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1. INTRODUCTION

YEAR2000 COMPLIANCE

This Intel chipset mainboard is Hardware Year2000 Compliance and supports the latest Pentium III Processor. It achieves the highest performance which based on the advanced Pentium II Microprocessor and featuring PCI Local Bus and Accelerated Graphics Port feature. This mainboard offers a high degree of flexibility in configuration and is fully IBM PC/AT compatible.

1.1 KEY FEATURES

This manual applies to different models of Intel chipset mainboard. Please refer to appropriate section and mainboard layout according to the model no.

Model No.	TL-BX31	TL-ZX31	TL-BX21	TL-ZX21
Chipset	i440BX	i440ZX	i440BX	i440ZX
Socket	Slot 1			
Front-Side Bus	66 / 100 MHz			
Processor	<ul style="list-style-type: none"> ▪ INTEL Pentium III 450 MHz or above Processor (Please download the updated BIOS from our website) ▪ INTEL Pentium II 233 – 450 MHz Processor ▪ INTEL Celeron / Celeron A 266 MHz or above Processor 			
CPU Speed	Jumperless setting			
Voltage Regulator	Built in switching voltage regulator to support 1.5V to 3.5V			
Cache	Built in Level 2 cache: 512KB (PII and PIII), 128KB (Celeron A)			
SDRAM	Support 66MHz and 100MHz (PC100) SDRAM module. Also SPD or Non SPD. Each DIMM slot supports up to 256 MB.			
168 pin DIMM Slot	3	2	3	2
Max. System Memory	768 MB	512 MB	768 MB	512 MB
Expansion Slots	1 x AGP 1.0 slot (1X/2X mode) 4 x PCI slots 3 x ISA slots		1 x AGP 1.0 slot (1X/2X mode) 3 x PCI slots 2 x ISA slots	
On-board I/O	<ul style="list-style-type: none"> ▪ 2 x Ultra DMA/33 Bus Master IDE Ports (support up to 4 IDE devices and PIO Mode 3 & 4, DMA 2 & Ultra DMA 33) ▪ Support HD greater than 8.4GB ▪ 1 x Floppy port (up to 2.88 MB floppy) ▪ 1 x Serial ports (16550 Fast UART) ▪ 1 x Parallel port (ECP/EPP) ▪ 2 x USB ports ▪ 1 x PS/2 mouse port ▪ 1 x Infra-red port 			
System BIOS	Award 1M or 2M Flash BIOS Support ACPI, DMI, PnP, Green, Wake on Modem (external) features			
Wake on LAN	Yes		--	--
Power Connector	ATX		ATX and AT	
Sound on Board	--	--	Crystal Sound (4235)	

INTEL PII
User's Guide

Form Factor	ATX	Baby AT
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Model No.	TL-IBX3-13	TL-IZX3-13	TL-IBX2-13	TL-IZX2-13
Chipset	i440BX	i440ZX	I440BX	i440ZX
Socket	Socket 370			
Front-Side Bus	66 / 100 MHz			
Processor	▪ INTEL Socket 370 Celeron A 300 MHz or abover Processor			
CPU Speed	Jumperless setting			
Voltage Regulator	Built in switching voltage regulator to support 1.5V to 3.5V			
Cache	Built in Level 2 cache: 128 KB			
SDRAM	Support 66MHz and 100MHz (PC100) SDRAM module. Also SPD or Non SPD. Each DIMM slot supports up to 256 MB.			
168 pin DIMM Slot	3	2	3	2
Max. System Memory	768 MB	512 MB	768 MB	512 MB
Expansion Slots	1 x AGP 1.0 slot (1X/2X mode) 4 x PCI slots 3 x ISA slots		1 x AGP 1.0 slot (1X/2X mode) 3 x PCI slots 2 x ISA slots	
On-board I/O	<ul style="list-style-type: none"> ▪ 2 x Ultra DMA/33 Bus Master IDE Ports (support up to 4 IDE devices and PIO Mode 3 & 4, DMA 2 & Ultra DMA 33) ▪ Support HD greater than 8.4GB ▪ 1 x Floppy port (up to 2.88 MB floppy) ▪ 1 x Serial ports (16550 Fast UART) ▪ 1 x Parallet port (ECP/EPP) ▪ 2 x USB ports ▪ 1 x PS/2 mouse port ▪ 1 x Infra-red port 			
System BIOS	Award 1M or 2M Flash BIOS Support ACPI, DMI, PnP, Green, Wake on Modem (external) features			
Wake on LAN	Yes	--	--	--
Power Connector	ATX		ATX and AT	
Sound on Board	--	--	Crystal Sound (4235)	
Form Factor	ATX		Baby AT	

Crystal (4235) Sound on Board

- Compatible with Sound Blaster, Sound Blaster Pro and Windows Sound System
- Advanced MPC3-compliant input and output mixer
- Enhanced stereo full duplex operation
- Dual Type-F DMA support
- Integrated CrystalClear 3D stereo enhancement
- Industry leading Delta-sigma data converters (90 dB DAC)
- Internal default PnP resources
- CS9236 wavetable interface
- CS4610 audio accelerator interface

Yamaha 128 Voice SoftSynth Software

The Yamaha Software Synthesizer S-YXG50 makes it possible for computers with MMX technology to playback MIDI data with higher sound quality than ever. Even to CD quality level without using hardware. As it also supports DirectSound as well, you can also enjoy the sound effects from the latest DirectSound multimedia games.

Yamaha XG Studio Mixer

This versatile playback software allows you to play MIDI files in tandem with animation, video and still images to create a wonderful multimedia effect. In addition, it allows you to change all aspects of the MIDI files from its tempo, volume, source, special effects, voice and individual instruments; so that you are in complete control of the sound effects.

1.2 CHECKLIST

- ◆ Mainboard x 1
- ◆ User's Guide x 1
- ◆ CD Driver x 1
- ◆ FDD & HDD Cable Pack (Sound connector card & ATX form card for Baby AT mainboard only)

1.3 STATIC ELECTRICITY PRECAUTIONS

Static electricity can easily damage your mainboard. Following procedures can help you to protect your mainboard from electrostatic discharge :

- Keep the mainboard and other system components in their anti-static packaging until you are ready to install them.
- Ground yourself before removing any system component from its protective anti-static packaging. A grounded surface within easy reach is the expansion slot covers at the rear of the system case or any other unpainted portion of the system chassis.
- Frequently ground yourself to discharge any static electric charge that may build up in your body while working on installation and/or configuration.
- Handle the mainboard by its edges or by the mounting bracket to avoid touching its components.

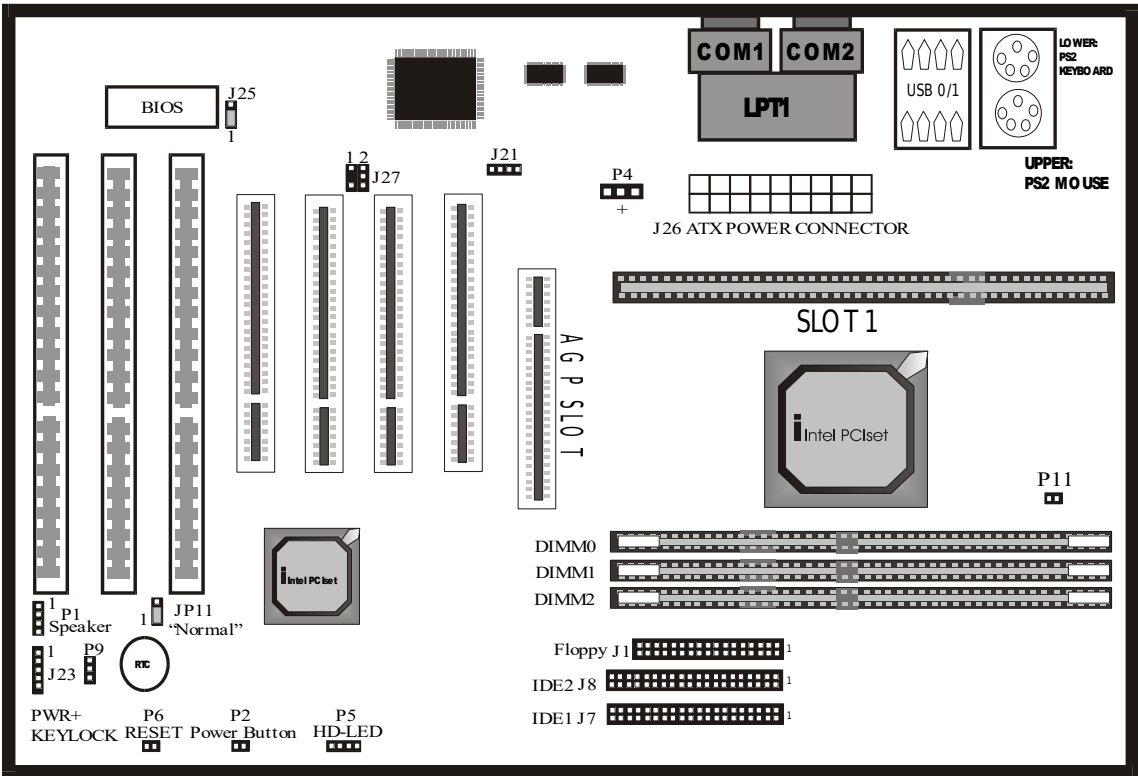
2. HARDWARE CONFIGURATION

Before you install the mainboard into the system chassis, you may find it convenient to first configure the mainboard's hardware. This chapter describes how to set jumpers and install memory modules, and where to attach components.

