TM-P2BX TM-P2VAP
ISA/ PCI/ AGP Mainboard

with onboard PCI IDE and super Multi-I/O.

Version: 2.0

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Overview

The TM-P2BX\VA are a Pentium II\III based mainboard that utilizes Intel 82440BX and VIA chipset on ATX PCI/ ISA platform. This mainboard is designed for Pentium II\III CPU, and supports new architectures such as high speed AGP graphic port, Ultra DMA/33/66, Bus Master IDE, SDRAM memory and expandable to a maximum 1GMB. There is no second level cache onboard since the cache is on the Pentium II\III CPU card.

In addition to above features, TM-P2BX\VA implements most advanced technology such as Synchronous switching regulator, **CPU thermal protection, CPU fan monitoring, System voltage monitoring, Over current protection, Modem Wake Up, Keyboard power on, PS/2 mouse power on, Debug sensor on board and user-friendly Jumper-less.**

The most unique feature of the TM-P2BX\VA is its capability to LED and Voice debug onboard. When the CPU, DRAM, FDD, or VGA cards have not been properly installed, a DIY user can isolate problems through reading the Debug Sensor LED and instructions in the manual or hearing the voice Dedug. To professional system test engineers or maintenance engineers, the Debug Sensor can work as an 80 Port Debug Card. In other words, they can use this debug sensor function to do testing and maintenance in lieu of the 80 Port Debug card.

Main Features

1. **Debug sensor on board.**
2. Support the newest specifications of ACPI.
3. Support Ultra DMA/33/ 66 (VIA)-highest rate IDE (must be applied with driver).
4. Support current CPUs and future higher speed CPUs that are compatible with SECC Socket.
5. Support IR/Consumer IR/USB and PS/2 device.
6. Support modem ring on.
7. Compatible with PCI 2.1 Spec.
8. With the "power saving" feature, the CPU cooler automatically stops when the system enters the green mode state.
9. CPU cooler connector built in.
10. Supports Intel LDCM Network Manageability.
11. Supports ECC or Non-ECC type DRAM module.
12. Support Keyboard Power On.
13. Support PS/2 Mouse Power On.
14. **Supports BIOS in setting CPU type.**
15. **Supports automatic closing of the unused DIMM/ PCI clock to reduce noise.**

CONTENTS

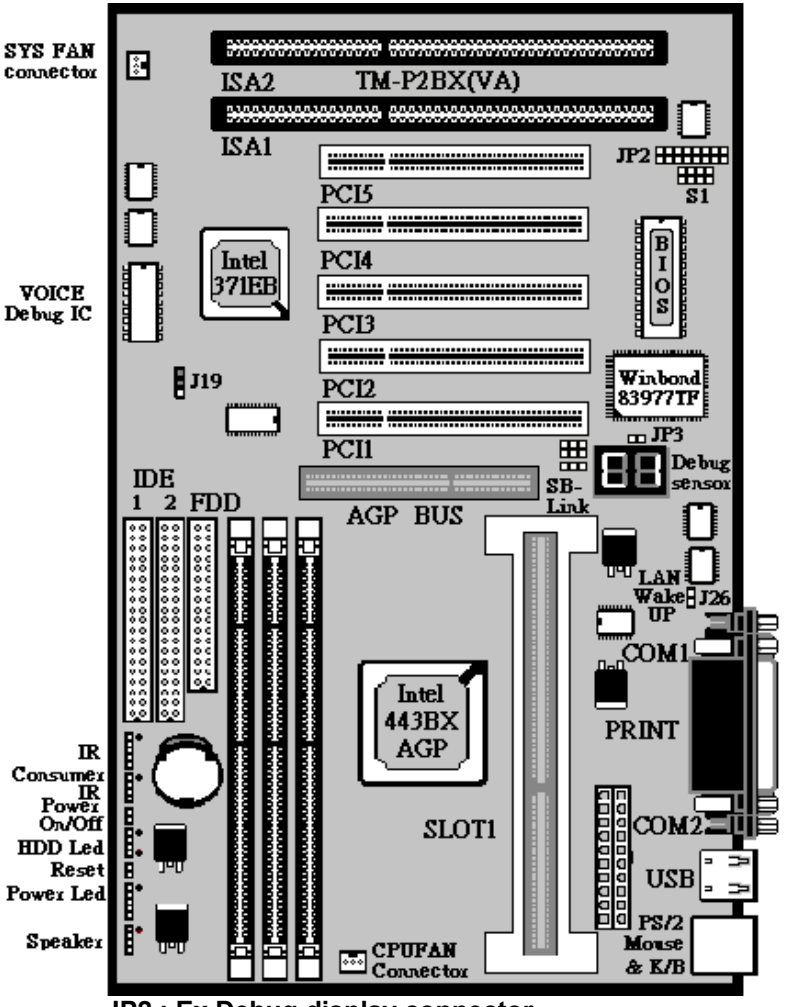
Introduction

A. Specifications

System Chipset	Intel 82440 BX and VIA 693A+596B (or 686A in Q1, 00) chipset.
CPU	Intel Pentium II\III processors, support 233/266/300/333 (Ex. Clk 66 MHz). 300/350/400/450/500 550/600 (Ex. Clk 100MHz). 533/600 (Ex. Clk 133 MHz)
Memory	Expandable to 768MB (3 banks) with three 168-pin DIMM socket {support 3.3 V EDO (66MHz only) / SDRAM (66MHz/ 100MHz)}.
I/O	Winbond 83977, two high speed 16550 compatible serial ports, one Multi-Mode. Parallel Port support SPP/EPP/ECP standard mode. Two onboard PCI IDE Ports (32-bit data transfer). LS-120/ ZIP FDD, IrDA/ ASK IR/ Consumer IR. Dual USB ports Support two 360/720KB/1.2/1.44/2.88MB floppy disk devices. One PS/2 Mouse port.
BIOS	Award System BIOS installed in socket (Flash and PnP).
Expansion slots	One AGP slot, five PCI Master Slots and two 16-bit ISA Slots.
Voltage	Auto 1.5V-3.5V
Dimension	4-layer PCB, size (300mm x 190mm).
Others	Support BIOS setting CPU type (**Jumper-less**), CPU Auto Temperature Sensor & Music Alarm, voltage monitor and CPU Fan monitor, Bus Master/ Ultra DMA/33, ACPI, AGP Bus, Keyboard Power On, PS/2 Mouse Power On, Modem Ring On, LAN wake up, **Voice & Debug sensor on board.**

Setup Guide

A. Layout Diagram



JP2 : Ex.Debug display connector.

Jp3 : Short=On board debug display

Open=Ex.Debug display

B. Voice / LED Debug On Board & S1 set up

When the CPU, DRAM, Cache RAM, FDD or VGA card have not been properly installed, user can isolate those basic problems through the Debug Sensor LED and instructions from the manual.

Error Message	LED Error code	Voice Debug
DRAM defect or improper connection	C1\C6	Please check memory.
CPU defect or improper connection	FF	Please check CPU.
Display card defect or improper connection	OD	Please check display card or memory.
Cache RAM Defect	61	Please check Cache RAM
Keyboard defect	05	Please check keyboard.
Floppy defect or improper connection	4E	Please check Floppy Disk Drive connector or BIOS.
When CPU temperature over the set point.		Your CPU temperature is too high.
When Mainboard was seriously demaged in some of components.	Refer to page 52-56 for other Error Codes.	The Mainboard components may be demaged, please sent it bck to your supplier for repairing.

S1 Set up

In case the CPU you use is belonged old style - Multiplier type, you may refer to following set up. All the new frequency-fixed CPU are Auto-Detect so that don't need to set up S1.

S1

Pin 1	Pin 2	Pin 3	Pin 4	Multiplier
Off	Off	Off	Off	X2
On	On	On	Off	X2.5
On	On	Off	On	X3
On	On	Off	Off	X 3.5
On	Off	On	On	X 4
On	Off	On	Off	X 4.5
On	Off	Off	On	X 5
On	Off	Off	Off	X 5.5

ROM PCI/ISA BIOS (2A69KTJ9)
CHIPSET FEATURE SETUP
AWARD SOFTWARE, INC

Auto Configuration	: Enabled	Auto Detect DIMM/ PCI Clk	: Enabled
EDO DRAM Speed Selection	: 60ns		
EDO CASx# MA Wait State	: 2		
EDO RASx# Wait State	: 2		
SDRAM RAS-to CAS Delay	: 3	Spread Spectrum	: Disabled
SDRAM RAS Precharge Time	: 3	CPU Warning Temperature	: Disabled
SDRAM CAS latency Time	: Auto	Current CPU Temperature	: 28℃/ 82℉
DRAM Data Integrity Mode	: Non-ECC	Current SYSFAN Speed	:4285 RPM
System BIOS Cacheable	: Enabled	Current CPUFAN Speed	:4000 RPM
Video BIOS Cacheable	: Enabled	Current Vin3 (V)	: 2.88V
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 1		
16 Bit I/O Recovery Time	: 1		
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Enabled	Esc : Quit	↑↓→← Selection : Item
Delayed Transaction	: Disabled	F1 : Help	PU/PD/+/- : Modify
AGP Aperture Size (MB)	: 64	F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Default	
		F7 : Load Setup Default	

Dear Customers:
Thank you for your patronage of our products. The board you bought is a **jumper-less** mainboard. The ratio and frequency of the CPU shall be set in BIOS and the working voltage for the CPU shall be automatically detected. Please read carefully the following instructions:
1. Power on the installed system and press the "DEL" key to enter BIOS Setup. Select
"Chipset Features Setup" and press <Enter>.

2. Select "CPU Speed" and press "PgUp" or "PgDn" to set the CPU ratio and frequency. The available options are Intel PII
233MHz (66X3.5), 266MHz (66X4), 300MHz (66X4.5), 333MHz (66X5), 366MHz (66X5.5), 400MHz(66X6), 433MHz(66X6.5), 466MHz(66X7), 500MHz(66X7.5).
250MHz(100X2.5), 300MHz(100X3), 350MHz(100X3.5), 400MHz(100X4), 450MHz(100X4.5), 500MHz(100X5), 550MHz(100X5.5), 600MHz(100X6) and "Manual".
To set the CPU manually, please note the following:

CPU Speed: "Manual" (you can manually set the CPU ratio and frequency)
CPU Ratios: x3.5, x4, x4.5, x5, x5.5, x6, x6.5, x7, x7.5
CPU Frequency: 66, 68, 75, 83, 100, 103, 112, 133Mhz

Several options are provided for the CPU external clock. You are recommended to restore to the default setting in case of instability when the external clock exceeds 66MHz.

