5SW

SYSTEM BOARD

(VER. 1.x)

OPERATION MANUAL

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Edition : 1.0

TRADEMARKS

All trademarks used in this manual are the property of their respective owners.

NOTE

The "LOAD SETUP DEFAULTS" function loads the default settings directly from BIOS default table, these default settings are the best-case values that should optimize system performance. This function will be necessary when you accept this system board, or the system CMOS data is corrupted.
By pressing "Enter" key, while "LOAD SETUP DEFAULTS" is highlighted, then presses "Y" and "Enter" key. the SETUP default values will be loaded. (Please refer to the Chapter 5 AWARD BIOS SETUP procedures in this maulal.)

FEATURES

The 5SW system board supports (or includes) the following features:

Pentium P54C/P54CT/P54CS/P55C/P55CT based, PC/AT compatible system board with ISA Bus and PCI Local Bus.

Designed based on the SiS 551X (5511, 5512, 5513) PCI/ISA system chipset and Winbond W83787F (or W83787IF or W83877F) and W83768F I/O chipset.

Supports the most part Pentium CPUs and OverDrive CPUs designed and manufactured by Intel.

Supports adjustable System Clock : 40/50/60/66.6 MHz.

Supports multi-spec. CPU VCC voltage, includes Standard, VR and VRE specification.
Supports VRM (Voltage Regulator Module) 30-Pin Header.

Supports True GREEN function.

Supports PS/2 Mouse connector (option), PS/2 Keyboard connector (option) and AT Keyboard connector.

DRAM Memory   : Two banks, using 4x72-Pin SIMM socket, each bank could be single or double sided, supports 2 MB up to 256 MB main memory. Both standard fast page (FP) mode and Extended Data Out (EDO) memory are supported. Half populated bank (32-bit) is also supported for bank 0.

Cache Memory   : Supports 256/512/1024KB Direct-mapped L2 cache memory. Both Write Back and Write Through cache policy are supported. The SRAM configuration using either burst, pipelined burst or standard (asynchronous) SRAMs. The burst and pipelined burst SRAMs are supported via a 160-Pin slot and the special SRAM modules.

Shadow RAM   : Software-controlled Shadow RAM for video BIOS and optional Adapter   BIOS. (System BIOS Shadow RAM is fixed)

BIOS   : Using AWARD system BIOS, v4.50G or v4.50PG. (Both Normal BIOS and Plug & Play BIOS are supported)

IDE ports   : Supports two channels Master/Slave PCI IDE port, maximum connected four IDE devices, up to Mode 4 timing. Built-in two 8x32 bits FIFOs, support post write and pre-fetch operations.

I/O ports   : Supports two high speed UART ports (W/16550 FIFOs). One multimode parallel port for standard (SPP), enhanced (EPP) and high speed (ECP) modes. One Floppy Disk control port.

IR Port (option)   : Supports IR (Infrared Rays) functions. Both IrDA (HPSIR) and Amplitude Shift Keyed IR (ASKIR) are supported. (Only when the I/O Chip is used W83787IF or W83877F. If the I/O Chip is used W83787F , the IR functions are not supported.)

Expansion slots   : Four 32-bit PCI Local Bus slots and three 16-bit ISA Bus slots.

Dimension   : 4-layers PCB, 220x280mm.

Software   : MS-DOS, WindowsNT, OS2, XENIX, UNIX, NOVELL, CAD/CAM, Windows,
compatibility   Windows 95....etc.

SPECIFICATIONS

Chipset
SiS 551X (5511, 5512, 5513) and Winbond W83787F (or W83787IF or W83877F) and W83768F.

CPU
Intel Pentium processor and OverDrive processor (P54C/P54CT/P54CS/P55C/P55CT)
75/90/100/120/133/150/180/200 MHz.

CPU VCC
Multi-spec. CPU VCC voltage, supports Standard, VR and VRE specification. Supports VRM Header.

System Clock
40/50/60/66.6 MHz adjustable.

Memory
DRAM   : Two banks, each bank could be single or double sided, 2M up to 256 MB. Supports both
         standard fast page (FP) mode and Extended Data Out (EDO) memory. Half populated bank is
         also supported for bank 0.
SRAM   : One bank, 256/512/1024KB Direct-Mapped wirte back cache memory, supports either burst,
          pipelined burst or standard (asynchronous) SRAMs

BIOS
AWARD system BIOS. 128KBx8, EPROM or Flash ROM.
(EPROM for Normal BIOS, Flash ROM for Plug & Play BIOS)

Expansion Slots
PCI Slots : 32-bit x 4 (All Master/Slave)
ISA Slots : 16-bit x 3

IDE Ports
Two channels Master/Slave PCI IDE port, maximum connected 4 IDE Hard Disk and ATAPI CD-ROM
device.

