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## 1. INTRODUCTION

### 1.1 SYSTEM OVERVIEW

The **【4SIG】** 486 PCI Local Bus GREEN function system board is a "half-all-in-one" system board. It is designed based on the SIS 85C496, 85C497 system chipset and GoldStar Prime 3B I/O chipset, and built-in two channels enhanced VESA Local Bus IDE port, one Floppy Disk control port, two high speed Serial ports (UARTs) and one multimode Parallel port.

This 4SIG system board is designed to fit a high performance, 486 25 MHz to 160 MHz based solution for high-end and true GREEN-PC computer systems. It is made to maintain complete compatibility with software written for the IBM PC/AT. It offers powerful functions for setting the system's configuration, that provides the user with the convenience of being able to set the system's characteristics, performances and it's mode of operation to suit their specific requirements.

This 4SIG system board supports the Peripheral Component Interconnect (PCI) Local Bus standard (Rev. 2.0). It not only breaks through the I/O bottlenecks of the traditional ISA main board, but also provides the performance needs for networking and multi-user environments.

### 1.2 SPECIFICATIONS

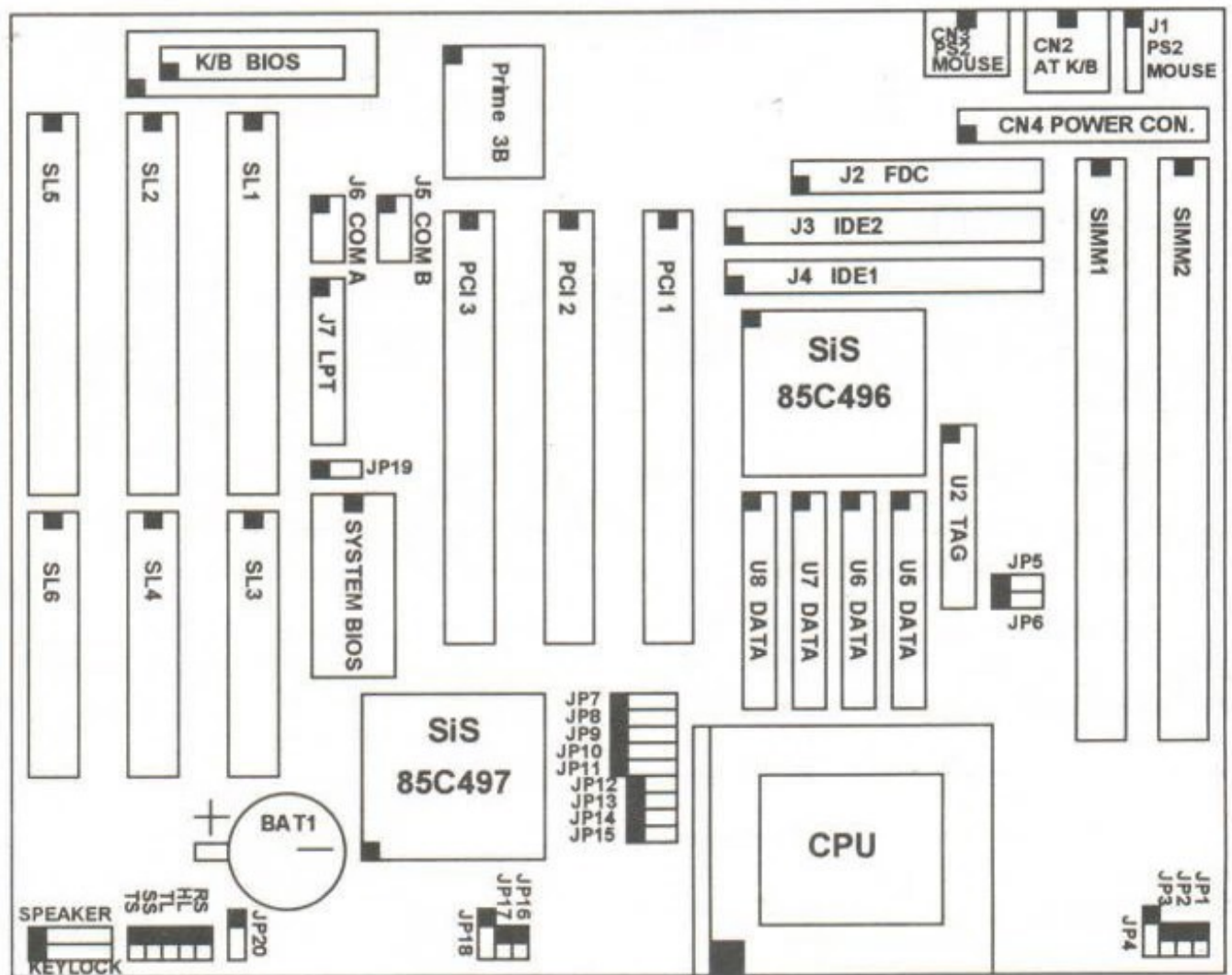
- CPU** (Processor with 237 pins ZIF socket, **the jumpers setting refers to page 3-6.**)
  - Intel** 486SX-25/33, 486DX-33, 486DX2-50/66, S-Series Enhanced (P23S, P4S, P24S), 486DX4-75/100 (P24C), P24D, P24T.
  - AMD** 486DX-40, 486DX2-50/66/80, 486DX4-75/100/120, X5-133/150/160.
  - Cyrix** Cx486DX-40, Cx486DX2-50/66/80, Cx486DX4-100, Cx5x86-100/120.
  - UMC** 486SX(U5S), 486DX/DX2(U5D).
  