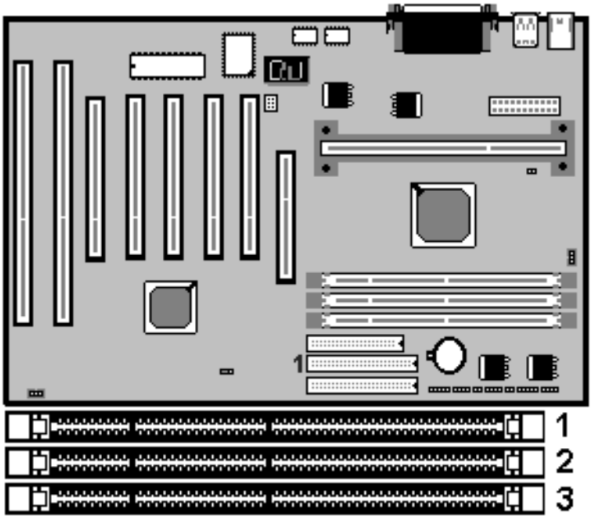
NOTE: System failure may occur if the CPU frequency is set incorrectly. To solve this problem. Press the "Insert" key on the keyboard to clear the previously set frequency (i. c., restore the default frequency), and then reboot the system.

- Switch voltage is applied, making the temperature lower and voltage steadier.
- You don't need to adjust Voltage in Pentium II mainboard. It will automatically send out one VID (Voltage Identification) to the mainboard power supply to ask for the voltage it needs.
- The CPU type default setting is Intel Pentium II 250MHz=100 MHz * 2.5.

Intel Pentium II\III CPU family

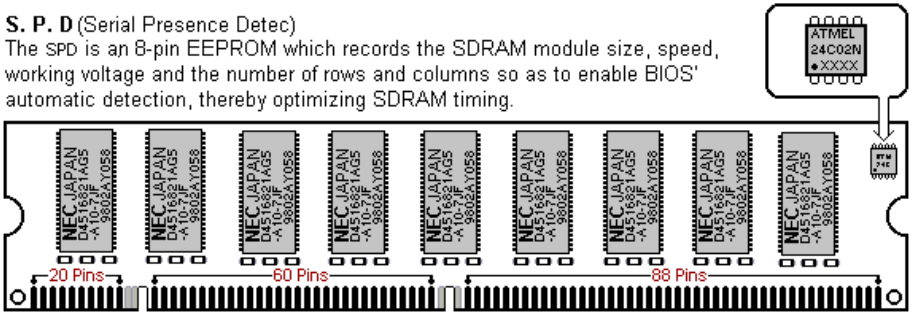
CPU	Ext. clk	Ratio	L1 cache	L2 cache	Voltage
Intel Pentium III – 600MHz	133MHz	X4.5	32KB	512KB	2.8V
Intel Pentium III – 533MHz	133MHz	X4	32KB	512KB	2.8V
Intel Pentium III – 600MHz	100MHz	X6	32KB	512KB	2.8V
Intel Pentium III – 550MHz	100MHz	X5.5	32KB	512KB	2.8V
Intel Pentium III – 500MHz	100MHz	X5	32KB	512KB	2.8V
Intel Pentium III – 450MHz	100MHz	X4.5	32KB	512KB	2.8V
Intel Pentium II – 450MHz	100MHz	X4.5	32KB	512KB	2.8V
Intel Pentium II – 400MHz	100MHz	X4	32KB	512KB	2.8V
Intel Pentium II – 350MHz	100MHz	X3.5	32KB	512KB	2.8V
Intel Pentium II – 300MHz	100MHz	X3	32KB	512KB	2.8V
Intel Pentium II – 333MHz	66MHz	X5	32KB	512KB	2.8V
Intel Pentium II – 300MHz	66MHz	X4.5	32KB	512KB	2.8V

C. EDO/ SDRAM Installation Procedures:



- A 168-pin DIMM can support up to 768MB 3.3V EDO (66MHz) / SDRAM (66MHz/ 100MHz).
- You are recommended to use SDRAMs. With SPD that are compliant with PC-100. This will enable BIOS to detect the SDRAM speed, thereby fully bring into play the efficiency of the SDRAM.

S. P. D (Serial Presence Detec)
The SPD is an 8-pin EEPROM which records the SDRAM module size, speed, working voltage and the number of rows and columns so as to enable BIOS' automatic detection, thereby optimizing SDRAM timing.



- To avoid compatibility and reliability problems, you are recommended to test the 168-pin SDRAMs before buying them since the PCB specifications differ.

- The following table shows the memories that have passed the **PC-100** specifications.

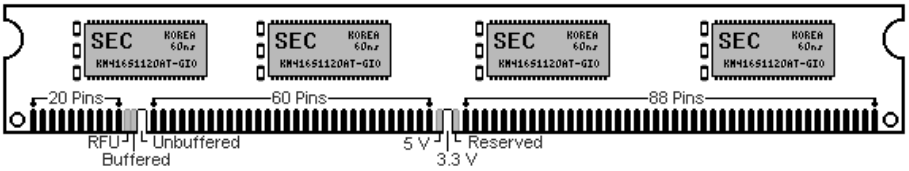
Brand	Memory size	Number
TOSHIBA	8M X 08=64MB	TC59S6408BFT-80
TOSHIBA	4M X 16=64MB	TC59S6416BFT-80
HITACHI	8M X 08=64MB	HM5264805TT-B60
HITACHI	4M X 16=64MB	HM5264165TT-B60
MITSUBISHI	8M X 08=64MB	M5M4V64S30ATP-8
MITSUBISHI	4M X 16=64MB	M5M4V64S40ATP-8
MITSUBISHI	2M X 08=16MB	M5M4V16S30DTP-8
FUJITSU	8M X 08=64MB	81F64842B-103FN
FUJITSU	4M X 16=64MB	81F641642B-103FN
TI	8M X 08=64MB	TMX664814A81A7ET
TI	2M X 08=16MB	TMX626812BDGE5M
SAMSUNG	8M X 08=64MB	KM48S8030BT-GH
SAMSUNG	4M X 16=64MB	KM416S4030BT-G10
SAMSUNG	2M X 08=16MB	KM48S2020CT-GL
HYUNDAI	8M X 08=64MB	HY57V658020ALTC-10P
HYUNDAI	2M X 08=16MB	HY57V168010C TC-10S
LG	8M X 08=64MB	GM72V66841CT7J
LG	4M X 16=64MB	GM72V661641CT-7J

- First, verify the working voltage of the EDO/ SDRAM module in either DIMM socket.
- P2BX only supports 3.3V EDO/ SDRAM module. The following illustration shows you the difference between 3.3V and 5V to ensure your correct selection of 3.3V DIMM module for using.
- You can set up the BIOS "Chipset Feature Setup" to the best working condition basing on the type of EDO/ SDRAM you are using.
- The BIOS DRAM default setting is 60 ns. Change the BIOS "Chipset Feature Setup" default setting to 50ns for better performance, if the chipset is marked 50ns.
- Change nothing if EDO RAM is used. BIOS automatically detect the RAM type.
- MEMO for Installing System:

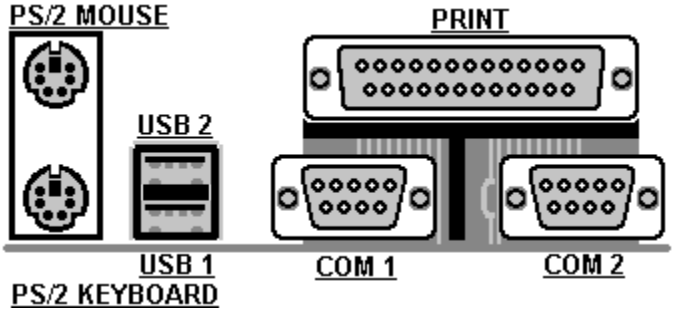
⊕ Concerning memory setup, you can find how to from **"Chipset Feature Setup"** under BIOS setup. However, to avoid system unstable or system hang, user without engineering background is not suggested to change BIOS set up.

⊕ If system boot failure, please clean DIMM socket **(with clean oil)** or polish **Gold-Finger** of DRAM with **soft eraser**, and try again.

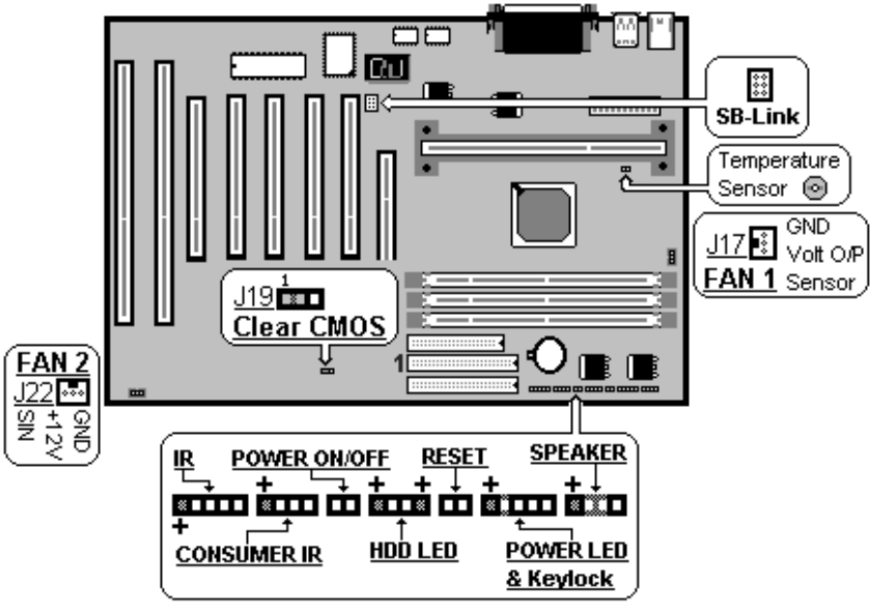
- The Dual Inline Memory Module (DIMM) must be 3.3 Volt and Unbuffered Synchronus DRAM (SDRAM) 8MB, 16MB, 32MB, 64MB, 128MB or 256MB. The following illustration shows the type of DIMM Module.



168-PIN SDRAM DIMM Notch Key Definitions



D. Other Jumper Settings



- **Speaker:** Connect to the system's speaker for beeping.
- **Keylock:** Keyboard lock switch and Power LED connector.
- **Reset:** Short to restart system.
- **HDD LED:** LED ON when on board PCI IDE hard disk activates.
- **POWER SW (FOR ATX POWER SUPPLY):**
  The button should be a momentary switch that is normally open. Pushing the ATX Power Switch will immediately change the system status. Before or during "POST", you need to hold the button for four seconds in order to turn off the system.
- **J19: Clear CMOS**
  Turn off the system and short pins 2-3 to clear CMOS. Then short pins 1-2 before turning it on.