****You can find the Model No. label on the mainboard.****

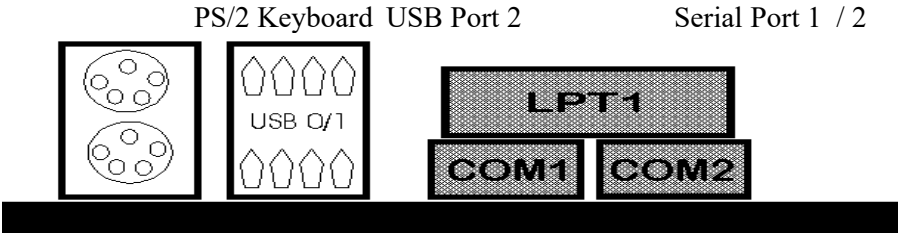
2.1 MAINBOARD LAYOUT

Model No: TL-BX31



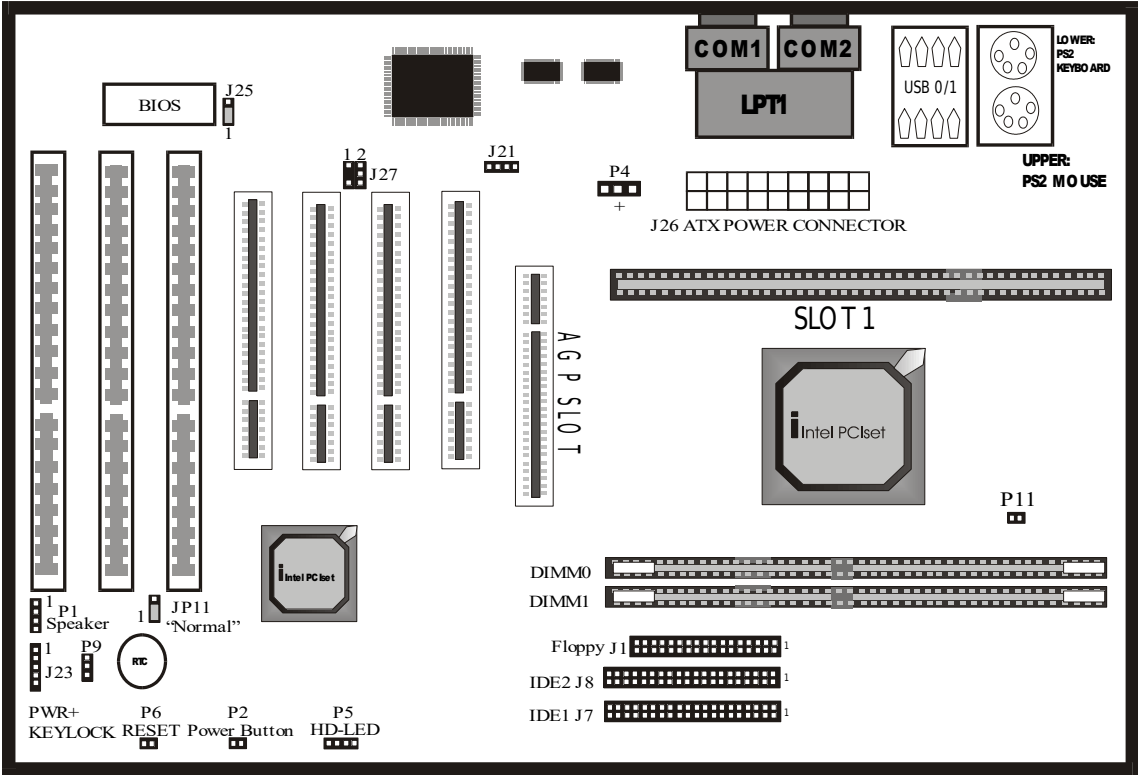
ATX On board Connector Description

PS/2 Mouse USB Port 1 Printer Port

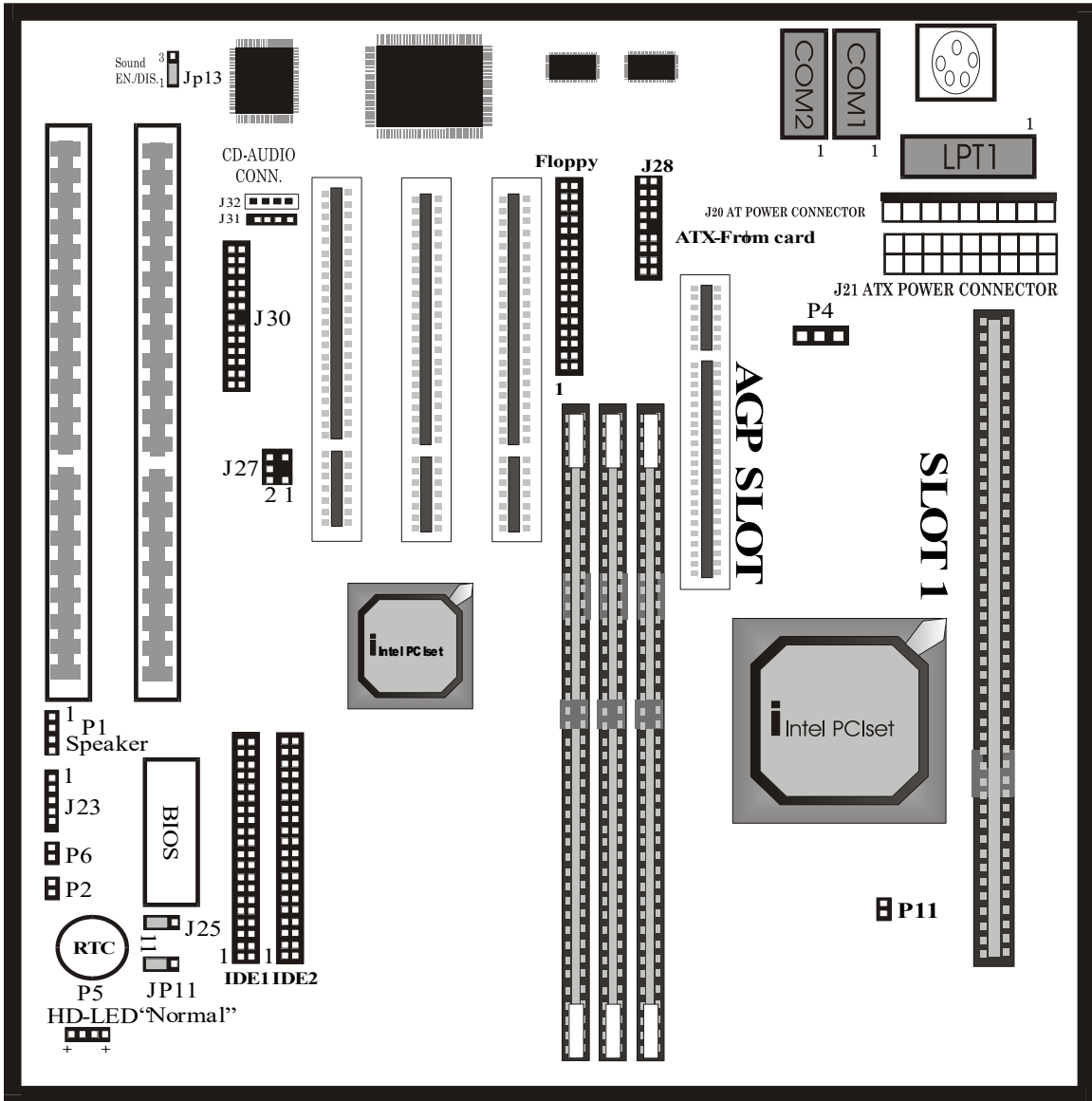


INTEL PII
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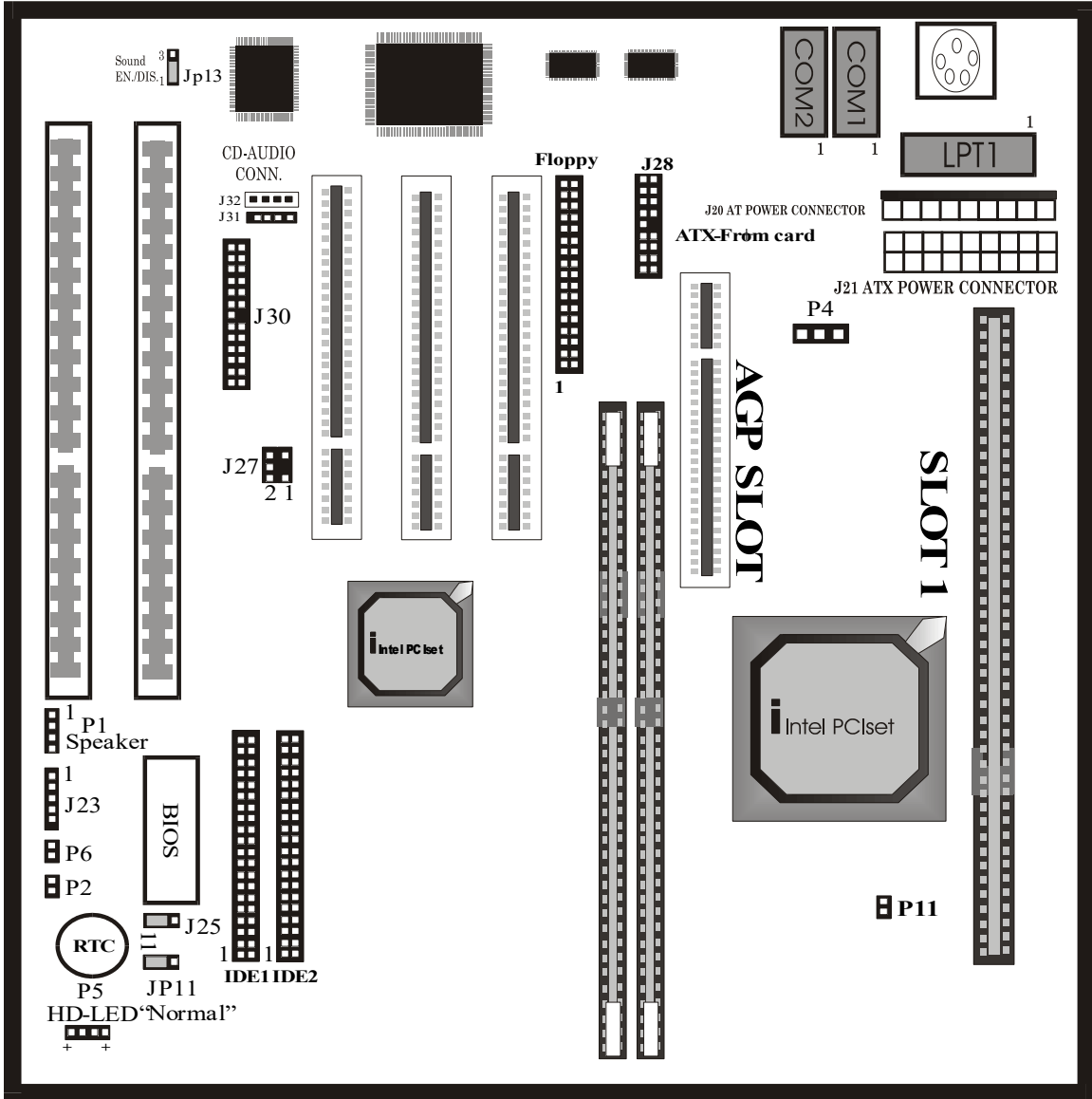
Model No: TL-ZX31



