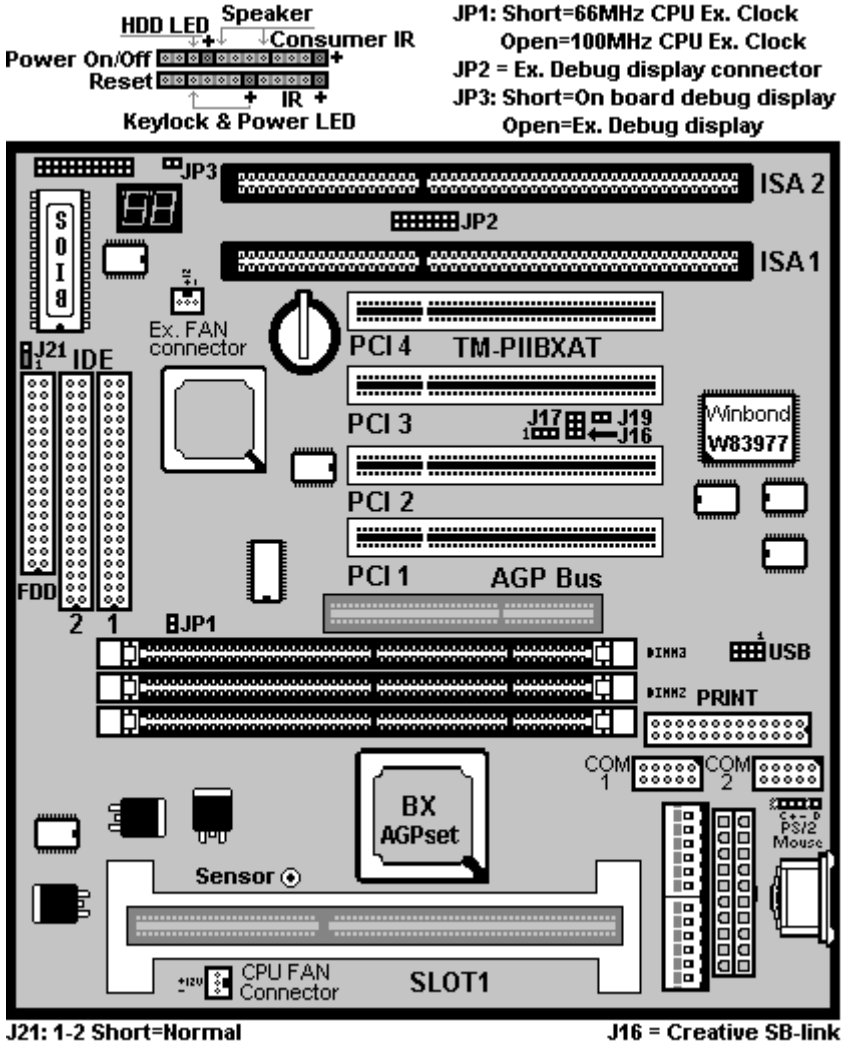
Introduction

A. Specifications

System Chipset	Intel 82440 BX chipset.
CPU	Intel Pentium II processors, support 233/266/300/333 (Ex. Clk 66MHz) MHz. 300/350/400/ 450/ 500 (Ex. Clk 100MHz) 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 1.8V-3.5V
Dimension	4-layer PCB, size (22cm x 20cm).
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, **Debug display on board.**

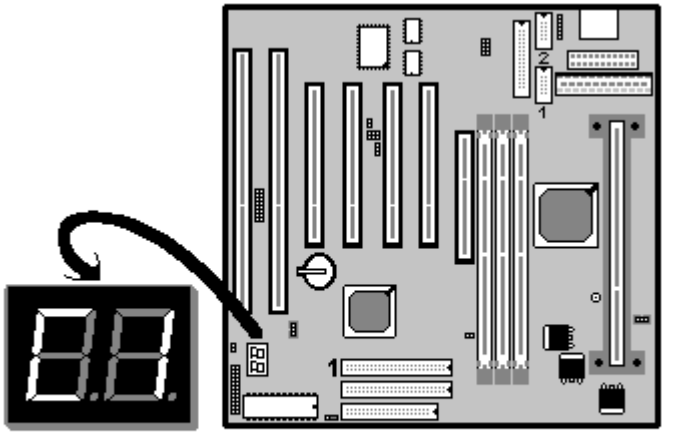
Setup Guide

A. Layout Diagram



B. Smart Display On Board

When the CPU, DRAM, Cache RAM, FDD or VGA card have not been properly installed, user can isolate those basic problems through the Debug display and instructions from the manual. To Professional system engineers or maintenance engineers, the Debug display can work as an 80 Port Debug Card.