- Clock Rate** : 25/33/40/50 MHz (**The jumpers setting refers to page 3-7.**)
  
- CPU VCC** : +5V, +4V, +3.45V, +3.3V DC (**The jumpers setting refers to page 3-5.**)
  
- True Green Function** : Hardware SMM mode, or software SMI interrupt.  
An external SMI switch (SS).
  
- WORD SIZE**
  - Data Path** : 8-bit, 16-bit, 32-bit.
  - Physical Addressing** : 20 address lines in real mode, 26 address lines protected mode. (64 mega bytes address space).

- Memory**
  - DRAM** : Two 72-pin SIMM sockets, 1 MB up to 128 MB (**Table-Free**). Supports fast page burst mode and EDO (in the future) DRAM.
  - SRAM** : One bank, 128/256/512 KB Direct-mapped L2 cache memory. Both Write-Back and Write-Through cache schemes are supported. (**The jumpers setting refers to page 3-2.**)
  
- Shadow RAM** : Software-controlled Shadow RAM for video BIOS and optional Adapter BIOS. (System BIOS Shadow RAM is fixed).
  
- BIOS** : AWARD system BIOS, 128KBx8 EPROM for Normal BIOS, Flash ROM for Plug and Play BIOS (**The jumper setting refers to page 3-7.**)
  
- I/O Bus Slots**
  - PCI Local Bus** : Three Master / Slave 32-bit PCI Local Bus slots.
  - ISA Bus** : Three 16-bit ISA Bus slots.
  
- IDE Ports** : Two channels Enhanced VESA IDE ports (**J4, J3**). Support four Mode 3/4, IDE Hard Disk and ATAPI CD-ROM device.
  
- FDC Port** : One Floppy Disk Control port (**J2**). Support 360KB/720KB/1.2MB/1.44MB/2.88MB format floppy disk driver.
  
- Serial Ports** : Two high speed NS16C550 compatible UART serial ports (**J6, J5**). With Send/Receive 16 Byte FIFOs.
  
- Parallel Port** : One IBM PC XT/AT compatible multimode parallel port (**J7**). Supports Standard bi-directional Parallel Port (SPP, Normal), Enhanced Parallel Port (EPP), Extended Capabilities Parallel Port (ECP).
  
- PS/2 Mode** : Supports PS/2 Mouse port (**J1, or CN3**). PS/2 Keyboard port (optional) (**CN1**).
  
- Dimension** : 4-layer PCB, 220 x 190 mm.
  
- Software compatibility** : MS-DOS, Windows NT, OS2, XENIX, UNIX, NOVELL, CAD/CAM, Windows, Windows 95...etc..

## 2. SYSTEM BOARD LAYOUT

### 4SIG Ver. 2.0

Explanation : All connectors, jumpers and components which marks by a black point on the corner means the Pin-1 side of the connector, jumper and component.



## **3. HARDWARE SETUP**

### **3.1 UNPACKING**

The System Board package should contain the following parts:

- The 4SIG System Board.
- OPERATION MANUAL.
- Cable set for IDE and I/O device.

### **3.2 HARDWARE CONFIGURATION**

Before the system board is ready to operate, the hardware must be configured to allow for various functions within the system. To configure the 4SIG system board is a simple task, only a few jumpers, connectors, cables and sockets needs to be selected and installed. Please refer to system board layout figure in Page 2-1.

#### **3.2.1 DRAM INSTALLATION**

The 4SIG system board will support two 72-Pin SIMM sockets, SIMM1 and SIMM2. Non-interleaved, fast page burst mode and EDO mode (in the future) DRAM are supported.

The useful SIMM modules are 256KBx36(32)-S, 512KBx36(32)-D, 1MBx36(32)-S, 2MBx36(32)-D, 4MBx36(32)-S, 8MBx36(32)-D, 16MBx36(32)-S 72-Pin SIMM module. Four banks, 1MB up to 128 MB of local memory can be attained.

*Note : S = Single Bank , D = Double Banks*

There are no jumper for DRAM configuration, the DRAM SIMMs installation is "Table-Free", which means the SIMMs can be installed into any socket location and any combinations. The DRAM speed must be used 70ns or faster than 70ns.