Super I/O Ports
1. Two high speed compatible serial prots (UARTs) W/16550 FIFOs.
2. One parallel port, supports SPP/EPP/ECP mode.
3. One Floppy Disk Control port.

IR Port (option)
One HPSIR and ASKIR compatible IR transmission connector (5-pin).

Mouse and Keyboard
Supports PS/2 Mouse connector (option), PS/2 Keyboard connector (option) and AT Keyboard connector.

Dimension
4-layers PCB, 220mm x 280mm.

Software compatibility
MS-DOS, WindowsNT, OS2, XENIX, UNIX, NOVELL, CAD/CAM, Windows, Windows 95....etc.

PERFORMANCE

With 256KB external Cache Memory (Async.) and 16MB DRAM (FP), Without Autoexec.bat and Config.sys

Test Programs	CPU Type				
	P54C-75	P54C-90	P54C-100	P54C-120	P54C-133
Landmark speed V.2.0	431.21	518.44	574.20	691.25	765.61
Norton S I V8.0	236.7	284.6	315.2	379.5	420.3
Power Meter V.1.7	51.3	61.9	68.4	81.2	90.6
Byte V.2.2 (Desktop Index)	2.48	3.32	3.74	3.71	3.84

Note : The different hardware and software configuration will result in different testing results.

2.   SPECIFICATIONS

CPU
Intel Pentium processor and OverDrive processor (P54C/P54CT/P54CS/P55C/P55CT)
75/90/100/120/133 MHz. and 150/166/180/200 MHz (ideally)

CPU VCC
Multi-spec. CPU VCC voltage, supports Standard, VR and VRE specification.
VRM (Voltage Regulator Module) 30-pin header on board.

WORD SIZE
Data Path : 8-bit, 16-bit, 32-bit, 64-bit

Chipset
SiS 551X (5511, 5512, 5513) and Winbond W83787F (or W83787IF or W83877F) and
W83768F.

System Clock
40/50/60/66.6 MHz adjustable.

Memory
DRAM   : Two banks, each bank could be single or double sided, 2M up to 256 MB. Supports
            both standard fast page (FP) mode and Extended Data Out (EDO) memory. Half
            populated bank (32-bit) is also supported for bank 0.
SRAM   : One bank, 256/512/1024KB. Direct-Mapped wirte back cache memory, supports
            either burst, pipelined burst or standard (asynchronous) SRAMs.

BIOS
AWARD or AMI System BIOS. 128KBx8 Flash ROM, supports Plug & Play BIOS

Expansion Slots
PCI Slots : 32-bit x 4 (All Master/Slave)
ISA Slots : 16-bit x 3

IDE Ports
Two channels Master/Slave PCI IDE port, maximum connected 4 IDE Hard Disk and ATAPI
CD-ROM device.

Super I/O Ports
1. Two high speed compatible serial prots (UARTs) W/16550 FIFOs.
2. One parallel port, supports Normal/EPP/ECP mode.
3. One Floppy Disk Control port.

IR Port (option)
One HPSIR and ASKIR compatible IR transmission connector (5-pin).

Mouse and Keyboard
Supports PS/2 Mouse connector (option), PS/2 Keyboard connector (option) and AT Keyboard connector.

DIMENSION

Width & Length	**:** 220 mm x 280 mm.
Height	**:** 3/4 inches with components mounted, but without expansion boards and cables.
PCB Thickness	**:** 4 layers, 0.05 inches normal.
Weight	**:** 21 ounces.

ENVIRONMENT

Operating Temperature	**:** 10*C to 40*C. (50*F to 104*F)
Required Airflow	**:** 50 linear feet per minute across 80486 CPU.
Storage Temperature	**:** - 40*C to 70*C. (- 40*F to 158*F)
Humidity	**:** 0 to 90% noncondensing.
Altitude	**:** 0 to 10,000 feet.