Model No.: TL-BX21

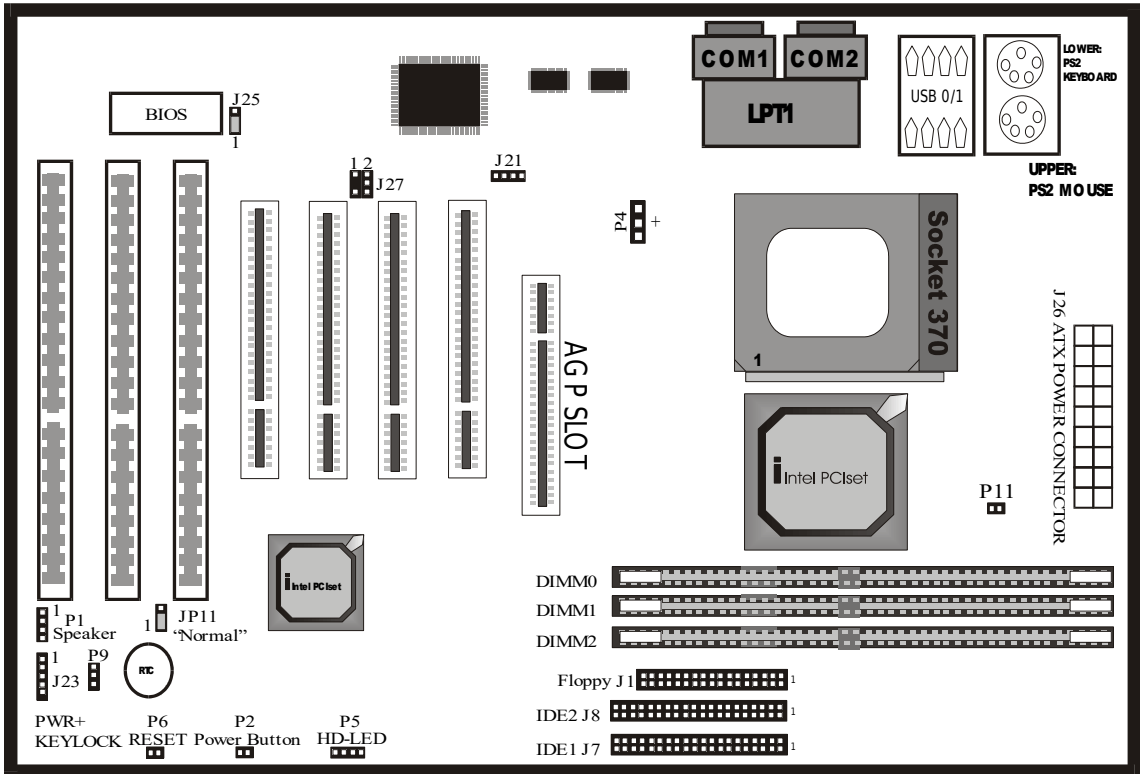


Model No.: TL-ZX21



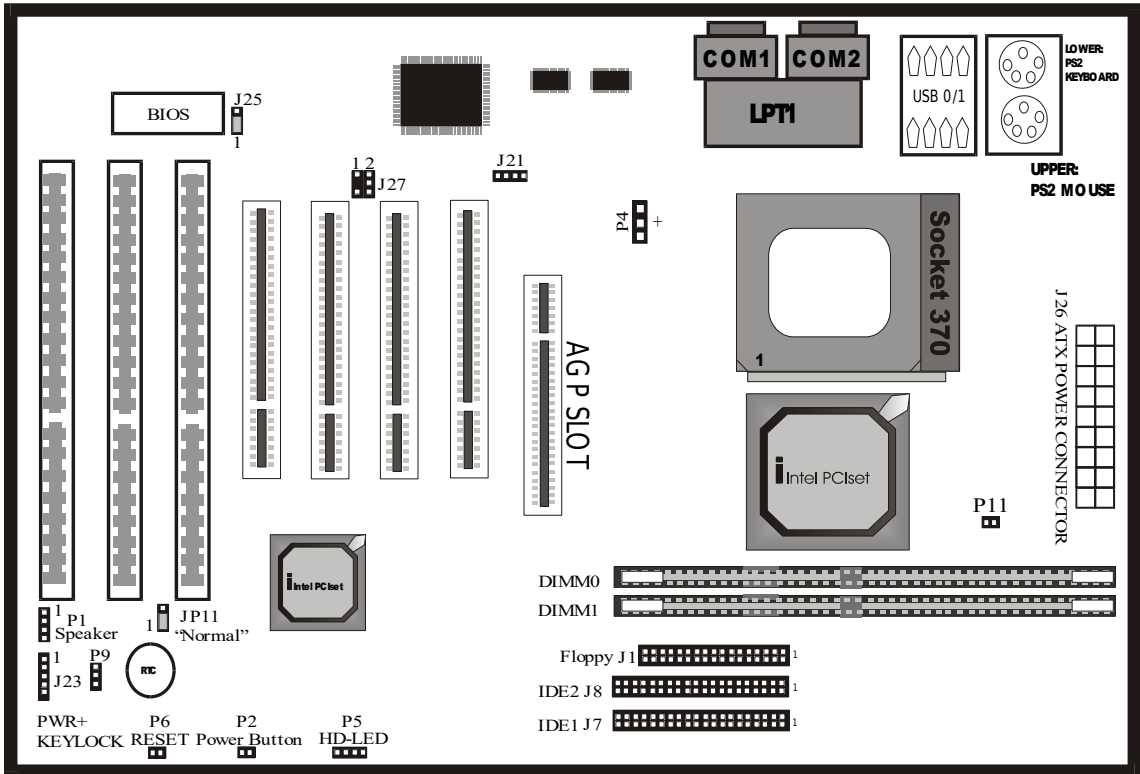
INTEL PII
User's Guide

Model No.: TL-IBX3-13

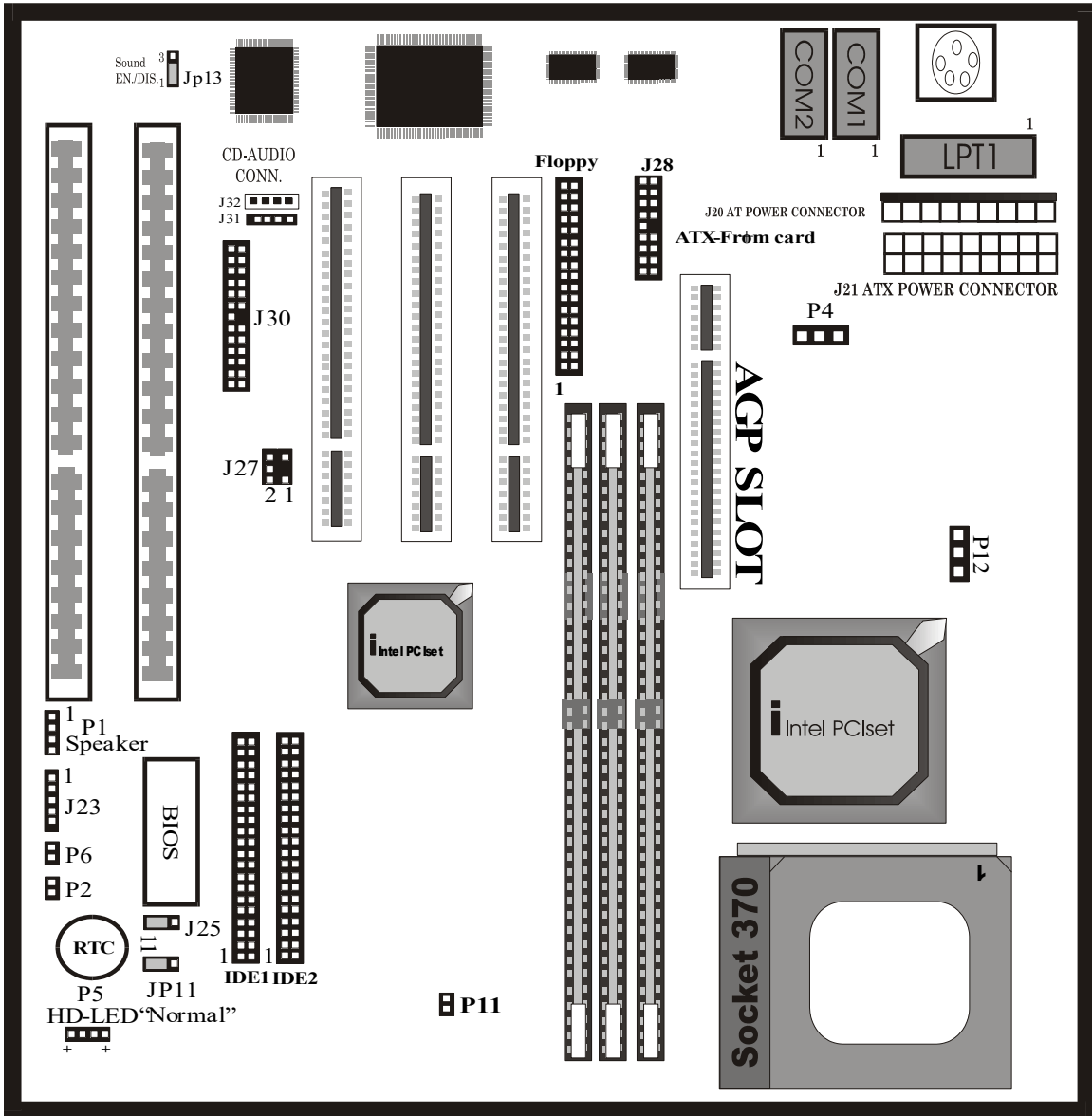


INTEL PII
User's Guide

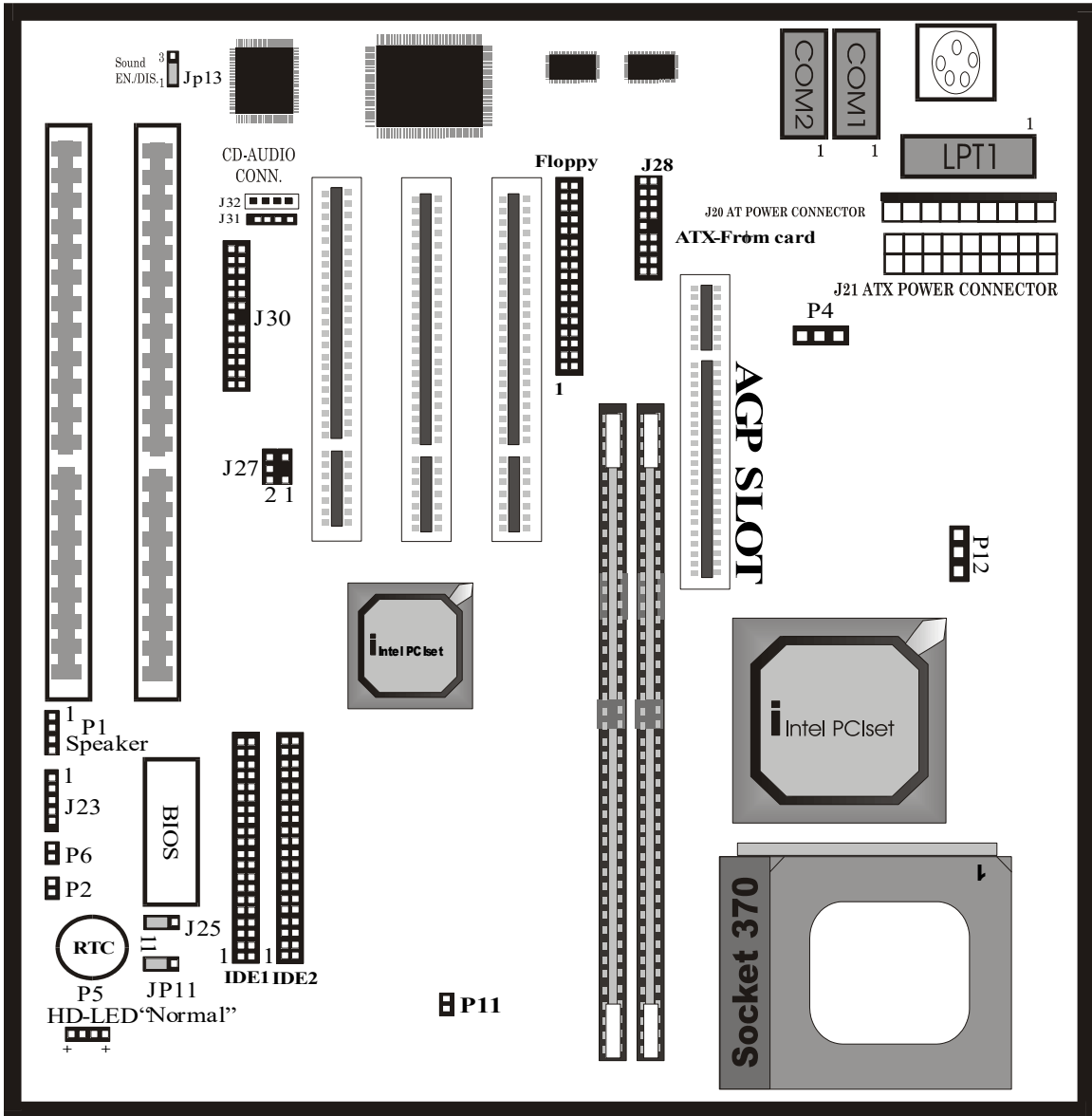
Model No.: TL-IZX3-13



Model No.: TL-IBX2-13



Model No.: TL-IZX2-13

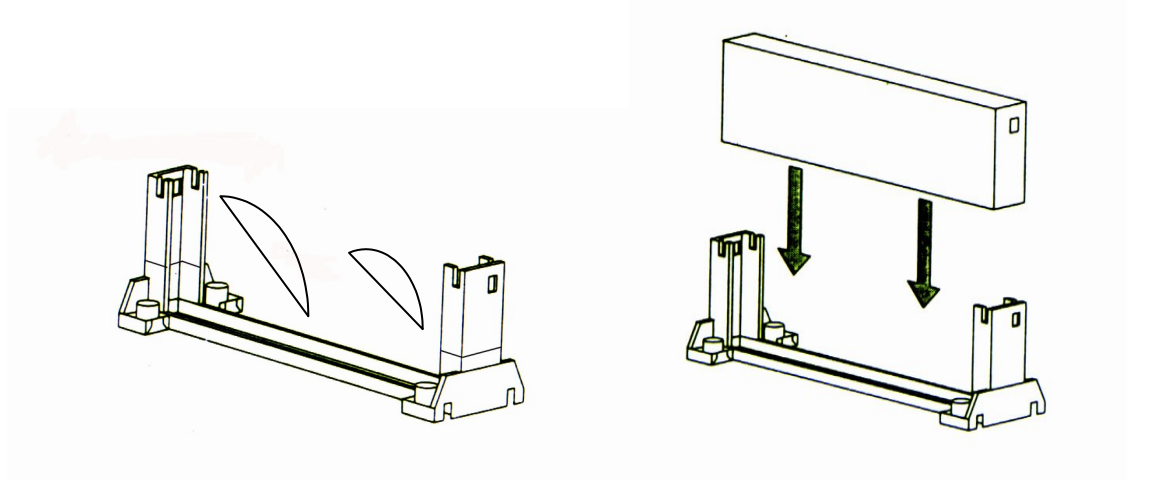


2.2 INSTALLING CPU

This mainboard supports the Pentium II CPU using Single Edge Contact (SEC) slot and Socket 370.

Slot 1

To install the CPU, flatten the two latches on the side of the CPU, insert the CPU into the retention clip. Lock the two latches to secure the CPU. Insert the clip portion of the CPU supporter so that the heat sink can sit on top of the whole CPU supporter.



Socket 370

Match pin 1 of the CPU with pin 1 of the CPU socket. The pin 1 corner of the CPU socket is designated by a small triangle printed on the motherboard. Carefully insert the CPU into the CPU socket and move the metal arm downward to replace it in its original position.