J19

1-2	Normal operation(Default).
2-3	for clearing CMOS Data.

- **CPU Cooler Fan connector**
  This is the connector for CPU cooler. Never use the jumper to short the connector. Serious damages caused this way will not be warrantied.

- **Creative SB-Link**
  It is used to connect the AWE64 or other compatible sound cards so that they are made compatible with the ISA-compatible SB16 sound cards.

E. Note to BIOS Update

Do not update the BIOS if no abnormalities occur. However, if BIOS update is needed, consult your dealer first. Prior to updating your BIOS, you are recommended to save the original BIOS values.

1. Download the AWARD BIOS Flash Utility file (**Awdflash.exe**)

2. Download the BIOS file used by your mainboard(**e.g., BXV110N.BIN**)

3. **Reboot** your system (but do not run **Himem.sys** and **Emm386.exe**) to
   execute the new BIOS program.

4. Execute these commands: **Awdflash BXV110N.BIN**

5. When this message displays: "**Do you want to save BIOS (Y/N)?**"
   Type "**N**"

6. When this message displays: "**Are you sure to program (Y/N)?**"
   Type "**Y**"

7. **Turn off** power to your system to clear the CMOS data.

8. Turn on the power to test if your system is running normal.

F. Keyboard/ PS/2 Mouse Power On and MODEM Ring on

- **To make sure the 5VSB signal nearly to 750mA (Amperage) from ATX Power Supply, or if your keyboard consuming power than 300mA, it's better to upgrade your ATX Power Supply to 1A for working perfectly.**
- If you are going to use the function of keyboard and PS/2 mouse power on, then, the power-switch will be becoming useless automatically (unable to be used).

ROM PC/ISA BIOS (2A69KTJ9)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Serial Port 2	: 2F8H / IRQ3
IDE Primary Master PIO	: AUTO	UART Mode Select	: Normal
IDE Primary Slave PIO	: AUTO		
IDE Secondary Master PIO	: AUTO	Onboard Parallel Port	: 378H/IRQ 7
IDE Secondary Slave PIO	: AUTO	Parallel Port Mode	: ECP+EPP
IDE Primary Master UDMA	: AUTO	ECP Mode Use DMA	: 3
IDE Primary Slave UDMA	: AUTO	EPP Mode Select	: EPP 1.9
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 AGP Display First	: Enabled		
POWER ON Function	**: Hot KEY**		
		Esc : Quit	↑↓→← Selection : Item
Hot Key Power ON	**: Ctrl-F12**	F1 : Help	PU/PD/+/- : Modify
KBC input clock	: 8MHz	F5 : Old Values	(Shift)F2 : Color
Onboard FDC Controller	: Enabled	F6 : Load BIOS Default	
Onboard Serial Port 1	: 3F8H / IRQ4	F7 : Load Setup Default	

Hot KEY	When user select this option, it will show another line lines as Hot Key Power ON: **Ctrl-F(1/2/3/4/5/6/7/8/9/10/11/12)** select any you like. After power off, if user key in the "Ctrl-F?", it will power on the system.
PS/2 Mouse Left	It will power on the system by PS/2 mouse left.
PS/2 Mouse Right	It will power on the system by PS/2 mouse Right.

Button Only	Only the power button can power on the system.

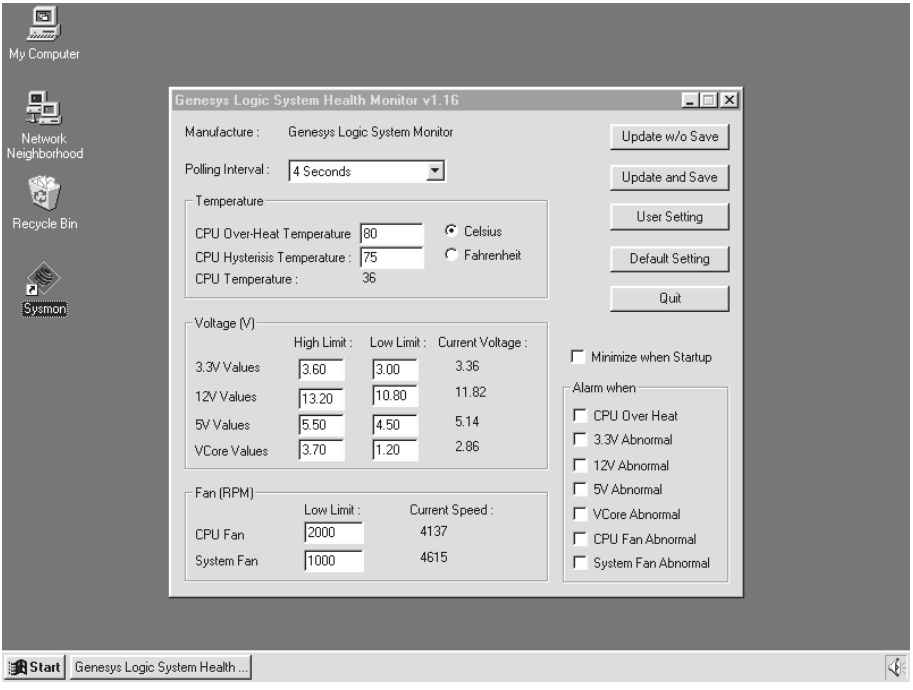
- **Modem Ring On Function Operation:**

ROM PCI / ISA BIOS (2A69KTJ9)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC

Power Management	: Disabled	** Reload Global Timer Events **	
PM Control by APM	: No	IRQ[3-7, 9-15], NMI	: Enabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0	: Disabled
Video Off After	: Standby	Primary IDE 1	: Disabled
MODEM Use IRQ	: 3	Secondary IDE 0	: Disabled
Doze Mode	: Disabled	Secondary IDE 1	: Disabled
Standby Mode	: Disabled	Floppy Disk	: Disabled
Suspend Mode	: Disabled	Serial Port	: Enabled
HDD Power Down	: Disabled	Parallel Port	: Disabled
Throttle Duty Cycle	: 62.5%		
ZZ Active in Suspend	: Disabled		
VGA Active Monitor	: Enabled		
Soft-Off by PWR-BTTN	: Instant-Off		
CPUFAN Off In Suspend	: Enabled		
Resume by Ring	**: Enabled**		
IRQ 8 Clock Event	: Disabled	Esc : Quit ↑↓→←Selection Item	
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Default	
		F7 : Load Setup Default	

1. Have an external MODEM connected to COM 1 or COM 2.
2. Enter BIOS setup.
3. Select Power Management Setup.
4. **This number of MODEM use IRQ has to be set as same as the IRQ of Serial Port which you are connecting in. Please set in N/A if you are not going to use the function of MODEM ring on.**
5. **Resume by Ring: Enable.**
6. Save BIOS setup and Reboot.
7. Booting from DOS, Windows, or Windows 95.
8. Turn off the system by:
   a. ATX-Power Switch
   b. Windows 95 Software Power Off
9. System Waiting for Modem Ring On
   When Modem Ringing Signal Active, System will wake-up.

G. System Health Monitor



- **Fan Monitoring:**

  There are two fan connectors, one is for CPU, the other can be a housing fan. When the fans speed is working abnormal, there will be warning **(Speaker Alarm)** through application software such as SM10(Small Icon for System Monitoring) to notify user. The fan monitoring function is implemented by connecting fan to 3-pin fan connector FAN1/ FAN2 and installing SM10. Referring to Page 19 (System Health Monitor).

- **CPU Thermal Protection:**

  TM-P2BX implements special thermal protection circuits. When **temperature** is higher than a predefined value, there will be warning (Speaker Alarm) through application software such as SM10 (Small Icon for System Monitor) to notify user. It's automatically implemented by BIOS or SMD10, no hardware installation is needed. Referring to Page19 (System Health Monitor).

  This mainboard also reserves an option to use special CPU cooling Fan. With **Thermal Sensor** on it. The CPU thermal sensor should be connected to **J16**.

- **System Voltage Monitoring:**

  TM-P2BX is featured with a voltage monitoring system. When you turn on your system, this smart design will keep on monitoring your system working voltage. If any of voltage is over the component's standard, there will be Speaker Alarm though application software SM10 (Small Icon For System Monitor) for a warning to user. System voltage monitoring function monitors 5V, 12V, 3.3V and CPU voltage. It's automatically implemented by BIOS and SM10, no hardware installation is needed. Referring to Page 19 (System Health Monitor)

H. EDO/ SDRAM Configuration Table:

DIMM1	DIMM2	DIMM3	TOTAL
8MB	8MB	---	16MBytes
---	8MB	8MB	16MBytes
8MB	---	8MB	16MBytes
---	16MB	---	16MBytes
8MB	8MB	8MB	24MBytes
16MB	8MB	---	24MBytes
---	16MB	8MB	24MBytes
16MB	---	8MB	24MBytes
16MB	16MB	---	32MBytes
---	16MB	16MB	32MBytes
16MB	---	16MB	32MBytes
---	32MB	---	32MBytes
16MB	16MB	8MB	40MBytes
8MB	16MB	16MB	40MBytes
32MB	8MB	---	40Mbytes
---	32MB	8MB	40MBytes
16MB	16MB	16MB	48MBytes
32MB	8MB	8MB	48MBytes
32MB	16MB	---	48MBytes
---	32MB	16MB	48MBytes
32MB	32MB	---	64MBytes
---	32MB	32MB	64MBytes
---	64MB	---	64MBytes
32MB	16MB	16MB	64MBytes
32MB	32MB	8MB	72MBytes
8MB	32MB	32MB	72MBytes
64MB	8MB	---	72Mbytes
---	64MB	8MB	72MBytes
32MB	32MB	16MB	80MBytes
16MB	32MB	32MB	80MBytes
64MB	16MB	---	80MBytes
---	64MB	16MB	80MBytes

32MB	32MB	32MB	96MBytes
64MB	32MB	---	96MBytes
---	64MB	32MB	96MBytes
16MB	64MB	16MB	96MBytes
64MB	64MB	---	128MBytes
---	64MB	64MB	128MBytes
64MB	32MB	32MB	128MBytes
---	128MB	---	128MBytes
64MB	64MB	8MB	136MBytes
8MB	64MB	64MB	136MBytes
128MB	8MB	---	136MBytes
---	128MB	8MB	136MBytes
64MB	64MB	16MB	144MBytes
16MB	64MB	64MB	144MBytes
128MB	16MB	---	144Mbytes
---	128MB	16MB	144MBytes
64MB	64MB	32MB	160MBytes
32MB	64MB	64MB	160MBytes
128MB	32MB	---	160MBytes
---	128MB	32MB	160MBytes
64MB	64MB	64MB	192MBytes
128MB	64MB	---	192MBytes
---	128MB	64MB	192MBytes
32MB	128MB	32MB	192MBytes
128MB	128MB	---	256MBytes
---	128MB	128MB	256MBytes
64MB	128MB	64MB	256MBytes
---	256MB	---	256MBytes
128MB	128MB	8MB	264MBytes
256MB	---	8MB	264MBytes
256MB	8MB	---	264MBytes
---	256MB	8MB	264MBytes