3. SYSTEM BOARD LAYOUT

5SW Ver. 1.2

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.
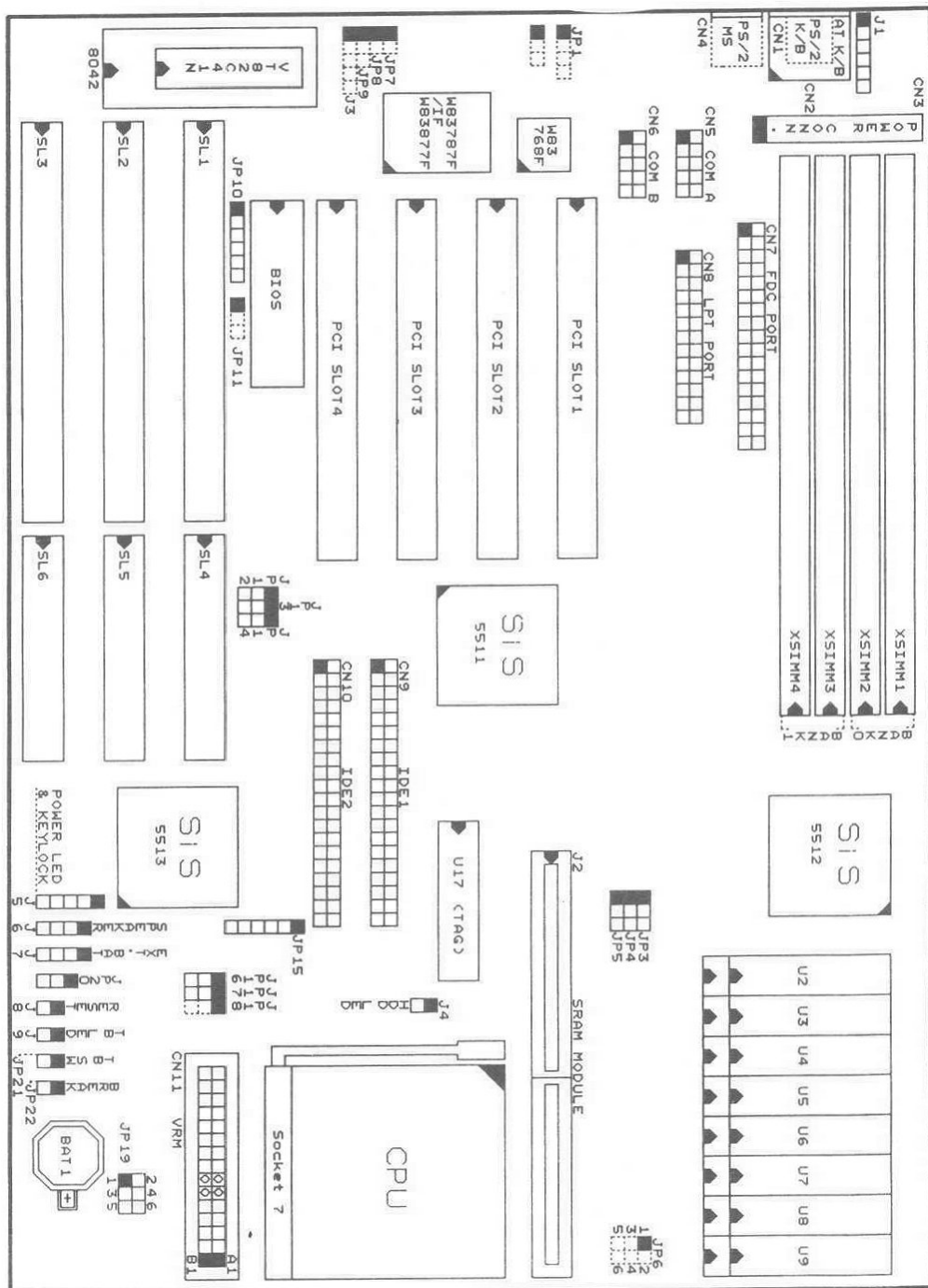
4. HARDWARE SETUP

4.1   UNPACKING

The system board package should contain the following parts:

    The 5SW system board.
    OPERATION MANUAL.
    Cable set for IDE and I/O device.

4.2   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 5SW system board is a simple task, only a few jumpers, connectors, cables and sockets needs to be selected and installed. For the detailed locations of each component please refer to the system board layout-figure appears in the page 3-1.