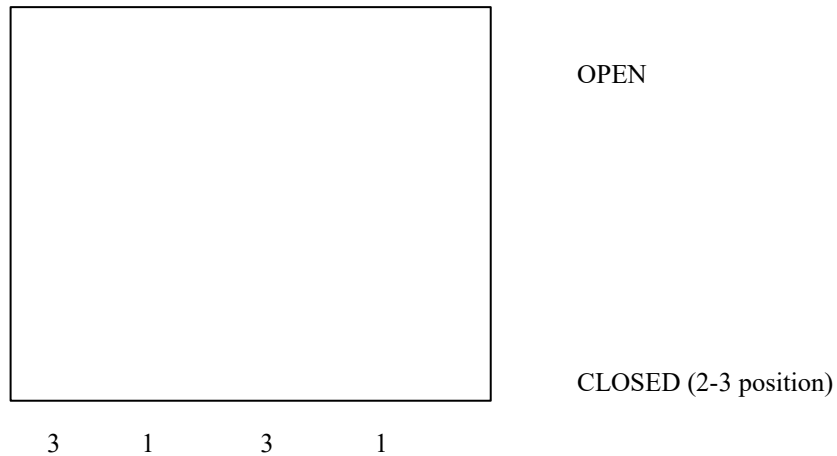
2.3 HOW TO SET JUMPER

Jumper switch is used to select between various operating modes. A jumper switch consists of two or three gold pins, which stretches out from the system board. By using the cap to cover two pins is to short those pins. If the cap is not placed on any pins at all, it indicates to leave the pins open.

To set a jumper switch, please refer to below :

- ◆ to close a jumper, insert the plastic jumper cap over two pins of a jumper
- ◆ to open a jumper, remove the jumper cap

The following conventions are used to represent the proper jumper settings :



NOTE : When you open a jumper, attach the plastic jumper cap to one of the pins so you won't lose it.

2.4 JUMPERS & CONNECTORS

Setting the CPU Voltage

This mainboard supports Pentium II VID function, the CPU core voltage is automatically detected, the range is from 1.3V to 3.5V.

Pentium II VID signal provides CPU voltage auto-detection, therefore, no worries on wrong CPU voltage select.

Selecting the CPU Frequency

The possible settings of current CPU available on the market are listed below, and pls verify the BIOS – “CPU SPEED SETTING” to set the correct CPU Clock+Ratio.

Pentium II / Celeron A	CLock	Ratio
233MHz	66MHz	3.5
266MHz	66MHz	4
300Mhz	66MHz	4.5
333MHz	66MHz	5
366MHz	66MHz	5.5
400MHz	66MHz	6
433MHz	66MHZ	6.5
466MHz	66MHZ	7

Pentium II / III	CLock	Ratio
350MHz	100MHz	3.5
400MHz	100MHz	4
450MHz	100MHZ	4.5
500MHz	100MHZ	5

FOR INTERNAL TEST ONLY

F.S.B 66 / 100 MHz Selector (Pin 11)

Pin 11	Description
Open	100 Mhz
Close	66 / 100 Mhz

Note: The mainboard chipset supports maximum 100 Mhz frequency, the over 100 Mhz settings are for internal test only, which may cause serious system damage

2.4.1 ATX Mainboard

CPU FAN connector (P4)

Plug in the fan cable to the 3-pin fan connector onboard. The fan connector is marked CPU FAN and FAN on the system board.

Pin1	Sense
Pin2	+12V
Pin3	GND

Flash ROM Voltage Selector (J25)

Pin	Description
1-2	12v (default)
2-3	5v

Note : The factory default is 1-2, it is not recommended to change the factory default setting.

ATX Soft-Power Switch Connector (P2)

The ATX soft-power switch connector is a 2 pin header on the system board. Locate the power switch cable from your ATX housing. Plug this connector to the soft-power switch connector marked P2 PWRBT.

P2	PWERBT function
Post ON	Instant ON/OFF
Post OFF	Delay 4 second

ATX power connector pinout

The ATX power supply provides a single 20-pin connector.

Pin	Description	Pin	Description
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	Power OK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

Note: Some ATX-Power does not have -5V voltage output, it will effect some functional of ADD-ON card device.

Software Power-Off

Following the steps below to use the “Software Power-Off control” function in windows 95 with ATX power supply.

1. Click the **START** button on the Windows 95 task bar.
2. Select Shut Down The computer to turn off the system. It is now safe to turn off your computer.” will not be shown when using this function.

Power Led and Keylock Connector (J23)

Keylock connector enables and disables the keyboard key-in function on the case.

Pin	Description
1	LED Output
2	N.C
3	Ground
4	Keylock
5	Ground

Infra Red Connector (J21)

Pin	Description
1	VCC
2	IRRX
3	Ground
4	IRTX

SB-Link (J27)

SB-Link is a connector used especially with a Creative PCI sound card. The SB-link guides signals from the ISA bus to the PCI sound card through a cable which comes with the PCI sound card. This is necessary because some DOS based games address the ISA bus directly.

Speaker Connector (P1)

Pin	Description
1	Data Out
2	N.C
3	Ground
4	+5V

Hard-Disk Active LED (P5)

Pin	Description
1	Active signal
2	Ground
3	Ground
4	Active signal

Reset Switch Connector (P6)

Attach the Reset push cable to this connector

Setting	Description
Open	Normal Mode
Close	Reset System

CMOS state (JP11)

JP11	CMOS Setting
1-2	Normal operation
2-3	Clear CMOS

Wake-on-LAN Connector (P9)

The Wake-on-LAN connector powers up the system when a wakeup packet or signal is received from the network through the INTEL L101 LAN card:

IMPORTANT: This feature requires that the Wake-on-LAN Power up control BIOS is set to Enabled and that your system has an ATX power supply with +5V standby power.

WAKE-LAN(P9)

Pin	Description
1	+5V Standby
2	GND
3	NC

What is Wake-on-LAN?

The Wake-on-LAN feature provides the capability to remotely power on systems supporting Wake-on-LAN by simply sending a wake-up frame. With this feature, remotely uploading/downloading data to/from systems during off-peak hours will be feasible.

Wake-on-LAN is a remote management tool with advantages that can reduce system management workload, provide flexibility to the system administrator's job, and then of course save your time-consuming efforts and costs.

To enable Wake-on-LAN function, your system requires Ethernet LAN adapter card that can activate Wake-on-LAN function, a client with Wake-on-LAN capability, and software such as LDCM rev3.10 or up that can trigger wake-up frame.

2.4.2 Baby AT Mainboard

CPU FAN connector (P4)

Plug in the fan cable to the 3-pin fan connector onboard. The fan connector is marked CPU FAN and FAN on the system board.

Pin1	Sense
Pin2	+12V
Pin3	GND

Flash ROM Voltage Selector (J25)

Pin	Description
1-2	12v (default)
2-3	5v

Note : The factory default is 1-2, it is not recommended to change the factory default setting.

ATX Soft-Power Switch Connector (P2)

The ATX soft-power switch connector is a 2 pin header on the system board. Locate the power switch cable from your ATX housing. Plug this connector to the soft-power switch connector marked P2 PWRBT.

P2	PWERBT function
Post ON	Instant ON/OFF
Post OFF	Delay 4 second

Power Led and Keylock Connector (J23)

Keylock connector enables and disables the keyboard key-in function on the case.

Pin	Description
1	LED Output
2	N.C
3	Ground
4	Keylock
5	Ground

ATX power connector pinout (J21)

The ATX power supply provides a single 20-pin connector.

Pin	Description	Pin	Description
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	Power OK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

Note: Some ATX-Power does not have -5V voltage output, it will effect some functional of ADD-ON card device.

Software Power-Off

Following the steps below to use the "Software Power-Off control" function in windows 95 with ATX power supply.

1. Click the **START** button on the Windows 95 task bar.
2. Select Shut Down The computer to turn off the system. It is now safe to turn off your computer." will not be shown when using this function.

AT power connector pinout (J20)

The AT power supply provides a single 12-pin connector.

Pin	Description
1	+5V
2	+5V
3	+5V
4	-5V
5	Ground
6	Ground
7	Ground
8	Ground
9	-12V
10	+12V
11	+5V
12	Power Good

Speaker Connector (P1)

Pin	Description
1	Data Out
2	N.C
3	Ground
4	+5V

Hard-Disk Active LED (P5)

Pin	Description
1	Active signal
2	Ground
3	Ground
4	Active signal

Reset Switch Connector (P6)

Attach the Reset push cable to this connector

Setting	Description
Open	Normal Mode
Close	Reset System

CMOS state (JP11)

JP10	CMOS Setting
2-3	Normal operation
1-2	Clear CMOS

Onboard Sound Enable/Disable (JP13)

JP13	Description
1-2	Enable
2-3	Disable

On board Connector Description

ATX From Card – J28



On Board Audio Connector – J30

CD Audio Connector – J32, J31

Connect to “Audio” on the CD-ROM drive, and the signal for Panasonic jack is G-S-G-S and S-G-G-S for Sony.

2.5 Memory Configuration

The DIMM types supported are EDO and SDRAM. This mainboard has two or three 168 pin DIMM socket that allow you to install system memory up to 512MB or 768MB.

In 100 MHz system, SPD SDRAM and PC100 specification SDRAM is recommended.