128MB	128MB	32MB	288MBytes
256MB	---	32MB	288MBytes
256MB	32MB	---	288MBytes
---	256MB	32MB	288MBytes
128MB	128MB	64MB	320MBytes
256MB	---	64MB	320MBytes
256MB	64MB	---	320MBytes
---	256MB	64MB	320MBytes
128MB	128MB	128MB	384MBytes
256MB	---	128MB	384MBytes
256MB	128MB	---	384MBytes
---	256MB	128MB	384MBytes
128MB	128MB	256MB	512MBytes
256MB	---	256MB	512MBytes
256MB	256MB	---	512Mbytes
---	256MB	256MB	512MBytes
256MB	256MB	8MB	520MBytes
256MB	8MB	256MB	520MBytes
8MB	256MB	256MB	520MBytes
256MB	256MB	16MB	528MBytes
256MB	16MB	256MB	528MBytes
16MB	256MB	256MB	528MBytes
256MB	256MB	32MB	544MBytes
256MB	32MB	256MB	544MBytes
32MB	256MB	256MB	544MBytes
256MB	256MB	64MB	576MBytes
256MB	64MB	256MB	576MBytes
64MB	256MB	256MB	576MBytes
256MB	256MB	128MB	640MBytes
256MB	128MB	256MB	640MBytes
128MB	256MB	256MB	640MBytes
256MB	256MB	256MB	768MBytes

Getting Help

Main Menu
The online description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for highlighted item. To exit the Help Window press <Esc>.

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu will appear on the Screen.. Use arrow keys to select the desired items, press <Enter> to select or enter a submenu.

ROM PC/ISA BIOS (2A69KTJ9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

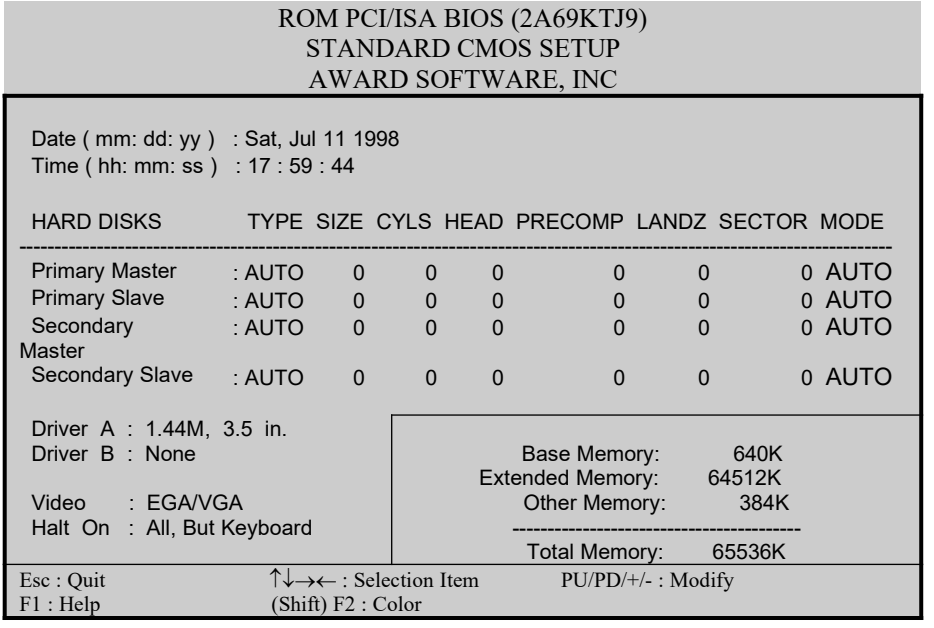
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURE SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING

Esc : Quit ←↑↓→ : Select Item
F10 : Save & Exit Setup (Shift) F2 : Change Color

Time, Data, Hard Disk Type...

AWARD BIOS Setup
1. Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. 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.



AWARD BIOS Setup
2. BIOS Features Setup

ROM PCI/ISA BIOS (2A69KTJ9)
BIOS FEATURE SETUP
AWARD SOFTWARE, INC

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	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		
Gate A20 Option	: Fast		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
PS/2 mouse function control	: Enabled	Esc : Quit	↑↓→← : Selection Item
PCI/VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/- : Modify
Assign IRQ For VGA	: Enabled	F5 : Old Values	(Shift) F2 : Color
OS Select For DRAM > 64MB	: Non-OS2	F6 : Load BIOS Default	
Report No FDD For WIN 95	: No	F7 : Load Setup Default	

Virus Warning
This category flashes on the screen. During and after system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time , you can run anti-virus program to locate the problem.

!WARNING!
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.

Enabled:	Activate automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled:	No warning message to appear when anything attempt to access the boot sector or hard disk partition table.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is Enabled.

Enabled:	Enabled cache
Disabled:	Disabled cache

Quick Power On Self Test

This category speeds up Power-On-Self-Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled:	Enable quick POST
Disabled:	Normal POST

Boot Sequence

This category determines which drive computer searches first for the hard disk operation system (i.e., DOS).

A, C, SCSI / C, A, SCSI / C, CDROM, A / CDROM, C, A / D, A, SCSI / E, A, SCSI / SCSI, A, C / SCSI, C, A / C only / LS120, C: System will first search drive for BOOT, and then next other drive, if first driver does not boot.

Swap Floppy Drive

Users can enable this item so that the BIOS will see the hardware "Drive A:" as "Drive B:"" , and hardware "Drive B:"" as "Drive A:"".

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M drive types are all 80 tracks.

Enabled:	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS cannot tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled:	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

Boot Up NumLock Status: The default value is On.

On:	Keypad is number keys
Off:	Keypad is arrow keys

Boot Up System Speed

It selects the default system speed - the speed that the system will run immediately after power up.

High:	Set the speed to high
Low:	Set the speed to low

Gate A20 Option

The Gate A20 Option default setting is “fast.”. This is the optimum setting for this mainboard.

Typematic Rate Setting

This determines the typematic rate.

Enabled:	Enable typematic rate
Disabled:	Disable typematic rate

Typematic Rate (Chars/Sec)

6: 6 characters per second

8: 8 characters per second

10: 10 characters per second

12: 12 characters per second

15: 15 characters per second

20: 20 characters per second

24: 24 characters per second

30: 30 characters per second

Typematic Delay (Msec)

It indicates the time between the first and second character displayed when you hold a key.

250	: 250 msec	**500**	: 500 msec
750	: 750 msec	**1000**	: 1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System:	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup:	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

NOTE: *To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and press* **<Enter>** *to disable security. Once the security is disabled, the system will boot and you can enter Setup freely.*

PCI/ VGA Palette Snoop

It determines whether the MPEG ISA/ VESA VGA cards can work with PCI/ VGA or not.

Enabled:	When PCI/ VGA working with MPEG ISA/ VESA Card.
Disabled:	When PCI/ VGA not working with MPEG ISA/ VESA Card.

Assign IRQ for VGA

When this items is enabled, the system will assign an IRQ for VGA. If this item is disabled, the VGA will not occupy an IRQ; therefore the IRQ of VGA will be released for other usage. The default value is Enabled.

OS Select for DRAM>64MB

This item allows you to access the memory that is over 64MB in OS/2.
The default value is Non-OS2.

Report No FDD For WIN95

For Windows 3.1x users set "No"; for Windows 95 users set "No" or "Yes".
The default value is no.

Video BIOS Shadow

It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video shadow will increase the video speed.

Enabled:	Video shadow is enabled
Disabled:	Video shadow is disabled

C8000-CBFFF Shadow/DC000-DFFFF Shadow

These categories determine whether optional ROM will be copied to RAM by 16K byte.

Enabled:	Optional shadow is enabled
Disabled:	Optional shadow is disabled

3. Chipset Features Setup

ROM PCI/ISA BIOS (2A69KTJ9)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC

Auto Configuration	: Enabled	Auto Detect DIMM/ PCI Clk	: Enabled
EDO DRAM Speed Selection	: 60ns	CPU Speed	: Manual
EDO CASx# MA Wait State	: 2	CPU Ratio	: X 2.5
EDO RASx# Wait State	: 2	CPU Frequency	: 100 MHz
SDRAM RAS-to CAS Delay	: 3	Spread Spectrum	: Disabled
SDRAM RAS Precharge Time	: 3	CPU Warning Temperature	: Disabled
SDRAM CAS latency Time	: Auto	Current CPU Temperature	: 28℃/ 82℉
DRAM Data Integrity Mode	: Non-ECC	Current SYSFAN Speed	:4285 RPM
System BIOS Cacheable	: Enabled	Current CPUFAN Speed	:4000 RPM
Video BIOS Cacheable	: Enabled	Current Vin3 (V)	: 2.88V
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 1		
16 Bit I/O Recovery Time	: 1		
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Enabled		
Delayed Transaction	: Disabled	Esc : Quit	↑↓→← : Selection Item
AGP Aperture Size (MB)	: 64	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Default	
		F7 : Load Setup Default	

➲ This setup menu is optimized for this mainboard by your computer vendor. Unless you are a qualified engineer and know the item functions you are going to modify, we do not recommend you to change the default setting.

Auto Configuration: Selects predefined 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.
NOTE: When you insert slower memory modules in the system and set a faster timing, maybe, the system will hang up.

EDO DRAM Speed Selection: The default value is 60ns.

50ns:	for 50ns EDO DRAM/SDRM.
60ns:	for 60ns EDO DRAM/SDRM.

EDO CASx# MA Wait State: The default value is 2.

1:	This item allows you to select MA Wait State.
2:	

EDO RASx# Wait State: The default value is 2.

1:	This sets the relative delay between the row and column address strobes from DRAM (EDO).
2:	

SDRAM RAS-to-CAS Delay: The default value is 3.

3:	For 66/83 MHz SDRAM DIMM module.
2:	For 100 MHz SDRAM DIMM module.

SDRAM Precharge Time: The default value is 3.

3:	For 66/83 MHz SDRAM DIMM module.
2:	For 100 MHz SDRAM DIMM module.

SDRAM CAS latency Time: The default value is 3.

2:	For 100 MHz SDRAM DIMM module.
3:	For 66/83 MHz SDRAM DIMM module.