4.2.1   DRAM INSTALLATION

The 5SW system board will support two banks main memory (bank0 and bank 1) on board, (using four 72-Pin SIMM socket, XSIMM 1-4), each bank could be single or double sided, half populated bank (32-bit) is also supported for bank 0. The installed DRAM SIMM modules type could be
256KB**x**36(32)-S, 512KB**x**36(32)-D, 1MB**x**36(32)-S, 2MB**x**36(32)-D, 4MB**x**36(32)-S,
8MB**x**36(32)-D or 16MB**x**36(32). 2MB up to 256 MB of local memory can be attained. Both standard fast page (FP) mode and Extended Data Out (EDO) memory are supported, and both symmetrical and asymmetrical type DRAMs are supported. The speed of FP DRAMs must be used 70ns or faster than 70ns and the speed of EDO DRAMs must be used 60ns or faster than 60ns. (*Note :S = Single-sided, D = Double-sided)*

There are no jumper for DRAM configuration, the DRAM SIMM modules installation is "Table-Free", that means the SIMM modules could be installed into any bank and any combinations, but note this the 5SW system board could not support the following DRAM combinations :

1. Different DRAM types (EDO or FP) in different SIMMs of each bank.
2. EDO memory interleaved mode.
3. Double-sided half-populated DRAM.
4. Interleaved mode between two different DRAM configurations (sigle-sided/doubled-sided,
    DRAM size, or symmetry/asymmetry).

4.2.2 CACHE MEMORY INSTALLATION AND JUMPER SETUP

The 5SW system board will support one bank direct-mapped L2 cache memory which provides either 256KB, 512KB or 1024KB (1024KB supports by onboard asynchronous SRAMs only) cache memory size. Both Write Back and Write Through cache update mode are supported. The SRAM configuration using either burst, pipelined burst or standard (asynchronous) SRAMs, but they cannot be mixed installation at the same time. The burst and pipelined burst SRAMs are supported via a 160-pin slot and a special SRAM modules. The standard (asynchronous) SRAMs are supported via either the onboard SRAM sockets or the special SRAM modules.

4.2.2.1 ONBOARD CACHE MEMORY CONFIGURATION

The onboard cache memory system just supports the standard (asynchronous) SRAMs which 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, the DATA SRAM type is 32Kx8, 64Kx8 or 128Kx8.

The following table lists the detailed combination and the jumper settings about onboard cache memory size selection.

Cache Size	DATA SRAM U2 through U9	TAG SRAM U17	JP3	JP4
256 KB	eight pieces 32Kx8	8Kx8 or 16Kx8 or 32Kx8	1-2	1-2
512 KB	eight pieces 64Kx8	16Kx8 or 32Kx8	2-3	1-2
1024 KB	eight pieces 128Kx8	32Kx8	2-3	2-3

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

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

Pin-1 of 32-Pin SRAM

For 32-Pin SR

Pin-1 of 28-Pin SRAM

For 28-Pin SRAM
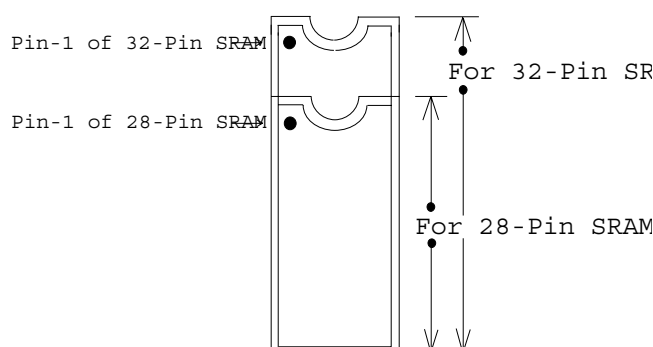
4.2.2.2   SRAM MODULE CACHE MEMORY CONFIGURATION

The SRAM module cache memory configuration using either burst, pipelined burst or standard (asynchronous) SRAMs, the following table lists the jumper settings about SRAMs type selection.

SRAM Module Type	Cache Size	JP5
Asynchronous	256 KB	1-2
SRAM	512 KB	1-2
Burst	256 KB	2-3
SRAM	512 KB	2-3
Pipelined Burst	256 KB	2-3
SRAM	512 KB	2-3

Note : The 5SW system board supports just one bank L2 cache memory, that means you could not use the "onboard cache memory system" and the "SRAM module cache memory system" at the same time.