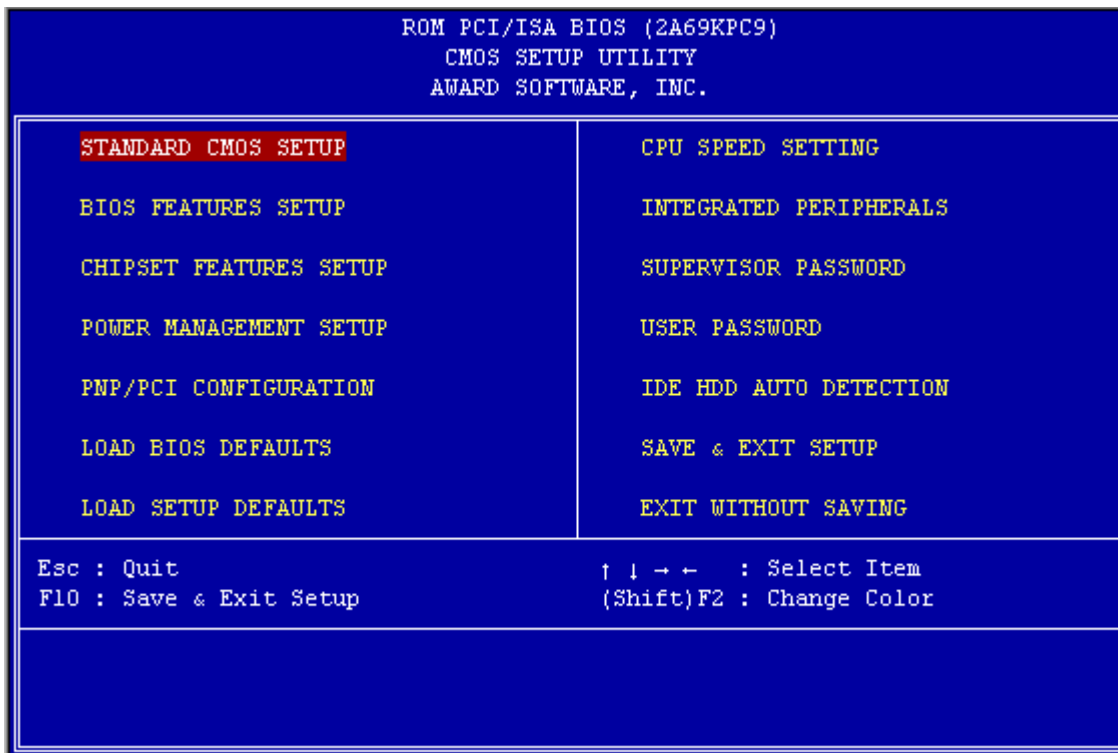
Serial Presence Detect (SPD)

- 1 Specification:
 - SDRAMS: SDRAM SPD specification Rev 1.1 or later
- 2 SPD usage and 100MHz Systems:
 - MUST use SPD method to detect/size memory.
 - If BIOS detects non-SPD DIMMS (or SPD data is invalid) in a system, then BIOS should “BEEP” and stop executing POST. –*“depends on the factory BIOS setting”*
- 3 What happens if non-SPD DIMMS are used in 100MHz system:
 - BIOS cannot verify if the DIMMS used, meet 100MHz requirement.
 - Memory access without programming Buffer strengths FIRST, may return incorrect data and/or damage the memory
 - Incorrect Buffer strength programming for REG. SDRAM.
 - CAS# Latency, RAS#-CAS# delay and RAS# Precharge bits will need to be programmed to lowest performance values
 - BIOS cannot distinguish between 2&4 bank 64MB SDRAMs.

3. AWARD BIOS SETUP

Enter the Award Setup program's Main Menu as follows:

1. Turn on or reboot the system. The following message appears at the bottom of the screen:
"Press to enter setup, ESC to skip memory test"
2. Press the key to enter the Award BIOS setup program and the following screen appears:

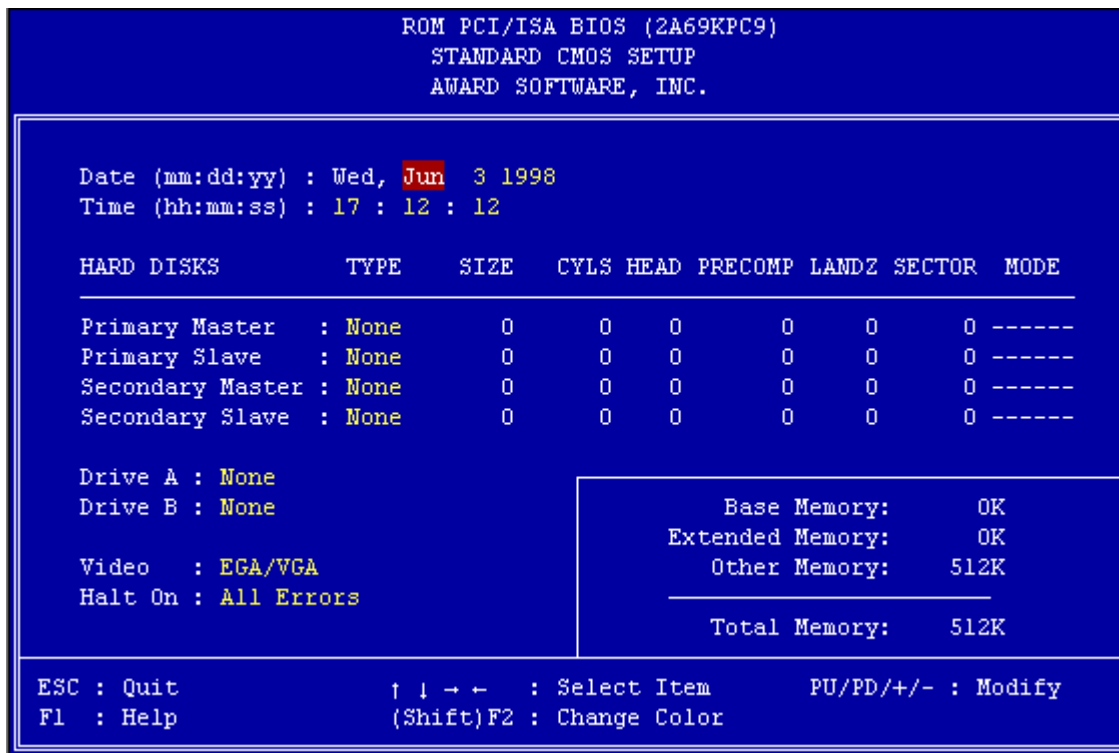


3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections for more information.)
4. Press <Esc> at anytime to return to the Main Menu.
5. In the Main Menu, choose "**SAVE AND EXIT SETUP**" or <F10> to save your changes and reboot the system.
Choosing "**EXIT WITHOUT SAVING**" or <Esc> ignores your changes and exits the program.

3.1 STANDARD CMOS SETUP

Run the Standard CMOS Setup as follows.

1. Choose "STANDARD CMOS SETUP" from the Main Menu and a screen with a list of items appears.



2. Use the arrow keys to move between items and to select values. Modify the selected fields using PgUp/PgDn/+/-keys. Some fields let you enter numeric values directly.

Data (mm/dd/yy)

Type the current date

Time (hh:mm:ss)

Type the current time

Primary / Secondary master and slave

Choose from the standard hard disk types 1 to 46, or "User" defined. If you choose "User", run the IDE HDD Auto detection function from the Main Menu, or enter the HDD information directly from the keyboard and press <Enter>. If you use Auto mode the BIOS can Auto detect HDD type and do not need to enter any HDD information from the keyboard.

Drive A & B

Choose 360KB 5 1/4" , 1.2MB 5 1/4", 720MB 3 1/2", 1.44MB 3 1/2", Not installed

Video

Choose Monochrome, Color 40x25, VGA/EGA, Color 80x25

Halt On

Choose All Errors (Default), No Errors, All, But Keyboard; All, But Diskette; All, But Disk/Key

3. After you have finished with the Standard CMOS Setup program, press the <ESC> key to return to the Main Menu.

3.2 BIOS FEATURES SETUP

Run the BIOS Features Setup as follows.

