATION

The main board can be installed with 16 / 32 / 64 / 128 / 256 MB 168 pins DIMM module DRAM, and the DRAM speed must 100 MHz for SDRAM when system bus speed is set to 66MHz or 100MHz, the DRAM memory system on main board consists of bank 0 and bank 1.
Since 168 pins DIMM module is 64 bits width, therefore 1 piece of DIMM module may match a 64 bits system. The total memory size is 16 MB ~ 512MB 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 DIMM module into the DIMM socket at Vertical angle. If there is a wrong direction of Pin 1, the SDRAM DIMM module could not be inserted into socket completely.

3.5. CPU SPEED SETUP

The system bus frequency can be switched between 66MHz and 100MHz by adjusting JP5. The CPU Frequency is control by BIOS.

JP5: System Bus Speed Set System Bus Speed (See Figure-1)

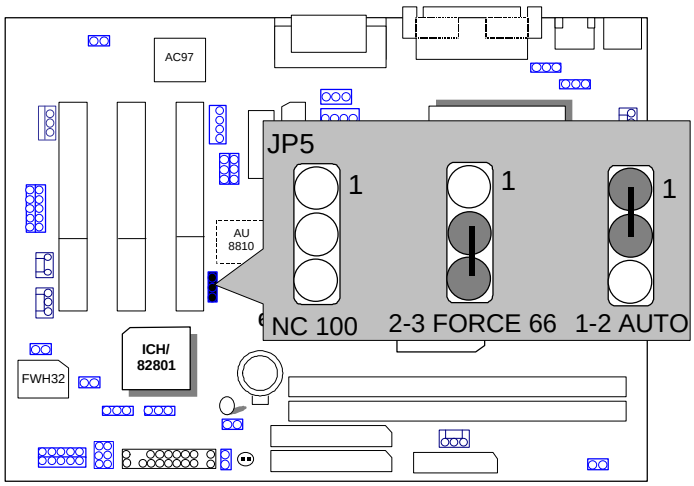


Figure-1

★**Note: Please set the CPU host frequency in accordance with your processor' s specifications. We don' t recommend you to set the system bus frequency over the CPU' s specification because these specific bus frequencies are not the standard specifications for CPU, chipset and most of the peripherals. Whether your system can run under these specific bus frequencies properly will depend on your hardware configurations, including CPU, Chipsets, SDRAM, Cards..etc.**

3.6. CMOS RTC & ISA CFG CMOS RAM

There're RTC & CMOS RAM 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 RAM 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 after it cannot work.

- 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. SPEAKER CONNECTOR INSTALLATION

There is a speaker in AT system for sound purpose. The 4 - Pins connector **SPKR** is used to connect speaker.

3.8. HARDWARE RESET SWITCH CONNECTOR INSTALLATION

The RESET switch on panel provides users with HARDWARE RESET function. The system will do a cold start after the RESET switch is pushed and released by user. The RESET switch is a 2 PIN connector and should be installed to **RST** on main board.

3.9. POWER LED CONNECTOR INSTALLATION

System has power LED lamp on the panel of chassis. The power LED will light on off or flash to indicate which step on the system. The connector should be connected to **P+P-P-** of main board in a correct direction.

3.10. IDE & ATAPI DEVICE INSTALLATION

There are two-Enhanced PCI IDE ports (**IDE1, IDE2**) on board, which following ATAPI standard SPEC. Each IDE port can connected to two ATAPI devices (IDE Hard Disk, CD-ROM or Tape Driver), so total four ATAPI devices can exist in a system. The **HD** is the active LED port for ATAPI devices.

3.11. PERIPHERAL DEVICE INSTALLATION

After the I/O device installation and jumpers setup, the main board can be mounted into the chassis and fixed by screw. To complete the main board 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 one of three PCI - Bus slots can be used.

3.12. 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 ready power-on the system.