DRAM Data Integrity Mode: The default value is Non-ECC.

Non-ECC:	For 64bit standard type DIMM module.
ECC:	For 72bit ECC type DIMM module.

System BIOS Cacheable: The default value is Enabled.

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.
Disabled:	System BIOS non-cacheable.

Video BIOS Cacheable: The default value is Enabled.

Enabled:	This field Enables Video BIOS Cacheable to speed up VGA performance.
Disabled:	Disables the Video BIOS Cacheable function.

Video RAM Cacheable: The default value is Disabled.

Enabled:	Enabled this function to get better VGA performance; while some brands of VGA must be disabled this function.
Disabled:	Disabled this function.

8/16 Bit I/O Recovery Time: The default value is 1.
8/16 Bit I/O Recovery Time: This field defines the recovery time from 1 to 8 for 8-bit I/O.
16 Bit I/O Recovery Time: To define the recovery time from 1 to 4 for 16-bit I/O.

Memory Hole at 15M-16M: The default value is Disabled.

Enabled:	This field enables the main memory (15~16MB) remap to ISA BUS. This feature reserves 15MB to 16MB memory address space to ISA expansion card that specifically require this setting.
Disabled:	Normal Setting.

Passive Release: The default value is Enabled.

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

Delayed Transaction: The default value is Disabled.

Enabled:	For slow speed ISA device in system.
Disabled:	Normal operation.

AGP Aperture Size(MB): The default value is 64.

Select the size of the AGP aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycle that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for AGP information. The choice 4, 8, 16, 32, 64, 128, 256.

Auto Detect DIMM/ PCI Clk: The default value is Enabled.

Enabled:	The unused DIMM/ PCI slot clock will be disabled.
Disabled:	The unused DIMM/ PCI slot clock will still get the clock signal.

Spread Spectrum: The default value is Disabled.

Enabled:	The clock generator spread spectrum will be Enabled.
Disabled:	The clock generator spread spectrum will be Disabled.

CPU Warning Temperature
When this item is enabled, we can set the CPU warning temperature. If the CPU temperature is higher than the setting temperature, the system will beep.

Current CPU Temperature
It shows the current system temperature.

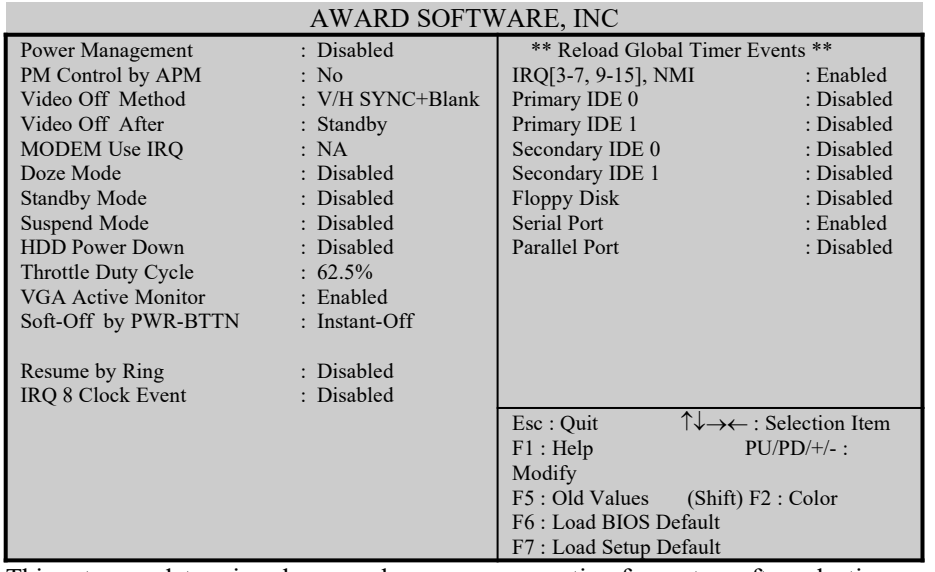
Current SYSFAN Speed
It shows the running speed of the system fan.

Current CPUFAN Speed
It shows the running speed of the CPU fan.

Current Vin3 (3)
It shows the Vcore valtage.

4. Power Management

ROM PCI / ISA BIOS (2A69KTJ9)
POWER MANAGEMENT SETUP



This category determines how much power consumption for system after selecting items mentioned below. Default value is Disabled. The following pages tell you the options of each item and describe the meanings of each option.

Power Management: The default value is Disabled.
Disable: The system operation in NORMAL conditions (Non-GREEN), and the Power Management function is disabled.

Max. Saving: Pre-defined timer values are used such that all timers are in their maximum value.
Min Saving: Pre-defined timer values are used such that all timers are in their minimum value.
User Define: Users can configure their own power management values.

PM Control by APM: The default value is NO.
No: System BIOS will ignore APM when power managing the system.

Yes: System BIOS will wait for APM's prompt before it enters any PM mode e.g. DOZE, STANDBY or SUSPEND.

NOTE: If APM is installed, and if there is a task running, even the timer is timeout, the APM will not prompt the BIOS to put the system into any power saving mode!
NOTE: – if APM is not installed, this option has no effect.

To make the APM function work, users have to install power.exe (supported by MS-DOS 5.0 or higher) in Config.exe. To make Windows 3.1 work regularly, in " Windows Setup", users have to set the "Computer" item to " MS-DOS System with APM"

Video Off Method: The default value is V/H SYNC+Blank.
Blank Screen: The system BIOS will only blank off the screen when disabling video.
V/H SYNC+Blank: In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals form VGA cards to monitor.
DPMS: This function is enabled for only the VGA card supporting DPM.

Doze Mode: The default value is Disabled. * Remark 1.
Disable: System will never enter DOZE mode.
10 Sec / 20 Sec / 30 Sec / 40 Sec / 1 Min / 3 Min / 5 Min / 10 Min / 15 Min / 20 Min 30 Min / 40 Min / 1 Hr / 2 Hr / 3 Hr: Defines the continuous idle time before the system entering DOZE mode. If any item defined in (J) is enabled and active, DOZE timer will be reloaded.
NOTE: Normally, STANDBY mode puts the system into low speed or 8 MHz, screen may be
off depending on (E)

Standby Mode: The default value is Disabled. * Remark 1.
Disabled: System will never enter STANDBY mode.
10 Sec / 20 Sec / 30 Sec / 40 Sec / 1 Min / 3 Min / 5 Min / 10 Min / 15 Min / 20 Min 30 Min / 40 Min / 1 Hr / 2 Hr / 3 Hr: Defines the continuous idle time before the system entering STANDBY mode. If any item defined in (J) is enabled and active, STANDBY timer will be reloaded.
Normally, STANDBY mode puts the system into low speed or 8, screen may be off depending on (E).

Suspend Mode: The default value is Disabled. * Remark 1.
Disable: System will never enter SUSPEND mode.
10 Sec / 20 Sec / 30 Sec / 40 Sec / 1 Min / 3 Min / 5 Min / 10 Min / 15 Min / 20 Min 30 Min / 40 Min / 1 Hr / 2 Hr / 3 Hr: Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled and active, SUSPEND timer will be reloaded.

NOTE: Normally, SUSPEND mode puts the system into low speed or 8 MHz, clock is stopped, screen may be off depending on (E).

* Remark 1: All items mark with (*) in this menu, will be loaded with predefined values as long as the item "Power Management" is not configured to "User Defined" These items are:
Item "System Doze" , "System Standby" and "System Suspend"

Remark 2: Although the item "HDD Power Down" is not controlled by item "Power Management" in terms of timer value, the HDD (s) will not power down if the global power management is disabled!

5. PNP/PCI Configuration Setup

ROM PCI/ISA BIOS (2A69KTJ9)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: No	PCI IDE IRQ Map To	: PCI-AUTO
Resources Contorlled By	: Manual	Primary IDE INT#	: A
Reset Configuration Data	: Disabled	Secondary IDE INT#	: B
IRQ-3 assigned to :	: Legacy ISA	Used MEM base addr	: N/A
IRQ-4 assigned to :	: Legacy ISA		
IRQ-5 assigned to :	: PCI/ISA PnP	Assign IRQ For USB	: Disabled
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	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	

The following pages tell you the options of each item and describe the meanings of each option.

PNP OS Installed: The default value is No.

Resources Controlled By: The default value is Manual.
Manual: PNP Card‘s resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI/ISA PNP or Legacy ISA Cards.
Auto: If your ISA card and PCI card are all PNP cards, BIOS will assign the interrupt resources automatically.

Reset Configuration Data: The default value is Disabled.
Disabled: Normal Setting.
Enabled: If you had plugged some Legacy cards in the system and there were record into ESCD (Extended Syatem Configuration Data), you can set this field to Enabled to clear ESCD.

PCI IDE IRQ Map To: The default value is PCI-AUTO.
When you have true PCI card (s) plugged into the system, you will not need to change anything here in the **SETUP** program. However, if you do not know whether you have true PCI card or not, refer to your PCI card user's manual.
When you have a Legacy card to be plugged into the system, a proper setting is extremely important or it may cause the system hang up. The diagram shown below tells you how the Rotating Priority Mechanism is designed.

Primary IDE INT#: The default value is A.
To tell which INT# does the PCI IDE card is used for its interrupts.

Secondary IDE INT#: The default value is B.
To tell which INT# does the PCI IDE card is used for its interrupts.

Used MEM base addr: The default value is N/A.
The Used MEM base addr (CB00, CC00, D000, D400, D800, DC00) and Used MEM Length (8K, 16K, 32K, 64K) were to support some specific ISA Legacy cards with requested memory space below 1M address. Now with these two functions, users can define where the used memory address is located and its length of the legacy area corresponding. Based on there, BIOS will skip the UMB area that is used by the legacy device to avoid memory space conflict. For example, if users select "D000" for "Used MEM base addr" and "16K" for "Used MEM Length:, that means the address
region D0000h-D3fffh is occupied by ISA legacy cards, and this BIOS will not assign this region for PNP/ISA and PCI cards.

6. Load BIOS Default

When you access "Load BIOS Default", the following message appears:

Load BIOS Default (Y/N) ?N

The BIOS Default values are the "worst case" default, and are the most stable values for the system. Use them if the system is performing erratically due to hardware problems. To load the Setup Default values, press <Y> then <Enter>.

AWARD BIOS Setup

7. Load Setup Default

When you access "Load Setup Default", you are shown the following message:

Load Setup Default (Y/N) ?N

The Setup Default values represent the "best case" default, and should provide optimum system performance. To load the BIOS Default values, press <Y> then <Enter>.