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of items appears.

```

ROM PCI/ISA BIOS (2A69KPC9)
  BIOS FEATURES SETUP
  AWARD SOFTWARE, INC.

Virus Warning           : Enabled
CPU Internal Cache     : Disabled
External Cache         : Disabled
CPU L2 Cache ECC Checking : Enabled
Quick Power On Self Test : Disabled
Boot Sequence          : A,C,SCSI
Swap Floppy Drive      : Disabled
Boot Up Floppy Seek    : Disabled
Boot Up NumLock Status : Off
Gate A20 Option        : Normal
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
Report No FDD For WIN 95 : No
Video BIOS Shadow     : Disabled
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
  
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/-Keys. An explanation of <F> keys follows:

- <F1>: "Help" gives options available for each item.
- <F2>: Change color
- <F5>: Get the old values. The user started the current session with these values.
- <F6>: Load all options in the BIOS Features Setup with the BIOS Default values.
- <F7>: Load all options in the BIOS Features Setup with the Setup Default values.

A short description of the screen items follows:

Virus Warning

Choose Enabled or Disabled. Enable this option and a SYSTEM WARNING MESSAGE appears when the system detects a virus.

CPU Internal Cache

Choose Enabled or Disabled. This option lets you enable the CPU's Cache internal cache Choose "Enable".

External Cache

Choose Enabled or Disabled. This option lets you enable the external cache memory. For better performance, make sure you always choose "Enabled."

CPU L2 Cache ECC Checking

This function controls the ECC check capability in the CPU level 2 cache.

Quick Power On

Choose Enabled or Disabled. Enabled provides a fast POST and boot-Self Test up speed.

Boot Sequence

This field determines where the system looks first for an operating system. Options are C,A; A,CDROM,C; CDROM,C,A; D,A; E,A; F,A; LS/ZIP, C and A,C

Swap Floppy Drive

Choose Enabled or Disabled. When Enabled Floppy drives A & B are swapped under DOS.

Boot Up Floppy Seek

Choose Enabled or Disabled. "Disabled" provides a fast boot and reduces the possibility of damage to the heads.

Boot Up Num Status

Choose On or Off. On puts numeric keypad in Num Lock mode at Lock Status boot-up. Off puts this keypad in arrow key mode at boot-up.

Boot Up System

Choose High or Low. This option lets you choose system bootup Speed speed. The default is High.

Gate A20 Option

Choose Fast or Normal. This item lets you use the GA20 from the chipset or the keyboard controller.

Typematic Rate Setting

Choose Enabled or Disabled. Enable this option to adjust the keystroke repeat rate.

Typematic Rate (chars/sec)

Choose the rate a character keeps repeating.

Typematic Delay (Msec.)

Choose how long after you press a key that a character begins repeating.

Security Option

Choose Setup, or System. Use this feature to prevent unauthorized system boot-up or unauthorized use of BIOS Setup.

"System" - Each time the system boots the password prompt appears

"Setup" - Password prompt only appears if you attempt to enter the Setup program.

Video BIOS VIDEO shadow

Copies BIOS code from slower ROM to faster RAM. Shadow BIOS can then execute from RAM.

Report No FDD For WIN95

Select "NO" will bypass all FDD access in WIN95 system.

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and then follow screen instructions to save or disregard your settings.

3.3 CHIPSET FEATURES SETUP

The "CHIPSET FEATURES SETUP" includes settings for the chipset dependent features. These features are related to system performance.



Caution : Make sure you fully understand the items contained in this menu before you try to change anything. You may change the parameter settings to improve system performance. However, it may cause system unstable if the setting are not correct for your system configuration.

AUTO Configuration- Default “Enable”

RAS Pluse Width Refresh
RAS Precharge Time
RAS to CAS Delay
CPU to PCI Post Write

All value are base on DRAM controller Factory default setting(depending on the memory modules that you are using.)

SDRAM CAS Latency - this bit contains the information for SDRAM during initialization

SDRAM WR Retire Rate - this bit controls the timing that the Intel chipset writes data into SDRAM during burst cycles

RAMW# assertion timing – this bit for EDO/FP DRAM only

SDRAM Input Signals-
SDRAM Output signals-

These control bits are used to adjust the internal SDRAM clock used to latch MD(63:0) driven out by SDRAM. The value being programmed will be subject to SDRAM TAC specification

Memory Hole At 15M-16M

-Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

Chipset Features – AGP Aperture Size (MB)

-Memory—mapped, graphics data structures can reside in a Graphics aperture. Leave on 64MB default setting.

Chipset Features – Auto detect DIMM/PCI Clk

- to meet the EMI specification, it will disable all un-detected DIMM CLK.

Chipset Features – Spread Spectrum

-1 Leave on default setting.

Chipset Features – Concurrent PCI/Host

- Allow PCI masters from both PCI buses active at the same time

3.4 POWER MANAGEMENT SETUP

The Power Management controls the mainboard a "green" features that for the power saving Mode, Display turn off and HDD power down that together form the hardware power conservation scheme.

Run the Power Management Setup as follows:

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of items appears.

```

ROM PCI/ISA BIOS (2A69KPC9)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management      : Min Saving
PM Control by APM     : Yes
Video Off Method      : V/H SYNC+Blank
Video Off After       : Standby
MODEM Use IRQ         : 3
Doze Mode             : Disable
Standby Mode          : Disable
Suspend Mode          : Disable
HDD Power Down        : Disable
Throttle Duty Cycle   : 62.5%
VGA Active Monitor    : Disabled
Soft-Off by PWR-BTTM : Instant-Off
Resume by Ring        : Enabled
IRQ 8 Break Suspend  : Disabled

** Reload Global Timer Events **
IRQ[3-7,9-15],MMI    : Disabled
Primary IDE 0         : Disabled
Primary IDE 1         : Disabled
Secondary IDE 0       : Disabled
Secondary IDE 1       : Disabled
Floppy Disk           : Disabled
Serial Port           : Enabled
Parallel Port         : Disabled

ESC : Quit           ↑↓←→ : Select Item
F1  : Help           PU/PD/+/- : Modify
F5  : Old Values    (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults

```

2. A short description of the screen items follows:

"POWER MANAGEMENT" is the master control for the four power saving modes, doze, standby, suspend mode and HDD power down mode..

Min Saving

-The "Min saving" defaults as "1 hour", "1 hour", "1 hour" and "15 Min" respectively.

Max Saving

-The "Max Saving" defaults are all "1Min"

User define

-Allows you to set the power mode time-out by yourself

Disable

-Turn off all power saving time-outs.

Doze mode

-Put the system performance down to 20%

Stand by mode

-Turn off the video signal and cause CPU enter SMM mode

Suspend mode

-Turn off the video signal and cause CPU enter SMM mode and shut down any IDE hard disk drivers connected to the system.

HDD Power

-Shut down any IDE hard disk drivers in the system if they are Down not accessed.

<i>Note: HDD Power down does not affect SCSI hard disks.</i>
--

Soft-off by PWR-BUTTON

-when set to Soft Off, the ATX switch can be used as a normal system power—off button when pressed for less than 4 seconds. If set as “ Instant-Off” , the system will be power off at any time.

3.5 PNP/PCI SLOT CONFIGURATION

The "PNP/PCI SLOT CONFIGURATION" sets the system for use with PCI bus cards.

Run the PNP/PCI Slot Configuration program as follows.

1. Choose "PCI SLOT CONFIGURATION" from the Main Menu and a screen with a list of items appears.

```

ROM PCI/ISA BIOS (2A69KPC9)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed      : Yes
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 : 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
IRQ-15 assigned to : PCI/ISA PnP
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

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

```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/-keys. <F> keys are explained below:

- <F1>: "Help" gives options available for each item.
- <F2>: Change color
- <F5>: Get the old values. The user started the current session with these values.
- <F6>: Load all options in the BIOS Features Setup with the BIOS Default values.
- <F7>: Load all options in the BIOS Features Setup with the Setup Default values.

1. After you have finished with the PCI Slot Configuration program, press the <ESC> key and then follow screen instructions to save or disregard your settings.

PNP OS Installed (YES)

-This field allows you to use a Plug-and-Play (PnP) operating system to configure the PCI bus slots instead of using this BIOS. Thus interrupts may be reassigned by the OS when YES is selected. When a non-PnP OS is installed or to prevent reassigning of interrupt settings, select the default setting as "YES".

Resources Controlled By (Manual/Auto)

-setting this option to manual allows you to individually assign the IRQs and DMAs to the ISA and PCI devices. Set this to AUTO to enable the auto configuration function.

Reset configuration Data

-Incase conflict occurs after you assign ths IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs.

Used MEM Base address

-this item, in conjunction with the "Used MEM Length", lets you set a memory space for non-PnP compatible ISA card. This item specifies the memory base (start address) of the reserved memory space. The memory size is specified in the "Used MEM length".

Used MEM Length

-If your ISA card is not PnP compatible and requires special memory space to support its function, specify the memory size in this parameter to inform the PnP BIOS to reserve the specified memory space for installed legacy ISA card.

3.6 LOAD SETUP DEFAULTS

This Main Menu item loads the default system values. These settings are recommended for optimum performance. If the CMOS is corrupted when enter BIOS setup utility you must load setup default again. Choose this item and the following message appears:

"Load "SETUP Defaults (Y/N)? N"

To use the Setup defaults, change the prompt to "Y" and press <Enter>.

3.7 INTEGRATED PERIPHERALS SETUP

The "INTEGRATED PERIPHERALS" is used to control the values of the I/O chipset registers. These registers control the mode of HDD type and I/O address port.

Run the Integrated Peripherals as follows:

1. Choose "INTEGRATED PERIPHERALS" from the Main Menu and a screen with a list .

```

ROM PCI/ISA BIOS (2A69KPC9)
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
Init Display First      : AGP

KBC input clock         : 8 MHz
Onboard FDC Controller  : Enabled
Onboard Serial Port 1   : 3F8/IRQ4
Onboard Serial Port 2   :
UART Mode Select        :
RxD , TxD Active       : Hi,Lo

IR Transmittiion delay : Enabled
Onboard Parallel Port  :
Parallel Port Mode      :
ECP Mode Use DMA        : 3
EPP Mode Select         : EPP1.7