Insert the DRAM SIMM module into the SIMM socket at 45 degree angle, and notice the Pin-1 of SIMM module must match with the Pin-1 of SIMM socket when the DRAM SIMM is installed. If there is a wrong direction of Pin-1, the DRAM SIMM module couldn't be inserted into the socket completely. After the SIMM module has been insert into the socket completion, then press the SIMM module to vertical direction until the left and right metal holders can keep the SIMM module standing up con-firmly.

#### **3.2.2 CACHE SRAM INSTALLATION AND JUMPER SETUP**

The Cache Memory system consists of two parts, one is TAG SRAM, the other is DATA SRAM. The TAG SRAM type used in this system board is 8Kx8, 16Kx8, or 32Kx8 and the DATA SRAM type is 32Kx8, 64Kx8 or 128Kx8.

This system board supports one bank of SRAM, which provides either 128KB, 256KB, or 512KB of cache memory.

The following table lists the detailed combination and the Jumper Setting about Cache Size selection.

Cache Size	DATA SRAM	TAG SRAM	JP5	JP6
128 KB	four 32Kx8	8(16, 32)Kx8	1-2	1-2
256 KB	four 64Kx8	16(32)Kx8	2-3	1-2
512 KB	four 128Kx8	32Kx8	2-3	2-3

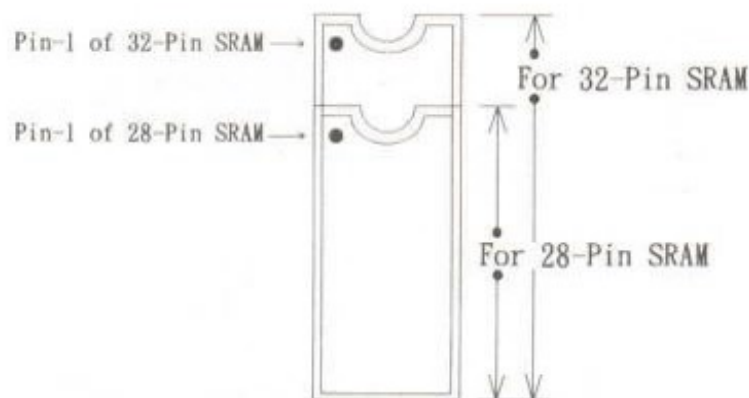
The corresponding bank to parts identification are as follows:

DATA SRAM : U5 , U6 , U7 , U8

TAG SRAM : U2

The following figure is an example, which shows how to use the Cache SRAM socket. For 32-pin-300-mil SRAM, uses all pins of socket. (such as 64KBx8, 128KBx8), For 28-pin-300-mil SRAM, uses a part of socket. (such as 8KBx8, 16KBx8 and 32KBx8)

Please make certain that the Pin-1 of SRAM must be match with the Pin-1 of Socket when the Cache SRAM is installed.



### 3.2.3 CONNECTORS

A connector is two or more pins that are used make connections to the system standard accessories (such as power, battery ,...etc.) The following is a list of connectors on board, as well as descriptions of each individual connector.

(A) BAT1 Non-Rechargeable battery (Using 3 Vlots Li battery : CR2032)

<u>Pin #</u>	<u>Assignment</u>
+	Battery Positive
-	Ground

(B) CN1 PS/2 Keyboard connector (option)

<u>Pin #</u>	<u>Assignment</u>	<u>Pin #</u>	<u>Assignment</u>
1	Keyboard Data	4	+5V DC
2	No Connection	5	Keyboard Clock
3	Ground	6	No Connection

(C) CN2 AT Keyboard connector

<u>Pin #</u>	<u>Assignment</u>	<u>Pin #</u>	<u>Assignment</u>
1	Keyboard Clock	4	Ground
2	Keyboard Data	5	+5V DC
3	No Connection		

(D) CN3 PS/2 Mouse connector & J1 PS/2 Mouse converted connector (Using IRQ12)

<u>Pin #</u>	<u>Assignment</u>	<u>Pin #</u>	<u>Assignment</u>
1	Mouse Data	1	Mouse Data
2	No Connection	2	No Connection
3	Ground	3	Ground
4	+5V DC	4	+5V DC
5	Mouse Clock	5	Mouse Clock
6	No Connection		

(E) CN4 Power connector

<u>Pin #</u>	<u>Assignment</u>	<u>Pin #</u>	<u>Assignment</u>
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	-5V DC
4	-12V DC	10	+5V DC
5	Ground	11	+5V DC
6	Ground	12	+5V DC

(F) J2 Floppy Disk Control Port connector (Using IRQ6, DMA channel 2)

(G) J3 IDE 2 connector (Secondary IDE Port, using IRQ15)

(H) J4 IDE 1 connector (Primary IDE Port, using IRQ14)

(I) J5 COM B (Serial Port 2) connector  
(COM1/2/3/4, selected by BIOS setup, using IRQ3 or 4)

<u>Pin #</u>	<u>Assignment</u>	<u>Pin #</u>	<u>Assignment</u>
1	DCD (Data Carrier Detect)	2	RD (Received Data)
3	TD (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	NC (No Connection)