Error code	Display	Message	Solution
C1	None	Can't detect DRAM	1. Reinstall or replace the SDRAM. 2. Reinstall or replace the BIOS.
C6	None	Can't detect DRAM	1. Reinstall or replace the SDRAM. 2. Reinstall or replace the BIOS.
OD	None	Can't detect VGA card	1. Reinstall or replace the VGA card. 2. Replace the BIOS.
4E	Yes	Can't detect Floppy disk	1. **Replace the BIOS. (if no screen)** 2. Enter the BIOS Setup menu to reset. 3. Check that the FDD cable and the power connector are properly connected. 4. Reconnect the FDD cable or replace the FDD.
61	Yes	L2 cache problem	1. Enter BIOS Setup to disable the external cache.

C. CPU Voltage and Frequencies

ROM PCI/ISA BIOS (2A69KTJA)
CHIPSET FEATURE SETUP
AWARD SOFTWARE, INC

Auto Configuration	: Enabled	Auto Detect DIMM/ PCI Clk	: Enabled
EDO DRAM Speed Selection	: 60ns	Spread Spectrum	: Disabled
EDO CASx# MA Wait State	: 2	CPU Speed	: Manual
EDO RASx# Wait State	: 2	CPU Ratio	: X 2.5
SDRAM RAS-to CAS Delay	: 3	CPU Frequency	: 100 MHz
SDRAM RAS Precharge Time	: 3	Spread Spectrum	: Disabled
SDRAM CAS latency Time	: Auto	CPU Warning Temperature	: Disabled
SDRAM Precharge Control	: Disabled	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	Esc : Quit	↑↓→← Selection : Item
Passive Release	: Enabled	F1 : Help	PU/PD/+/- : Modify
Delayed Transaction AGP	: Disabled	F5 : Old Values	(Shift) F2 : Color
Aperture Size (MB)	: 64	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.

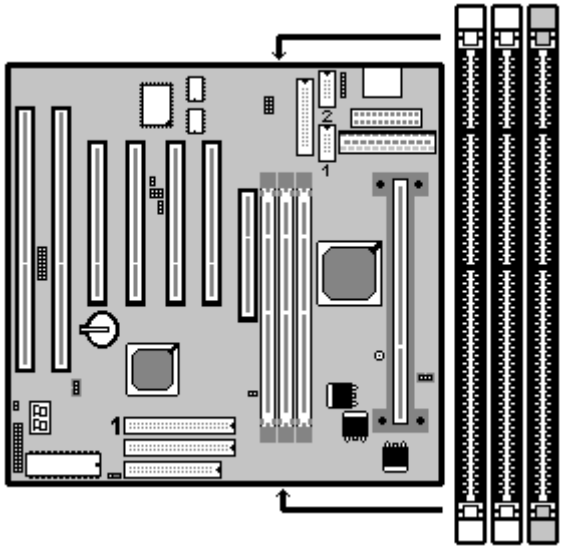
NOTE: System failure may occur if the CPU frequency is set incorrectly. To solve this problem. Press the "Insert" key on the keyboard to clear the previously set frequency (i. c., restore the default frequency), and then reboot the system.