8. Integrated Peripherals Setup

ROM PC/ISA BIOS (2A69KTJ9)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode	: Enabled	Onboard Serial Port 2	: 2F8H / IRQ3
IDE Primary Master PIO	: AUTO	UART Mode Select	: Normal
IDE Primary Slave PIO	: AUTO		
IDE Secondary Master PIO	: AUTO		
IDE Secondary Slave PIO	: AUTO	Onboard Parallel Port	: 378H/IRQ 7
IDE Primary Master UDMA	: AUTO	Parallel Port Mode	: ECP+EPP
IDE Primary Slave UDMA	: AUTO	ECP Mode Use DMA	: 3
IDE Secondary Master UDMA	: AUTO	EPP Mode Select	: EPP 1.9
IDE Secondary Slave UDMA	: AUTO		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
USB Keyboard Support	: Disabled		
Init AGP Display First	: Disabled		
POWER ON Function	: Hot KEY		
		Esc : Quit ↑↓→←	:Item
		Selection	
Hot Key Power ON	: Ctrl-F12	F1 : Help	Modify
		PU/PD/+/- :	
KBC input clock	: 8MHz	F5 : Old Values (Shift)F2	Color
		:	
Onboard FDC Controller	: Enabled	F6 : Load BIOS Default	
Onboard Serial Port 1	: 3F8H / IRQ4	F7 : Load Setup Default	

➲ This setup menu is optimized for this mainboard by your computer vendor. Unless you are a qualified engineer and know the item functions you are going to modify, we do not recommend you to change the default setting.

IDE HDD Block Mode: Select Enabled only if your hard drivers support block mode.

Enabled:	Enable IDE HDD Block Mode. Provides higher HDD transfer rates.
Disabled:	Disabled IDE HDD Block Mode.

IDE Primary (Secondary) Master / Slave PIO: The default value is Auto.
This field is Select Primary (Secondary) IDE PIO Mode (0~4) for HDD.

IDE Primary (Secondary) Master/Slave UDMA: The default value is Auto.

Auto:	Select Primary (Secondary) IDE used Ultra DMA HDD.
Disabled:	Disabled Primary (Secondary) IDE used Ultra DMA HDD.

IDE Primary Master PIO: The default value is Auto.

Auto:	BIOS automatically detects the Onboard Primary Master PCI IDE HDD Accessing mode.
Mode 0~4:	Manually sets the IDE Accessing mode.

IDE Primary Slave PIO: The default value is Auto.

Auto:	BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode.
Mode 0~4:	Manually sets the IDE Accessing mode.

IDE Secondary Master PIO: The default value is Auto.

Auto:	BIOS automatically detects the Onboard Secondary Master PCI IDE HDD Accessing mode.
Mode 0~4:	Manually sets the IDE Accessing mode.

IDE Secondary Slave PIO: The default value is Auto.

Auto:	BIOS automatically detects the Onboard Secondary Slave PCI IDE HDD Accessing mode.
Mode 0~4:	Manually sets the IDE Accessing mode.

On-Chip Primary PCI IDE: The default value is Enabled.

Enabled:	Enabled Onboard 1st channel IDE port.
Disabled:	Disabled Onboard 1st channel IDE port. When use On-card (PCI or ISA card) IDE connector.

On-chip Secondary PCI IDE: The default value is Enabled.

Enabled:	Enabled Onboard 2nd channel IDE port.
Disabled:	Disabled Onboard 2nd channel IDE port. When use On-card (PCI or ISA card) IDE connector.

USB Keyboard Support: The default value is Disable.

Enabled:	Enable USB Keyboard Support.
Disabled:	Disable USB Keyboard Support.

Onboard FDC Controller: The default value is Enabled.

Enabled:	Enable the Onboard floppy driver interface controller.
Disabled:	Disable the Onboard floppy driver interface controller when use On-card ISA FDC's controller.

Onboard Serial Port 1: This field allows the user to select the serial port. The default value is 3F8H / IRQ4.

COM 1:	Enable Onboard Serial port 1 and address is 3F8H / IRQ 4.
COM 2:	Enable Onboard Serial port 1 and address is 2F8H / IRQ 3.
COM 3:	Enable Onboard Serial port 1 and address is 3E8H / IRQ 4.
COM 4:	Enable Onboard Serial port 1 and address is 2E8H / IRQ 3.
Disabled:	Disable Onboard Serial port 1 controller.

Onboard Serial Port 2: This field allows the user to select the serial port. The default value is 2F8H / IRQ3.

COM 1:	Enable Onboard Serial port 2 and address is 3F8H / IRQ 4.
COM 2:	Enable Onboard Serial port 2 and address is 2F8H / IRQ 3.
COM 3:	Enable Onboard Serial port 2 and address is 3E8H / IRQ 4.
COM 4:	Enable Onboard Serial port 2 and address is 2E8H / IRQ 3.
Disabled:	Disable Onboard Serial port 2 controller.

Onboard Parallel port: This field allows the user to select the LPT port. The default value is 378H / IRQ 7.

378H:	Enable Onboard LPT port and address is 378H and IRQ 7.
278H:	Enable Onboard LPT port and address is 278H and IRQ 5.
3BCH:	Enable Onboard LPT port and address is 3BCH and IRQ 7.
Disabled:	Disabled Onboard LPT port.

NOTE: Parallel Port address is 378H / 3BCH that selects routing of IRQ 7 for LPT1. Parallel Port address is 278H that selects the routing of IRQ 5 for LPT 1.

Parallel port Mode: This field allows the user to select the parallel port mode. The default value is Standard mode.

SPP:	Standard mode. IBM PC / AT Compatible bidirectional parallel port.

EPP:	Enhanced Parallel Port mode.
ECP:	Extended Capabilities Port mode.
EPP+ECP:	ECP Mode and EPP Mode.

ECP Mode USE DMA: This field allows the user to select DMA 1 or DMA 3 for the ECP mode. The default value is DMA 3.

DMA 1:	The field selects the routing of DMA 1 for the ECP mode.
DMA 3:	The field selects the routing of DMA 3 for the ECP mode.

ECP Mode USE DMA: The default value is DMA 3.

EPP 1.7:	The field selects the routing of EPP1.7 for the EPP mode.
EPP 1.9:	The field selects the routing of EPP1.9 for the EPP mode.

9. Password Setting

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.
If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password everytime the system is rebooted or anytime you try to enter
Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

10. IDE HDD Auto Detection

This feature allows you to check all the information on your hard disk formation. When you access "IDE HDD Auto Detection", the system executes auto detection. At the prompt, it represents all the information on your HDD, and you are asked:

Do you accept this drive C: (Y/N) ?

1. If you accept the test result, press [Y] then [Enter] and the result is saved, then the system continues to detect another HDD.

2. If not, press [N] then [enter] and the system continues to detect another HDD.

11. Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your hard disk. The Utility automatically looks for the necessary information of the drive you select. The Utility also searches for bad tracks and lists them for your reference.
Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

Control Keys
Use the Up and Down arrow keys to move around the selections displayed on the upper screen. Press [Enter] to accept the selection. Press Esc to abort the selection or exit the Utility.

SELECT DRIVE
Select from installed hard disk drive C or D. List at the bottom of the screen is the drive automatically detected by the utility.

BAD TRACK LIST
Auto scan bad track
The utility will automatically scan bad tracks and list the bad tracks in the window at the right side of the screen.

Add bad track
Directly type in the information of the known bad tracks in the window at the right side of the screen.

Modify bad track
Modify the information of the added bad tracks in the window at the right side of the screen.

Delete bad track
Delete the added bad tracks in the window at the right side of the screen.

Clear bad track table
Clear the whole bad track list in the window at the right side of the screen.

PREFORMAT

Interleave

Select the interleave number of the hard disk drive you wish to perform low level format. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.

Auto scan bad track

This allows the utility to scan first then format by each track.

Start

Press <Y> to start low level format.

12. Exiting the Setup Program

To exit the Setup program, do the following:

If you want to save your change:

a. At the Main menu, select "Save & Exit Setup", then press [Enter]

b. Press [Y] then [Enter] to confirm. The system will boot with your new BIOS setting in effect .

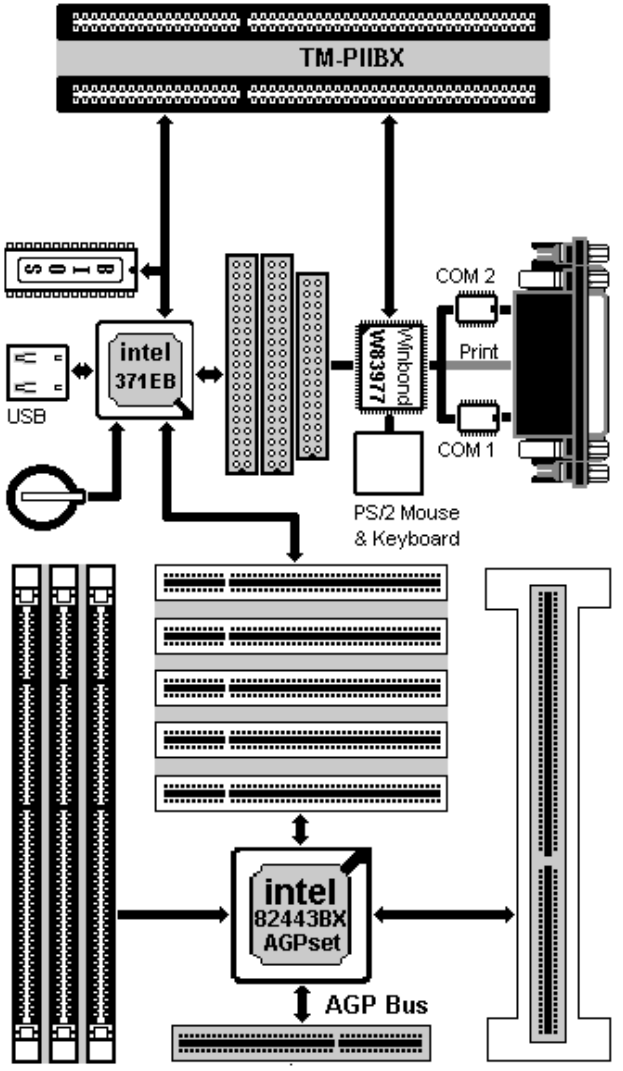
If you want to abandon your changes:

a. At the Main Menu, select "Exit Without Saving", then press [Enter].

b. Press [Y] then [Enter] to confirm. The system will reboot with the original BIOS setting in effect.