ESC : Quit           ↑↓←→ : Select Item
F1  : Help           PU/PD/+/- : Modify
F5  : Old Values    (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults

```

IDE Hard Disk Drive Mode Setting

The BIOS support two kind of methods to set up your IDE Hard Disk Drive Mode. One is auto, the other is manual mode.

In auto mode BIOS can auto detect HDD's mode, but in some old type HDD that can't meet ATA specification, the BIOS will detect wrong Mode and cause system boot fail. You must change auto mode to manual mode and try a proper mode that can meet your HDD specification. There are five modes defined in manual mode. They are mode 0,1,2,3,4. The default setting for on board timing is auto mode that it will provide optimum performance for your HDD.

IDE HDD Block Mode

Choose Enabled or Disabled. If your IDE HDD supports BLOCK MODE, then you can enable this function to speed up the HDD Access time. If not, please disable this function to avoid an HDD Access Error.

Onboard PCI IDE Controller

The on Chip PCI IDE controller is default "Enable" setting, if you disable On-Chip primary and secondary PCI IDE, it will disable the on board IDE controller. Make sure you do this if you want to use an IDE controller other than on the mainboard IDE controller.

Onboard FDD Controller

The default setting for the "Onboard FDC Controller" is "Enabled". This setting allows you to connect your floppy disk drives to the onboard "Floppy" connector. Choose the "Disabled" setting if you want to use a separate controller card.

Serial Port

The "Onboard Serial Port 1" and "Onboard serial Port 2" lines control the assignments for the mainboard's two onboard serial connectors. They can be assigned as COM1, COM2, COM3, COM4 for serial Port 1 and serial Port 2, or disable.

Parallel Port

The options for "Onboard Parallel Port" is 378H. This item controls the on-board parallel port connector, if you are using an I/O card with a parallel port, make sure the address don't conflict.

Parallel Port Mode

The options for "Onboard LPT Port Mode" is default SPP mode, you can select EPP, ECP, and SPP Mode just change setting, if you have a parallel interface peripheral device, use one of the parallel port enhancements and set this line for the enhanced mode that your peripheral supports.

ECP Mode Use DMA

The option for "ECP Mode use DMA" is default DMA3 if your system has ECP preheat device, when you are using some I/O card, make sure the DMA channel don't conflict. When you have done with this section, press the <ESC> key to go back to the main screen.

3.8 USER PASSWORD SETUP

This Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. The password cannot be longer than 8 characters.

ROM PCI/ISA BIOS (2A59GPCA)
 CMOS SETUP UTILITY
 AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/PCI CONFIGURATION LOAD SETUP DEFAULTS INTEGRATED PERIPHERALS	LOAD BIOS DEFAULTS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT T SETUP EXIT WITHOUT SAVING
Enter Password: <input style="width: 200px; height: 15px;" type="text"/>	
Esc : Quit F10 : Save & Exit Setup	
↑ ↓ → ← : Select Item (Shift)F2 : Change Color	
Change/Set/Disable Password	

Important: *Keep a safe record of the new password. If you forget or lose the password, the only way to access the system is to discharge CMOS memory using jumper JP11.*

3.9 IDE HDD AUTO DETECTION

1. If your system has an IDE hard drive, you can use this utility to detect its parameters and automatically enter them into the Standard CMOS Setup.

ROM PCI / ISA BIOS (2A59GF51)
 IDE HDD AUTO DETECTION
 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)	21	699	32	0	1398	63 LBA
1	722	1399	16	65535	1398	63 NORMAL
2	721	699	32	65535	1398	63 LARGE
ESC : SKIP						

For IDE hard disk driver, the BIOS provide three modes to support both normal IDE hard disk and also drivers large than 528MB, a short description of three modes as follows:

- a. Normal mode: For drivers small than 528MB
 - b. Large mode: For drivers larger than 528MB that do not use LBA. There can only be used with MS-Dos operating system.
 - c. LBA mode: For drivers larger than 528MB and upto 8.4GB that use logic block addressing mode. Normally we recommend to select LBA Mode if your HDD drivers large than 528MB.
3. This utility will autodetect as many as four IDE drivers.

3.10 CPU SPEED SETTING

The mainboard will auto detect your Pentium II CPU is 100MHz type or 66MHz type , and the table will shown a correct frequency table , the user may chose the correct CPU SPEED for the system.

100MHz type CPU:

```
ROM PCI/ISA BIOS (2A69KPC9)
CPU FEATURES SETUP
AWARD SOFTWARE, INC.

CPU Speed      : 350Mhz (100x3.5)

ESC : Quit          ↑↓←→ : Select Item
F1  : Help          PU/PD/+/- : Modify
F5  : Old Values   (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

66MHz type CPU:

```
ROM PCI/ISA BIOS (2A69KPC9)
CPU FEATURES SETUP
AWARD SOFTWARE, INC.

CPU Speed      : 333Mhz (66x5)

ESC : Quit          ↑↓←→ : Select Item
F1  : Help          PU/PD/+/- : Modify
F5  : Old Values   (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

3.11 SAVE & EXIT SETUP

Select this item from the main menu and type "Y" to save the values entered during the current session and then exit the BIOS Setup program. Type "N" to return to the Setup program.

3.12 EXIT WITHOUT SAVING

Select this item from the main menu and type "Y" to exit the BIOS Setup program without saving the values entered during the current session. Type "N" to return to the Setup program.

4. DRIVER INSTALLATION

4.1 Windows 95 SYSTEM INFO. update Installation (Driver CD or Diskette bundled)

The installation procedures described here were based on the Windows 95 Final Release version.

1. Insert the floppy disk containing the driver file into drive A (or B). (or insert CD in CD-ROM drive)
2. Double click the “**My Computer**” icon on the Desktop screen.
3. Double click the drive A (or B) icon. (or CD-ROM drive)
4. Run **SETUP.EXE** in drive A (or B) :\Win95 (or CD directory: \Intelmb\setup.exe)
5. Follow the advise showed on the screen to complete the installation.
6. When system prompted to reboot Windows 95, select “**Yes**”
7. Restart Windows 95 will detect Intel 82371AB PCI IDE Controllers and install the primary and secondary IDE controller in sequence.
8. And the System devices, Intel 82371AB PCI to ISA Bridge, Intel 82371AB power Management Controller, Intel 82443BX Pentium® Processor to PCI Bridge will be created and recognized.
9. Restart Windows 95 again.

4.2 PCI card (or PCI Universal serial devices):

If you are WIN95 OSR 2.0 user (it shows “**PCI Universal serial Devices**”), you may obtain USBSUPP.exe from Microsoft or our AGP product driver for installing Microsoft USB supplement which create “**USB Supplement to OSR2**” in the list of ADD/Remove program tool under Control Panel. After USBSUPP.exe update, run WIN95 SYSINFO uupdate (driver diskette) setup.exe again.

4.3 Crystal Sound -- Windows 95 / 98 Driver Installation

1. During the Windows 95 / 98 boot procedure, new hardware will be detected as shown below.
2. Select the “**Driver from disk provided by hardware manufacture**” item, and click the “**OK**” button.
3. Windows 95 / 98 will then prompt a “**Install From Disk**” dialog box.
4. Insert the CD into CD-ROM Drive and click the “**Browse...**” button to choose the letter of CD-ROM Drive (for example “**D:**”), and type “**CX4235\Win95 or Win98**” (for example **D:\CX4235\Win95**), then click the “**OK**” button to install the Windows 95 / 98 driver. For other languages replace English with the language of your choice.
5. Follow installation procedure.

Problem: There is problem in playing audio CD after reinstalling Windows 98 ?

Answer: During re-installation of Windows 98, Win98 will auto-detect the Crystal sound device on board and use its default driver of Crystal 4235 sound. However, this default driver is not specifically designed for this Crystal 4235 chipset. Therefore, whenever you encounter this problem, please delete the default driver and re-install the correct driver from the CD supplied by the mainboard manufacturer.

Procedures:

1. Run **Device Manager** which is located in the **System** option under **Control Panel**.
2. Delete the Win98 default driver of Crystal sound.
3. Run the Setup program of Crystal sound (directory X:\CX4235\win98, X: - CD-ROM drive)from the CD supplied by the mainboard manufacturer.
4. Re-install the correct driver of Crystal 4235 sound device.

4.4 Yamaha 128 Voice (S-YXG50) Installation

1. Start Win 95 / 98.
2. Insert the CD disk into the CD-ROM drive. (e.g. Drive D)
3. Choose "**Run**" from the Start Menu.
4. Type "**D:\Yama_128\XG-50\English\setup.exe**" on the command line, then click on the "**OK**" button.
5. Note that for S-YXG50 instead of English, you can choose French, German, Italian, Japanese or Spanish.
6. A Welcome dialogue box will appear, click the "**Next**" button to start the installation.
7. When the user information dialogue box appears, it will ask for a serial number. Please type in CAPITAL letters "**G5AAH98P1013**"
8. The heart of this software can be located in the **XG Synth Driver** icon under the **Control Panel**.

4.5 Yamaha XG Studio Mixer Software Installation

1. Start Win 95 / 98.
2. Insert the CD disk into the CD-ROM drive. (e.g. Drive D)
3. Choose "**Run**" from the Start Menu.
4. Type "**D:\Yama_128\xgstudio\setup.exe**" on the command line, then click on the "**OK**" button.
5. A Welcome dialogue box will appear, click the "**Next**" button to start the installation.
6. Follow the instructions on screen.
7. To assess the software, double click on the **XGStudio Mixer** option in the **YamahaXG Studio** menu located inside the **Program** menu.

4.6 BIOS Upgrade

Before upgrading the BIOS of this Intel mainboard, please check the BIOS size whether it is 1M or 2M. The BIOS size will be displayed on the monitor screen during system boot-up. Then download the correct size and version of BIOS from supplier's website.

Our Website: www.pine-tech.com

4.7 Installing ATAPI CD-ROM

1. This board offers two E-IDE (Enhanced IDE) connectors, each of which can take two devices. Please set the primary channel for E-IDE hard disks and set the secondary channel for slow throughput ATAPI compliant peripherals (such as ATAPI CD-ROM).
2. If you are installing a secondary E-IDE drive, you may have difficult getting the two drives to work together since some brands of E-IDE drivers won't work on the same bus as another brand. You will have to designate one drivers as master and another as slave.

APPENDIX I

On Board I/O Address & IRQ Maps

System Resource	IRQ	I/O Address
Timer	IRQ0	040-043
Keyboard	IRQ1	060-064
Programable INT Controller	IRQ2	0020-0021 00A0-00A1
COM2 (B)	IRQ3	2F8-2FF
COM1 (A)	IRQ4	3F8-3FF
Floppy	IRQ6	3F0-3F7
LPT1	IRQ7	378-37F
Real Time Clock	IRQ8	070-071
PS/2 Mouse	IRQ12	
Math Coprocessor	IRQ13	0F0-0FF
IDE 1	IRQ14	1F0-1F7
IDE 2	IRQ15	170-177

Note : IRQ 5,9,10 and 11 will be available for other interface card.

Our Website: www.pine-tech.com