(J) J6 COM A (Serial Port 1) connector  
(COM1/2/3/4, selected by BIOS setup, using IRQ4 or 3)

1 2	<u>Pin #</u> <u>Assignment</u>	<u>Pin #</u> <u>Assignment</u>
○ ○	1   DCD (Data Carrier Detect)	2   RD (Received Data)
○ ○	3   TD (Transmit Data)	4   DTR (Data Terminal Ready)
○ ○	5   Ground	6   DSR (Data Set Ready)
○ ○	7   RTS (Request To Send)	8   CTS (Clear To Send)
○ ○	9   RI (Ring Indicator)	10   NC (No Connection)
9 10		

(K) J7 Parallel Port connector  
(Supports Normal/EPP/ECP mode, selected by BIOS setup, using IRQ7, ECP using DMA channel 3)

1 14	<u>Pin #</u> <u>Assignment</u>	<u>Pin #</u> <u>Assignment</u>
○ ○	1   STROBE-	14   AUTO FEED-
○ ○	2   Data Bit 0	15   ERROR-
○ ○	3   Data Bit 1	16   INIT-
○ ○	4   Data Bit 2	17   SLCT IN-
○ ○	5   Data Bit 3	18   Ground
○ ○	6   Data Bit 4	19   Ground
○ ○	7   Data Bit 5	20   Ground
○ ○	8   Data Bit 6	21   Ground
○ ○	9   Data Bit 7	22   Ground
○ ○	10   ACK-	23   Ground
○ ○	11   BUSY	24   Ground
○ ○	12   PE	25   Ground
○ ○	13   SLCT	26   N.C. (No Connection)
13 26		

(L) RS Reset Button connector

<u>Pin #</u>	<u>Assignment</u>	<u>Pin 1&amp;2</u>	<u>Function</u>
1	Reset Control	Open	No action
2	Ground	Close	Reset

(M) HL IDE HDD LED connector

<u>Pin #</u>	<u>Assignment</u>
1	Pullup (+5V DC)
2	Signal Pin

(N) TL Turbo LED connector

<u>Pin #</u>	<u>Assignment</u>
1	Pullup (+5V DC)
2	Signal Pin



- (O) SS External SMI button connector
- | <u>Pin #</u> | <u>Assignment</u> | <u>Pin1&amp;2</u> | <u>Function</u>                                 |
|--------------|-------------------|-------------------|---|
| 1            | SMI Control       | Open              | For normal operation                            |
| 2            | Ground            | Close             | To get into Suspend mode or return Full-on mode |
- (P) TS Turbo Switch connector
- | <u>Pin #</u> | <u>Assignment</u> | <u>Pin1&amp;2</u> | <u>Function</u> |
|--------------|-------------------|-------------------|-----------------|
| 1            | Ground            | Open              | Non-Turbo       |
| 2            | Turbo Control     | Close             | Turbo           |
- (Q) SPEAKER Speaker connector
- | <u>Pin #</u> | <u>Assignment</u>   |
|--------------|---------------------|
| 1            | Speaker Data Signal |
| 2            | No Connection       |
| 3            | No Connection       |
| 4            | +5V DC              |
| 5            | No Connection       |
- (R) KEY LOCK Front Panel Power LED & Key-Lock connector
- | <u>Pin #</u> | <u>Assignment</u>             |
|--------------|-------------------------------|
| 1            | Pullup (+5V DC for Power LED) |
| 2            | No Connection                 |
| 3            | Ground                        |
| 4            | Keyboard Lock                 |
| 5            | Ground                        |

### 3.2.4 JUMPERS

A jumper is two, three or more pins which may or may not be covered by a plastic connector plug (mini-jumper). A jumper is used to select different system options. **Please make sure all jumpers at correct position before this system board be used.**

#### (A) JP1 - JP4 CPU VCC Voltage selection

CPU VCC	JP1	JP2	JP3	JP4
+5 V	x	x	x	1-2
+4 V	open	open	close	2-3
+3.45 V	open	close	open	2-3
+3.3 V	close	open	open	2-3

Explanation :

X : Don't care



(D) JP16, JP17, JP18 System (CPU) and PCI Clock Frequency selection

Clock Frequency		Jumper			CPU Type
CPU	PCI	JP16	JP17	JP18	
25 MHz	25 MHz	open	open	1-2	DX-25,DX2-50,DX4-75
33 MHz	33 MHz	close	close	1-2	DX-33,DX2-66,DX4-100,5x86-100,X5-133
** 40 MHz	40 MHz	close	open	1-2	DX-40,DX2-80,DX4-120,5x86-120,X5-160
* 40 MHz	20 MHz	close	open	2-3	DX-40,DX2-80,DX4-120,5x86-120,X5-160
50 MHz	25 MHz	open	close	2-3	DX-50,X5-150

**Remark** \* Reserved Setting.

\*\* Default Setting. This setting may enlarge your system's PCI performance. But some PCI cards couldn't run at this frequency, at this time you must set JP18 to 2-3. It could solve some problems but also could reduce PCI performance.