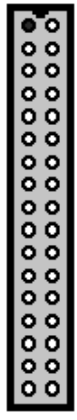
Technical information

A. Block Diagram



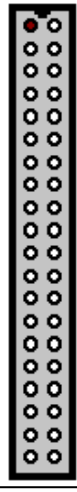
B. I/O Connector Map

Floppy Disk Connector



Ground	1	2	FDHDIN	
Ground	3	4	Reserved	
Ground	5	6	FDEDIN	
Ground	7	8	-Index	
Ground	9	10	Motor Enable	
Ground	11	12	-Driver selectB	
Ground	13	14	-Driver selectA	
Ground	15	16	Motor Enable	
Ground	17	18	-DIR	
Ground	19	20	-STEP	
Ground	21	22	Write Data	
Ground	23	24	Write Gate	
Ground	25	26	-Track 00	
Ground	27	28	-Write Protect	
Ground	29	30	-Read Data	
Ground	31	32	-Side 1 select	
Ground	33	34	Diskette	

IDE Connector



Reset IDE	1	2	Ground	
HOST Data 7	3	4	HOST Data 8	
HOST Data 6	5	6	HOST Data 9	
HOST Data 5	7	8	HOST Data10	
HOST Data 4	9	10	HOST Data11	
HOST Data 3	11	12	HOST Data12	
HOST Data 2	13	14	HOST Data13	
HOST Data 1	15	16	HOST Data14	
HOST Data 0	17	18	HOST Data15	
Grund	19	20	Key	
DRQ 3	21	22	Ground	
-I/O Write	23	24	Ground	
-I/O Read	25	26	Ground	
IOCHRDY	27	28	BALE	
-DACK 3	29	30	Ground	
IRQ 14	31	32	-IOCS16	
Addr 1	33	34	Ground	
Addr 2	35	36	Addr2	
-Chip select	37	38	-Chip select 1	
Activity	39	40	Ground	

ISA Bus

GND	1	1	-I/OCH CHK	
RESET	2	2	SD 07	
+5V	3	3	SD 06	
IRQ 9	4	4	SD 05	
-5V	5	5	SD 04	
DRQ2	6	6	SD 03	
-12V	7	7	SD 02	
OWS	8	8	SD 01	
+12V	9	9	SD 00	
GND	10	10	-I/O CH RDY	
-SMEMW	11	11	AEN	
-SMEMR	12	12	SA 19	
-IOW	13	13	SA 18	
-IOR	14	14	SA 17	
-DACK3	15	15	SA 16	
-DRQ3	16	16	SA 15	
-DACK1	17	17	SA 14	
-DRQ1	18	18	SA 13	
-REFRESH	19	19	SA 12	
BCLK	20	20	SA 11	
IRQ 7	21	21	SA 10	
IRQ 6	22	22	SA 09	
IRQ 5	23	23	SA 08	
IRQ 4	24	24	SA 07	
IRQ 3	25	25	SA 06	
-DACK2	26	26	SA 05	
T/C	27	27	SA 04	
BALE	28	28	SA 03	
+5V	29	29	SA 02	
OSC	30	30	SA 01	
GND	31	31	SA 00	
-MEMCS 16	1	1	SBHE	
-I/OCS16	2	2	LA 23	
IRQ 10	3	3	LA 22	
IRQ 11	4	4	LA 21	
IRQ 12	5	5	LA 20	
IRQ 15	6	6	LA 19	
IRQ 14	7	7	LA 18	
-DACK 0	8	8	LA 17	
DRQ 0	9	9	-MEMR	
-DACK 5	10	10	-MEMW	
DRQ 5	11	11	SD 08	
-DACK 6	12	12	SD 09	
DRQ 6	13	13	SD 10	
-DACK 7	14	14	SD 11	
DRQ 7	15	15	SD 12	
+5V	16	16	SD 13	
-MASTER	17	17	SD 14	
GND	18	18	SD 15	

ATX POWER SUPPLY Connector

3.3 V	11	1	3.3 V	
-12 V	12	2	3.3 V	
GND	13	3	GND	
PS-ON	14	4	5 V	
GND	15	5	GND	
GND	16	6	5 V	
GND	17	7	GND	
-5 V	18	8	PW-OK	
5 V	19	9	5 V-SB	
5 V	20	10	12 V	

Serial port connector

		1	DCD	
DSR	6	2	SIN	
RTS	7	3	SOUT	
CTS	8	4	DTR	
RI	9	5	GND	

Parallel port connector

-STROBE	1	14	-AUTO FEED
Data Bit 0	2	15	-ERROR
Data Bit 1	3	16	-INIT
Data Bit 2	4	17	-SLCT IN
Data Bit 3	5	18	Ground
Data Bit 4	6	19	Ground
Data Bit 5	7	20	Ground
Data Bit 6	8	21	Ground
Data Bit 7	9	22	Ground
-ACJ	10	23	Ground
BUSY	11	24	Ground
PE	12	25	Ground
SLCT	13		

PS/2 mouse connector signal line

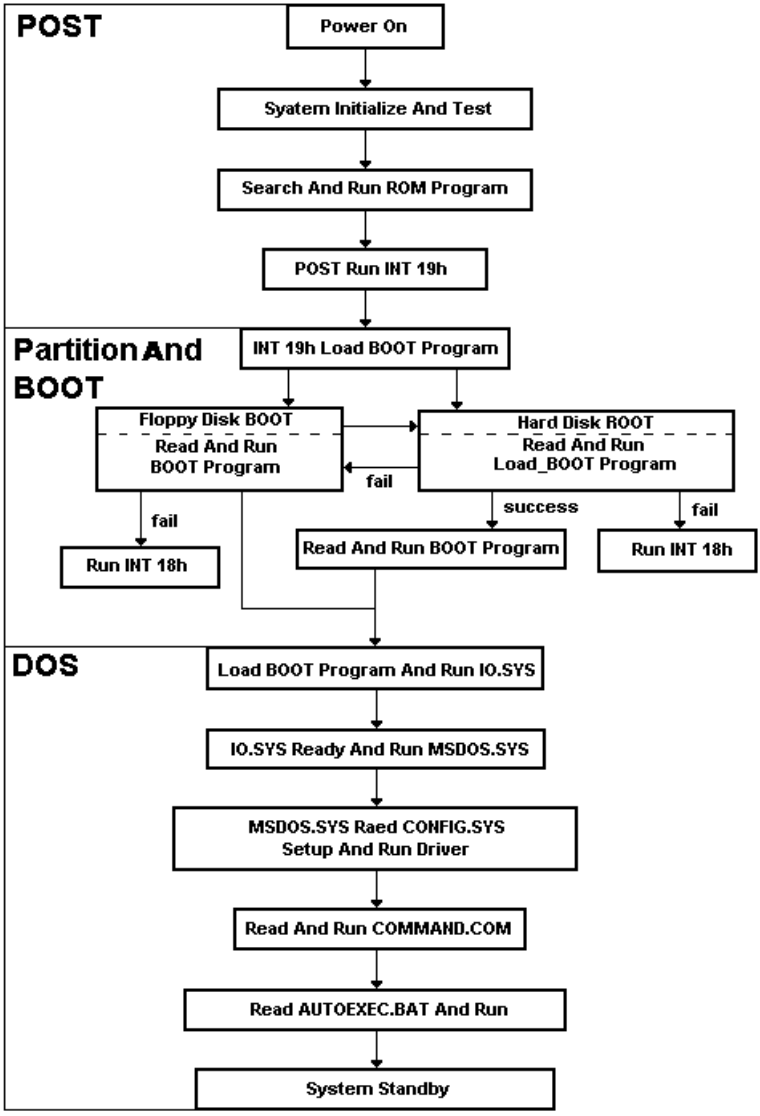
Data(Red)	1	4	NC
Clock(Blue)	2	5	VCC(Yellow)
GND(Green)	3		

C. The transfer rate of IDE PIO and DMA modes.

Mode	PCI Bus Clock	Cycle time	Data transfer rate
PIO Mode 0	33 MHz	600 ns	3.3 MB/s
PIO Mode 1	33 MHz	383 ns	5.2 MB/s
PIO Mode 2	33 MHz	240 ns	8.3 MB/s
PIO Mode 3	33 MHz	180 ns	11.1 MB/s
PIO Mode 4	33 MHz	120 ns	16.6 MB/s
PIO Mode 5	33 MHz	90 ns	20 MB/s
DMA Mode 0	33 MHz	480 ns	4.16 MB/s
DMA Mode 1	33 MHz	150 ns	13.3 MB/s
DMA Mode 2	33 MHz	120 ns	16.6 MB/s
DMA/33	33 MHz	60 ns	33 MB/s

When IORDY signal is used, PIO Mode 3/4 is in ATA-2 format while PIO Mode 0/1/2 is in ATA format. PIO Mode5 is unlikely to happen.

D. The Computer BOOT flow. chart



E. The Features Introduction

	INTEL 440 BX	INTEL i810e	VIA 693A+596B
CPU support	Pentium II / III	Pentium II / III	Pentium II / III
Memory size	1GB	1GB	1 GB
Memory	SDRAM	SDRAM	SDRAM
Memory Clock	100	100	100/133MHz
Ex. Clock	66/100MHz	66/100/133MHz	66/100/133 MHz
ACPI	Yes	Yes	ACPI
AGP Bus	X 2	X 2	X 4
Ultra ATA/66	No	Yes	Yes

- **Ultra ATA/66**

  It's an extension of Ultra ATA33 interface. This new high-speed interface has doubled the Ultra ATA/33 burst data transfer rate to 66.6 Mbytes/sec and maximized disk performance under current PCI local bus environment.

- **ACPI (Advanced Configuration and Power Interface)**

  This Advanced Configuration and Power Interface set up by Intel, Microsoft, Compaq, IBM, HP….etc, offers the functions below:

  (1) . Automatically stops offering power to CD-ROM, FDD or HDD when any of them is not in use.

  (2) . Offers the "OnNow" function; when you start the system, what is seen on the screen is in the condition same as the last time before the system was shut down.

  (3) . Enhances the system configuration like PnP, DMI….

- **USB(Univer Serial Bus)**

  The new Bus specification defined by Compaq, DEC, IBM, Microsoft, NEC, Intel ….etc, is connected by USB, making it possible for the peripheral to have the "plug and play" function without interface card.

There are at most 127 peripherals that can be connected at the same time.

- **Printer Modes /SPP /ECP /EPP**

  SPP (Standard Parallel Port)
  The current commonly used standard mode.

  ECP (Extended Capabilities Port)
  Jointly set by Microsoft and HP. Its main feature is using high-performance half-duplex bi-directional channel to achieve faster transmission speed. Its 16-bit FIFO (First-In-First-Out) buffer makes high-speed transmission more stable and reliable. DMA function is included in its controller.

  EPP (Enhanced Parallel Port)
  Jointly set by Intel, Zenith and Xircom. Bi-directional block transmission makes transmission speed to reach 2MB per second. It is compatible with the standard parallel port interface. For printers that do not support the EPP mode in Windows 95, including the Canon BJ Series and the Epson LQ Series, you can set the Parallel Mode in BIOS to Normal (SPP) Mode to enable EPP.