- 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 CPU family

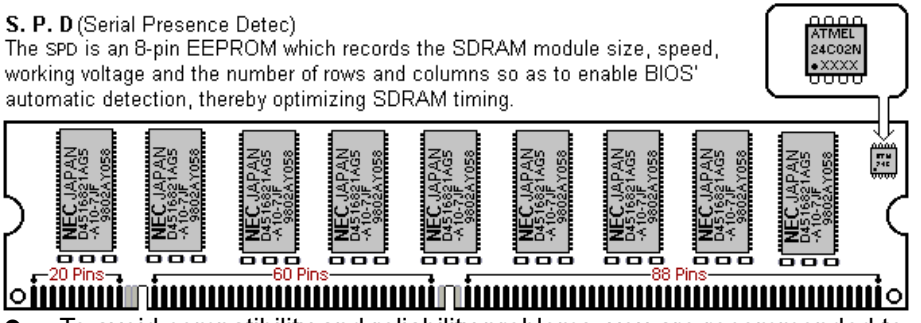
CPU	Ext. clk	Ratio	L1 cache	L2 cache	Package
Intel Pentium II – 450MHz	100MHz	X4.5	32KB	512KB	SECC 1
Intel Pentium II – 400MHz	100MHz	X4	32KB	512KB	SECC 1
Intel Pentium II – 350MHz	100MHz	X3.5	32KB	512KB	SECC 1/ 2
Intel Pentium II – 300MHz	100MHz	X3	32KB	512KB	SECC 1
Intel Pentium II – 333MHz	66MHz	X5	32KB	512KB	SECC 1
Intel Pentium II – 300MHz	66MHz	X4.5	32KB	512KB	SECC 1
Intel Pentium II – 266MHz	66MHz	X4	32KB	512KB	SECC 1
Intel Pentium II – 233MHz	66MHz	X3.5	32KB	512KB	SECC 1

D. 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.

- First, verify the working voltage of the EDO/ SDRAM module in either DIMM socket.

- P2BXAT 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.

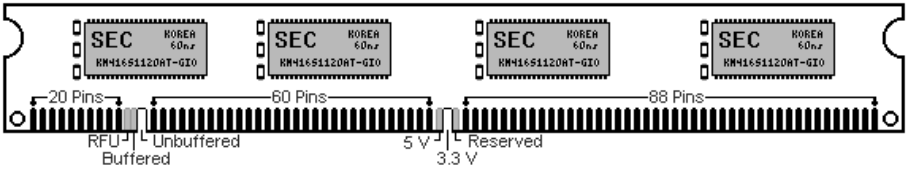
- You can set up the BIOS "Chipset Feature Setup" to the best working condition basing on the type of EDO/ SDRAM you are using.

- 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 Synchronous 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

E. 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 (2A69KTJA)
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 Display First	: AGP		
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:**

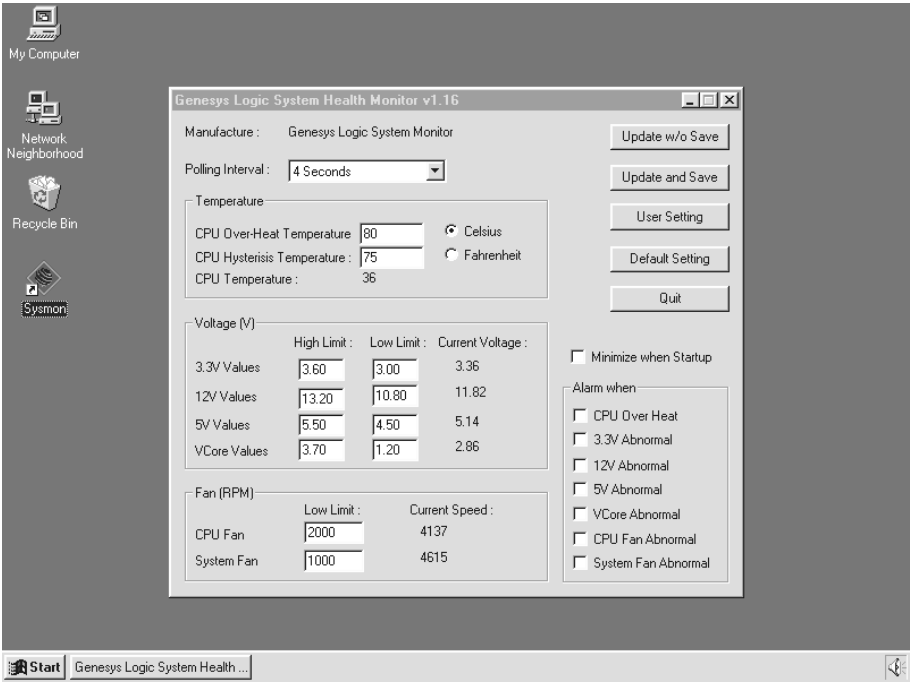
ROM PCI / ISA BIOS (2A69KTJA)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC

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.

F. 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 10 (System Health Monitor).

- **CPU Thermal Protection:**

  TM-P2BXAT 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 Page10 (System Health Monitor).

- **System Voltage Monitoring:**

  TM-P2BXAT 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 10 (System Health Monitor)