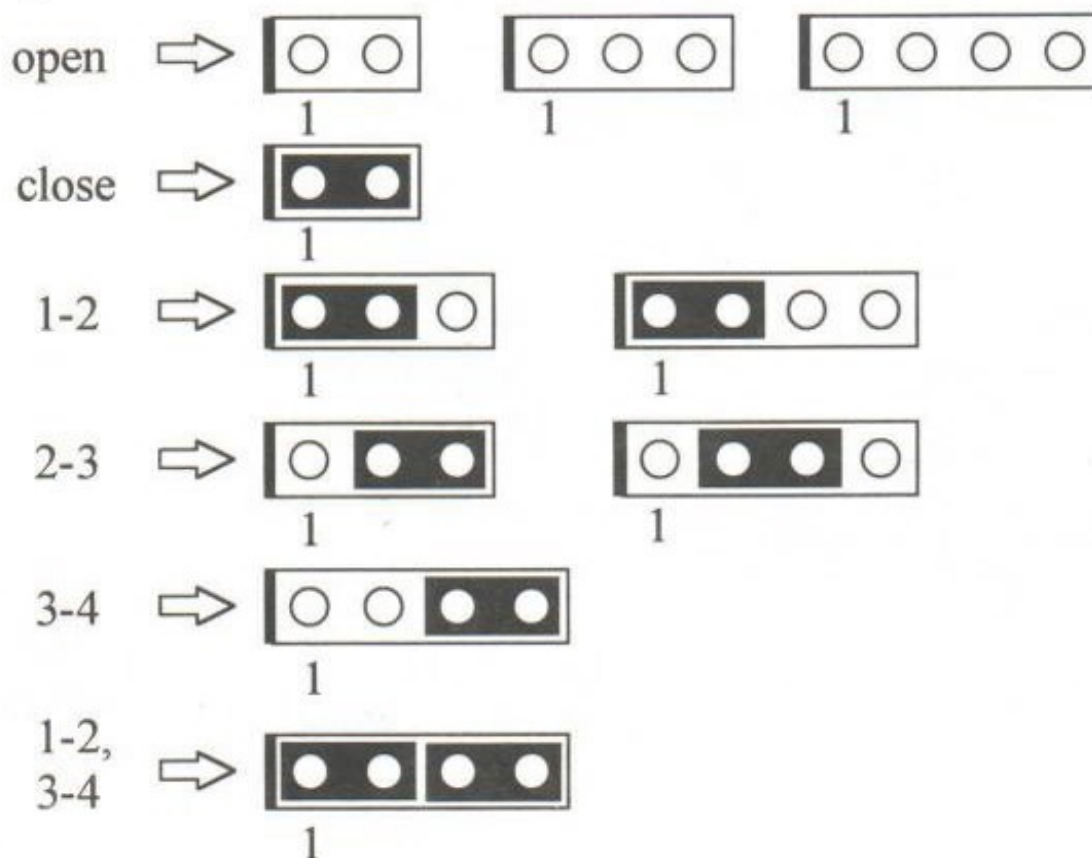
(E) JP19 ROM BIOS Type selection

Pin #	Function
1-2	+12V Flash ROM BIOS
2-3	+5V Flash ROM BIOS, EPROM BIOS

(F) JP20 CMOS Charge and Discharge switch

Pin #	Function
1-2	CMOS Charge (Normal operation)
2-3	CMOS Discharge

**Explanation :**



## **4. SOFTWARE SETUP**

### **4.1 BIOS SETUP**

After hardware configuration of 4SIG system board is completed, and system hardware has been assembled, the completed system may be powered-on. At this point, software setup should be run to ensure that the system information is correct, and that the configuration registers in SIS 486 chipset and Prime 3B I/O chipset do not need to be modified individually, the chipset provides certain features which can be accessed by software setup (such as : Cache timing control, DRAM timing, peripheral device I/O address...etc.). This flexibility feature allows the system to be tailored (via software setup) at anytime to meet the requirements of certain specific operating environments.

Else, the software setup is needed when the system hardware is not identical with the information contained in the CMOS RAM, or whenever, the CMOS RAM has lost power.

The software setup is achieved through BIOS programming, although the BIOS from different vendors will have different sequences displays, the setup elements or options will be the same. Please refer to APPENDIX A for AWARD BIOS setup.