- I**rDA (Infrared Data Association)**

  This organization sets the infrared transmission standards. The IrDA Protocol sets transmission speed at 115KB per second and a transmission angle of 30 degree. Its Serial Port shall have 16550 UARTs and its maximum transmission distance is one meter.

- **S. M. A. R. T (Self Monitoring Analysis Report Technology)**

It is jointly set by Conner, IBM, Quantum, Seagate and Western Digital.

Most hard disks on the market have this function. It issues a warning

message to the computer user prior to the "actual" failure of the user can

have sufficient time to backup data or to replace the hard disk.

F. TIME and DMA CHANNELS MAP

TIME MAP:

TIMER Channel 0	System timer interrupt.	
	TIMER Channel 1	DRAM REFRESH request.
	TIMER Channel 2	SPEAKER tone generator.

DMA CHANNELS:	DMA Channel 0	Available.
	DMA Channel 1	Audio.
	DMA Channel 2	FLOPPY DISK.
	DMA Channel 3	Onboard ECP (default).
	DMA Channel 4	Cascade.
	DMA Channel 5	PCMCIA DMA.
	DMA Channel 6	MPEG.
	DMA Channel 7	Available.

G. INTERRUPT MAP

NMI: Parity check error.

IRQ (H/W):

0 System TIMER interrupt form TIMER 0.
1 KEYBOARD output buffer full.
2 Cascade for IRQ 8-15.
3 SERIAL port 2.
4 SERIAL port 1.
5 Audio/MPU-401 or PARALLEL port 2.
6 FLOPPY DISK.
7 PARALLEL port 1.
8 RTC clock.

9 Available.
10 PCMCIA.
11 MPEG.
12 Trackpad (PS/2 Mouse).
13 MATH coprocessor.
14 Primary IDE interface (HDD).
15 Secondary IDE interrface (CD-ROM).

H. RTC and CMOS RAM MAP

RTC and CMOS:	00	Seconds
	01	Seconds alarm
	02	Minutes
	03	Minutes alarm
	04	Hours
	05	Hours alarm
	06	Day of week
	07	Day of month
	08	Month
	09	Year
	0A	Status register A
	0B	Status register B
	0C	Status register C
	0D	Status register D
	0E	Diagnostic status byte
	0F	Shutdown byte
	10	FLOPPY DISK drive type byte
	11	Reserve
	12	HARD DISK type byte
	13	Reserve
	14	Equipment type
	15	Base memory low byte
	16	Base memory high byte
	17	Extension memory low byte
	18	Extension memory high byte
	19-2d	
	2E-2F	

30	Reserved for extension memory low byte
31	Reserved for extension memory high byte
32	DATE CENTURY byte
33	INFORMATION FLAG
35-3F	Reserve
40-7F	Reserved for CHIPSET SETTING DATA

I. POST Code

POST (HEX)	Description
C0 ●●○○ ○○○○	1. Turn off OEM specific cache, shadow... 2. Initialize all the standard devices with default values standard devices including: - DMA controller (8237) - Programmable Interrupt Controller (8259) - Programmable Interval Timer (8254)
C1/C6 ● ●○○○○○●/ ●●○○○●●○	Auto-detection of onboard DRAM and Cache
C3 ●●○○ ○○●●	1. Test the first 256K DRAM 2. Expand the compressed codes into temporary DRAM area including the compressed System BIOS and Option ROMs
C5 ●●○○ ○●○●	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
01-02	Reserved
03 ○○○○ ○○●●	Initialize EISA registers (EISA BIOS ONLY)
04	Reserved
05 ○○○○ ○●○●	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06 ○○○○ ○●●○	F000 shadow R/W test
07 ○○○○ ○●●●	Verifies CMOS's basfic R/W functionality
BE ●○●● ●●●○	Program defaults values into chipset according to the MODBINable Chipset Default Table
09 ○○○○	1. Issue CPU ID instruction to idedtify CPU type

	●○○●	2. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 3. OEM specific cache initialization
0A	○○○○ ●○●○	1. Initialize the first 32 interrupt vectors with correspoinding interrupt handlers Initialize INT no from 33-120 with Dummy (Spurious) Interrupt Handler 2. Early Power Management initialization (OEM specific)

POST (HEX)	Description
0B ○○○○ ●○●●	1. Verify whether RTC time is valid or not 2. Detect bad battery 3. Read CMOS data into BIOS stack area 4. PNP initializations including (PNP BIOS ONLY) - Assign CSN to PNP ISA card - Create resource map from ESCD 5. Update the P6 CPU's micro code (P6 Only) 6. Assign IO and Memory for PCI devices (PCI BIOS ONLY)
0C ○○○○ ●●○○	Initialization of the BIOS Data Area (40:0-40:FF)
0D ○○○○ ●●○●	1. P5 Multi-P BIOS Only Init IO and Local APIC 2. Program some of the Chipset's value according to Setup (Early Setup Value Program) 3. Measure CPU speed for display and decide system clock speed 4. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep
0E ○○○○ ●●●○	1. Initialize the APIC (Multi-Processor BIOS ONLY) 2. Test video RAM (If Monochrome display device found) 3. Show messages including: - Award Logo, Copyright String, BIOS Date code and Part No. - OEM specific sign on messages - Energy Star Logo (Green BIOS Only) - CPU brand, type and speed
0F ○○○○ ●●●●	DMA channel 0 test
10 ○○○● ○○○○	DMA channel 1 test
11 ○○○● ○○○●	DMA page registers test
12-13	Reserved
14 ○○○● ○●○○	Test 8254 Timer 0 Counter 2
15 ○○○● ○●○●	Test 8259 interrupt mask bits for channel 1
16 ○○○● ○●●○	Test 8259 interrupt mask bits for channel 2
17	Reserved

POST (HEX)	Description
19 ○○○● ●○○●	Test 8259 functionality
1A-1D	Reserved
1E ○○○● ●●●○	If EISA NVM checksum is good,, execute EISA initialization
1F-29	Reserved
30 ○○●● ○○○○	1. Get Base Memory and Extended Memory Size 2. P6 Multi-P BIOS Only Init IO & Local APIC 3. Program K5 CPU's Write Allocation
31 ○○●● ○○○●	1. Get Base Memory and Extended Memory Size 2. P6 Multi-P BIOS Only Init IO and Local APIC 3. Program K5 CPU's Write Allocation
32 ○○●● ○○●○	1. Display the Award Plug and Play BIOS Extension message (PNP BIOS ONLY) 2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port... according to setup value 3. Program onboard audio devices
33-3B	Reserved
3C ○○●● ●●○○	Set flag to allow users to enter CMOS Setup Utility
3D ○○●● ●●○●	1. Initialize Keyboard 2. Install PS/2 mouse 3. Build the INT 15h function E820H table 4. Build the PnP Device Node for total memory size
3E ○○●● ●●●○	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turned on later in POST 61h
3F-40	Reserved
BF ●○●● ●●●●	1. Program the rest of the Chipset's value according to setup 2. If auto-configuration is enabled, program the chipset with predefined values in the MODBIN able Auto-Table
41 ○●○○ ○○○●	Initialize floppy disk drive controller

POST (HEX)	Description
42 ○●○○	1. Cut IRQ 12 connection if PS/2 mouse is not installed

	○○●○	2. Install IDE Hard Drives - Auto-detect HDDs - Build the AT compatible HDD table for Type 47 - Set PIO timing 3. Detect CD ROM on IDE Bus 4. Detect LS120 drive
43	○●○○ ○○●●	If it is a PNP BIOS, initialize serial and parallel ports
44		Reserved
45	○●○○ ○●○●	Initialize math coprocessor
46-4D		Reserved
4E	○●○○ ●●●○	1. If there is any error detected (such as video, kb.....), show all the error messages on the screen and wait for the user to 2. Enable “Far Hit” for Cyrix 6x86 CPU
4F	○●○○ ●●●●	1. If password is needed, ask for password 2. Clear the Energy Star Logo (Green BIOS ONLY)
50	○●○● ○○○○	Write all the CMOS values currently in the BIOS stack area back into the CMOS
51		Reserved
52	○●○● ○○●○	1. Initialize all ISA ROMs 2. Later PCI initializations (PCI BIOS ONLY) - assign IRQ to PCI devices - initialize all PCI ROMs 3. Program shadows RAM according to setup settings 4. Program Parity according to Setup setting 5. Power Management Initialization - Enable/Disable global PM - APM interface initializtion
53	○●○● ○○●●	1. If it is NOT a PNP BIOS, initialize serial and parallel port 2. Initialize time value in BIOS data area by translating the RTC time value into a timer tick value
54-5F		Reserved
60	○●●○ ○○○○	Setup Virus Protection (Boot Sector Protection) functionality according to setup setting

POST (HEX)		Descriptions
61	○●●○ ○○○●	1. Try to turn on Level 2 cache Note: if L2 cache is already turned on in POST 3D, this part

	will be skipped 2. Set the boot up speed according to setup setting 3. Last chance for chipset initialization 4. Last chance for power Management initialization (Green BIOS only) 5. Show the system configuration table
62 ○●●○ ○○●○	1. Setup daylight saving according to setup value 2. Program the NUM Lock, typmatic rate and typmatic speed according to setup setting
63 ○●●○ ○○●●	1. If there is any changes in the hardware configuration, update the ESCD information (PNP BIOS ONLY) 2. If there is any changes in the hardware configuration, update the DMI data pool (DMI BIOS ONLY) 3. Clear memory that have been used 4. Boot system via INT 19h
FF ●●●● ●●●●	System Booting. This means that the BIOS already pass the control right to the operating system

Unexpected Errors:

POST (HEX)	Description
B0 ●○●● ○○○○	If interrupt occurs in protected mode
B1 ●○●● ○○○●	Unclaimed NMI occurs

J. Problem Sheet

Customer			
Name		Tel	
address		Fax	

Mainboard

Mode		Mainboard Rev	
Serial No.		BIOS version	

Configuration					
CPU	Brand		RAM	Brand	
	Type			Type & Size	
	Voltage			Speed	
Floppy disk	Brand		VGA card	Brand	
	Mode			Chipset	
	Size			RAM Type	
Hard disk	Brand		CD-ROM	Brand	
	Mode			Mode	
	Size			Speed	
Sound card	Brand		Lan card	Brand	
	Mode			Mode	
	Remark			PCI/ISA Bus	
Mouse	Brand		O.S	Brand	
	Mode			Name	
	PS/2 or Serial			Version	

Autoexec.bat	Config.sys

Problem Description