Basically, the system elements that need to be setup are listed below :

- (a) STANDARD CMOS SETUP (includes Time, Date, Floppy disk type ...etc.)
- (b) BIOS FEATURES SETUP (includes virus warning, shadow RAM ...etc.)
- (c) CHIPSET FEATURES SETUP (includes ISA Bus Clock, DRAM Speed, I/O function ...etc.)
- (d) POWER MANAGEMENT SETUP (includes PM Timers, PM Events ...etc.)
- (e) PCI CONFIGURATION SETUP (includes INT# assign, IRQ selection ...etc.)
- (f) PASSWORD SETTING

The software setup procedure is generally listed below :

- (a) Enter into the setup routine
- (b) Modify the target option(s)
- (c) Save the change(s) and exit from setup
- (d) Reboot the system

## **4. SOFTWARE SETUP**

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The software setup procedure is generally listed below :

- (a) Enter into the setup routine
- (b) Modify the target option(s)
- (c) Save the change(s) and exit from setup
- (d) Reboot the system

## A.2 MAIN MENU

ROM PCI/ISA BIOS (2A4IB???)  
 CMOS SETUP UTILITY  
 AWARD SOFTWARE, INC.

<b>STANDARD CMOS SETUP</b>  BIOS FEATURES SETUP  CHIPSET FEATURES SETUP  POWER MANAGEMENT SETUP  PCI CONFIGURATION SETUP  LOAD SETUP DEFAULTS	PASSWORD SETTING  IDE HDD AUTO DETECTION  HDD LOW LEVEL FORMAT  SAVE & EXIT SETUP  EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift)F2 : Change Color
Time, Date, Hard Disk Type ...	

Fig. A-2 BIOS SETUP MAIN MENU screen.

Ranges or options for each feature will be listed below in prompt box in the bottom of the CMOS Setup MAIN MENU, as shown in above figure.

## A.3 CONTROL KEYS

Listed below is an explanation of the keys displayed at the bottom of the screens accessed through the BIOS SETUP program :

- Arrow Keys** : Use the arrow keys to move the cursor to the desired item.
- Enter** : To Select the desired item.
- F1** : Display the help screen for the selected feature.
- (Shift)F2** : To change the screen color, total 16 colors.
- ESC** : Exit to the previous screen.
- PgUp(-)/PgDn(+)** : To modify the default value of the options for the highlighted feature.
- F5** : Retrieves the previous CMOS values from CMOS, only for the current option page setup menu.
- F7** : Loads the SETUP default values from BIOS default table, only for the current option page setup menu.
- F10** : Save all changes made to CMOS RAM, only for the MAIN MENU.

## A.4 STANDARD CMOS SETUP

ROM PCI/ISA BIOS (2A4IB???)  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm : dd : yy) : Fri, Nov 17 1995																
Time (hh : mm : ss) : 14 : 15 : 22																
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE								
Primary Master	None	0	0	0	0	0	0	-----								
Primary Slave	None	0	0	0	0	0	0	-----								
Secondary Master	None	0	0	0	0	0	0	-----								
Secondary Slave	None	0	0	0	0	0	0	-----								
Drive A : 1.2M , 5.25 in.				<table border="1"> <tr> <td>Base Memory :</td> <td>640 K</td> </tr> <tr> <td>Extended Memory :</td> <td>xxxxxx K</td> </tr> <tr> <td>Other Memory :</td> <td>xxxxxx K</td> </tr> <tr> <td><hr/>Total Memory :</td> <td>xxxxxx K</td> </tr> </table>					Base Memory :	640 K	Extended Memory :	xxxxxx K	Other Memory :	xxxxxx K	<hr/> Total Memory :	xxxxxx K
Base Memory :	640 K															
Extended Memory :	xxxxxx K															
Other Memory :	xxxxxx K															
<hr/> Total Memory :	xxxxxx K															
Drive B : None																
Video : EGA/VGA																
Halt On : All Errors																
ESC : Quit			↑ ↓ → ← : Select Item			PU/PD/+/- : Modify										
F1 : Help			(Shift)F2 : Change Color													

Fig. A-3 STANDARD CMOS SETUP screen.

- Primary Master / Primary Slave / Secondary Master / Secondary Slave** : Setting numbers from "1" to "45", include "User", "None" and "Auto". 1 to 45 fills in remaining fields with values for predefined disk type. "User" allows user to fill in the remaining fields. "None" is available for the diskless workstation or **SCSI Hard Disks**. SCSI hard disks operate using device drivers and not supported directly by the system BIOS. "Auto" is a new feature, it will detect the hard disk configurations and run automatically, but a few Hard Disks maybe couldn't use this feature.
- MODE** : For IDE hard disks, the BIOS provides three modes to support both normal size IDE hard disks and also disks size larger the 528MB:
- **NORMAL** : For IDE hard disks size smaller then 528MB.
  - **LBA** : For IDE hard disks size larger then 528MB and up to 8.4GB (Giga Bytes) that use Logic Block Addressing (LBA) mode.
  - **Large** : For IDE hard disks size larger then 528MB that do not use LBA mode. Large mode is a new specification which may not be fully supported by all operation systems. Now it can only be used with the MS-DOS and is uncommon.
- Halt On** : This feature determines whether the computer will stop if an error is detected during power on self test (POST).

## A.5 BIOS FEATURES SETUP

By pressing "Enter" key, while BIOS FEATURES SETUP is highlighted, the following screen Fig. A-4 will appear.

ROM PCI/ISA BIOS (2A4IB???)  
BIOS FEATURES SETUP  
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CFFFF Shadow	: Disabled
External Cache	: Enabled	D0000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D8000-DFFFF Shadow	: Disabled
Boot Sequence	: A, C		
Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup	ESC : Quit	↑ ↓ → ← : Select Item
PCI/VGA Palette Snoop	: Disabled	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F7 : Load Setup Default	

Fig. A-4 BIOS FEATURES SETUP screen.

### Virus Warning :

This feature flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear, in the mean time, you can run anti-virus program to locate the problem. Default values is "Disabled"

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 attempts to access the boot sector or hard disk partition table.

### Swap Floppy Drive :

When "Enabled", the Floppy Driver A & B will be swapped under DOS. Default is "Disabled".

**Security Option :** (Before using this feature you must set the Password first, refer to Page A-8)

Setup : Asking password when enter CMOS Setup.

System : Asking password when enter CMOS Setup and boot system.



## A.6 CHIPSET FEATURES SETUP

Then selecting "CHIPSET FEATURES SETUP" from the Main Menu, the following screen Fig. A-5 will appear.

ROM PCI/ISA BIOS (2A4IB???)  
 CHIPSET FEATURES SETUP  
 AWARD SOFTWARE, INC.

Auto configuration	: Enable	Onboard 496B IDE Port	: Both
ISA Bus Clock	: 7.159MHz	IDE 0 Master Mode	: Auto
LBD# Sample Point	: End of T2	IDE 0 Slave Mode	: Auto
Cache Write Cycle	: 2 CCLK	IDE 1 Master Mode	: Auto
Cache Burst Read Cycle	: 1 CCLK	IDE 1 Slave Mode	: Auto
L2 Cache/DRAM Cycle WS	: 2 CCLK	IDE Prefetch Read Buffer	: Disable
DRAM RAS to CAS Delay	: 3 CCLK	IDE HDD Block Mode	: Enable
DRAM Write Cycle	: 1 WS	Onboard FDC Controller	: Enabled
DRAM Write CAS Pulse	: 2 CCLK	Onboard Serial Port 1	: COM1/3F8
DRAM CAS Precharge Time	: 1 CCLK	Onboard Serial Port 2	: COM2/2F8
DRAM RAS to MA Delay	: 2 CCLK	Onboard Parallel Port	: 378H
DRAM Speed	: Faster	Onboard Parallel Mode	: Normal
DRAM Slow Refresh	: Disable	Parallel Port EPP Type	: EPP1.9
* CPU Internal Cache	: Write Thru	ESC : Quit	↑ ↓ → ← : Select Item
CPU Burst Write	: Disable	F1 : Help	PU/PD/+- : Modify
L2 Cache Policy	: Write Back	F5 : Old Values (Shift)F2	: Color
		F7 : Load Setup Default	

Fig. A-5 CHIPSET FEATURES SETUP screen.

**WARNING :** *The CHIPSET FEATURES SETUP in this screen are provided so that technical professionals can modify the Chipset to suit their requirement. If you are not a technical engineer, do not use this program !*

### \* CPU Internal Cache :

This parameter appeared only when the CPU's Internal Cache possessed "Write Back" capability (such as Cyrix DX/DX2/DX4/5x86 CPUs). It is used for selecting the Internal Cache update scheme, the options are "Write Thru" and "Write Back", default is "Write Thru".

### CPU Burst Write :

This parameter determines the CPU Burst Write Enable function. For P24T / P24D, Cyrix DX / DX2 / DX4 / 5x86 CPUs you could select Enable or Disable. For the other CPUs, this option must be set to "Disable".

### IDE HDD Block Mode :

This feature enhances hard disk performance, making multi-sector transfers instead of one sector per transfer. Most IDE drives, except the very early designs can use this feature. Default is "Enable".

## A.7 POWER MANAGEMENT SETUP

Then selecting "POWER MANAGEMENT SETUP" from the Main Menu, the following screen Fig.A-6 will appear.

ROM PCI/ISA BIOS (2A4IB???)			
POWER MANAGEMENT SETUP			
AWARD SOFTWARE, INC.			
Power Management	: User Define	IRQ 3 (COM 2)	: Enable
PM Control by APM	: Yes	IRQ 4 (COM 1)	: Enable
Video Off Option	: Susp,Stby -> Off	IRQ 5 (LPT 2)	: Enable
Video Off Method	: Blank Screen	IRQ 6 (Floppy Disk)	: Enable
Suspend Switch	: Enable	IRQ 7 (LPT 1)	: Enable
		IRQ 8 (RTC Alarm)	: Disable
		IRQ 9 (IRQ2 Redir)	: Enable
		IRQ 10 (Reserved)	: Enable
		IRQ 11 (Reserved)	: Enable
		IRQ 12 (PS/2 Mouse)	: Enable
		IRQ 13 (Coprocessor)	: Enable
		IRQ 14 (Hard Disk)	: Enable
		IRQ 15 (Reserved)	: Disable
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F7 : Load Setup Default	

Fig. A-6 POWER MANAGEMENT SETUP screen.

### PM Control by APM : (APM : Advanced Power Management)

Yes : The defined Power Management mode won't be executed until all the application softwares running under OS stop working.

No : The defined Power Management mode will be executed once the respective timer(s) is time-out.

### \*\* PM Events \*\*

#### PCI Master Activity through VGA Activity :

These options specify several signals (devices) those monitored by PMU (Power Management Unit). When "Enable", the active state of each device will be monitored, if it retains activity, the system won't enter any green mode.

#### IRQ3 (COM 2) through IRQ15 (Reserved)

These options determine which IRQ(s) is monitored when the system entered green mode, that will resume your system if the device(s) activity. To maximize power management, you should set any IRQ your system is using to "Enable", except IRQ 8 (RTC Alarm) and IRQ 15 (Reserved).

## A.8 PCI CONFIGURATION SETUP

Then selecting "PCI CONFIGURATION SETUP" from the Main Menu, the following screen Fig. A-7 will appear.

ROM PCI / ISA BIOS (2A4IB???)  
 PCI CONFIGURATION SETUP  
 AWARD SOFTWARE, INC.

Slot 1 Using INT#	: AUTO		
Slot 2 Using INT#	: AUTO		
Slot 3 Using INT#	: AUTO		
1st Available IRQ	: 9		
2nd Available IRQ	: 10		
3rd Available IRQ	: 11		
4th Available IRQ	: 12		
PCI IRQ Activated By	: Edge		
PCI IDE 2nd Channel	: Enable		
PCI IDE IRQ Map To	: PCI-AUTO		
Primary IDE INT#	: A		
Secondary IDE INT#	: B		
Master Arbitration Protocol	: Weak	ESC	: Quit
CPU→PCI Mem Post Write Buf	: Enable	F1	: Help
CPU→PCI Memory Burst Write	: Disable	F5	: Old Values
PCI Master Burst Read/Write	: Disable	F7	: Load Setup Default
		↑ ↓ → ←	: Select Item
		PU/PD/+/-	: Modify
		(Shift)F2	: Color

Fig. A-7 PCI CONFIGURATION SETUP screen.

**WARNING :** *The PCI CONFIGURATION SETUP in this screen are provided so that technical professionals can modify the PCI Configuration to suit their requirement. If you are not a technical engineer, do not use this program !*

### PCI IDE IRQ Map To :

PCI-AUTO :

The BIOS will scan for PCI IDE devices and determine the location of the PCI IDE device, then assign IRQ 14 for primary IDE INT#, and assign IRQ 15 for secondary IDE INT#.

### PCI-SLOT1 to PCI-SLOT3 :

For the specified slot, the BIOS will assign IRQ 14 for primary IDE INT#, and assign IRQ 15 for secondary IDE INT#.

### ISA :

The BIOS will not assign any IRQs even if PCI IDE card is found. Because some IDE cards connect the IRQ 14 and 15 directly from ISA slot thru a card. (This card is called Legacy Header)

## A.9 LOAD SETUP DEFAULTS

This option loads the SETUP default values from BIOS default table. By pressing "Enter" key, while "LOAD SETUP DEFAULTS" is highlighted, then presses "Y" and "Enter" key. the SETUP default values will be loaded. The SETUP default settings are the best-case values that should optimize system performance. If CMOS RAM is corrupted, the SETUP DEFAULTS settings are loaded automatically.

## A.10 PASSWORD SETTING

By pressing "Enter" key, while "PASSWORD SETTING" is highlighted, then type the Password and press "Enter" repeat. Enters up to eight alphanumeric characters.

By pressing "Enter" key twice, without any alphanumeric character enters, the PASSWORD will be disabled.

## A.11 IDE HDD AUTO DETECTION

By pressing "Enter" key, while "IDE HDD AUTO DETECTION" is highlighted causes the system to attempt to detect the type of hard disk. If successful, then presses "Y" (or 1, 2, ...) and "Enter" key, it fills in the remaining fields on this menu and the correlated fields in the STANDARD CMOS SETUP menu.

## A.12 HDD LOW LEVEL FORMAT

This option provides an utility program for IDE HDD Low Level Format. Performing the Hard Disk Format will destory any data on the Hard Disk. Back up the Hard Disk(s) before actually performing of these routines.

*Note* : These routines are not valid for a SCSI Disk Drive.

## A.13 SAVE & EXIT SETUP

This option saves all setup values to CMOS RAM & EXIT SETUP routine, by moving the cursor to "SAVE & EXIT SETUP" and pressing "Enter" key, then types "Y" and "Enter" key, the values will be saved, the setup program will be terminated and the system will be reboot.

## A.14 EXIT WITHOUT SAVING

This option exits setup routine without saves any changed values to CMOS RAM, by moving the cursor to "EXIT WITHOUT SAVING" and pressing "Enter" key, then types "Y" and "Enter" key, the setup program will be terminated and the system will be reboot.