4.2.3 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 Lithium battery : CR2032)

Pin #	Assignment
	Battery Positive
	Ground

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

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

(C) CN2   AT Keyboard connector

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

(D) CN3   Power connector

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

(E) CN4   PS/2 Mouse connector (option) &   J1   PS/2 Mouse converted connector

Pin #	Assignment	Pin #	Assignment
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		

(F) CN5   COM A (Serial Port 1, UART 1) connector
(COM1/3/4, selected by BIOS setup, using IRQ4 or 3)

Pin #	Assignment	Pin #	Assignment
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)

(G) CN6   COM B (Serial Port 2, UART 2) connector
(COM2/3/4, selected by BIOS setup, using IRQ3 or 4)

Pin #	Assignment	Pin #	Assignment
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)

(H) CN7   Floppy Disk Control Port connector (Using IRQ6, DMA channel 2)

(I) CN8   Parallel Port connector
(Supports I/O address 3BC/378/278, and Normal/EPP/ECP mode, selected by BIOS setup, using IRQ7, ECP using DMA channel 3)

(J) CN9   IDE 1 connector (Primary IDE Port, using DIRQ0)

(K) CN10   IDE 2 connector (Secondary IDE Port, using DIRQ1)

(L) CN11   VRM (Voltage Regulator Module) connector
Note : If the Voltage Regulator Module is not installed, the "pin-A6 & pin-A7 " and "pin-B6 & pin-B7" of CN11 must be connected by a plastic connector plug (mini-jumper) individually.

(M) J2   SRAM Module connector

(N) J3   IR (Infrared Rays) transmission connector
            (Availably, only when the I/O Chip is used W83877F . If the I/O chip is used
            W83787F/IF, the IR functions are not supported and this connector is removed.)

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	+5V DC	3	IR Receive	5	IR Transmit
2	No Connection	4	Ground		

(O) J4   IDE HDD LED connector

Pin #	Assignment
1	Pullup (+5V DC)
2	Signal Pin

(P) J5   Front Panal Power LED & Key-Lock connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Pullup (+5V DC)	3	Ground	5	Ground
2	No Connection	4	Keyboard Lock		

(Q) J6   Speaker connector

Pin #	Assignment	Pin #	Assignmen
1	Speaker Signal	3	Ground
2	Ground	4	+5V DC

(R) J7   External 4.5 Volts battery connector

Pin #	Assignment	Pin #	Assignmen
1	Battery Positive	3	Ground
2	No Connection	4	Ground

(S) J8   Reset Button connector

Pin #	Assignment	Pin1&2	Function
1	Reset Control	Open	No action
2	Ground	Short	Reset

(T) J9   Turbo LED connector

Pin #	Assignment
1	Signal Pin
2	Pullup (+5V DC)

(U) JP21   Turbo Switch connector

Pin #	Assignment	Pin1&2	Function
1	Turbo Control	Open	Turbo
2	Ground	Short	Normal

(V) JP22   External SMI (BREAK) button connector

Pin #	Assignment	Pin1&2	Function
1	Ground	Open	For normal operation
2	SMI Control	Short	To get into Suspend mode

4.2.4 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 used.**

(A) JP3-JP5   Cache memory configuration
Please refer to page 4-2 & page 4-3 for detailed informations.

(B) JP6   Onboard DATA SRAM (asynchronous) VCC voltage selection

Voltage	JP6	Remark
+3.3V DC	3-5 , 4-6	For pure 3.3V SRAM
+5V DC	1-3 , 2-4	For pure 5V and mixed mode SRAM

(C) JP10   ROM BIOS Selection

Pin #	Function
2-3,4-5	For EPROM
2-3,5-6	For +5V FLASH ROM
1-2,5-6	For +12V FLASH ROM

(D) JP12, JP13, JP14   Frequency selection

| Frequency (unit : MHz) | | | JP12 | JP13 | JP14 | Remark |
System	PCI Bus	AT Bus				(CPU Type)
40	33.3	8.0	2-3	1-2	1-2	Reserved
50	33.3	8.0	2-3	2-3	2-3	For P5-75
60	30	7.5	1-2	2-3	1-2	For P5-90/120/150/180
66.6	33.3	8.33	1-2	1-2	2-3	For P5-100/133/166/200

(E) JP15   CPU-to-System Frequency ratio selection

Ratio	JP15	Remark (CPU Type)
3/2 (x 1.5)	1-2 , 5-6	For P5-75/90/100 (default)
2/1 (x 2)	2-3 , 5-6	For P5-120/133
5/2 (x 2.5)	2-3 , 4-5	For P5-150/166
3/1 (x 3)	1-2 , 4-5	For P5-180/200

(F) JP16   CPU Pipelined function selection

Pin #	Function
1-2	CPU Pipelined Disable
2-3	CPU Pipelined Enable (default)

(G) JP17   CPU Internal (L1) Cache Write Back / Write Through selection

Pin #	Function
1-2	CPU Internal Cache Write Back (default)
2-3	CPU Internal Cache Write Through

(H) JP19   CPU VCC voltage Selection

CPU VCC	JP19	Remark
+ 3.3 V	1-2	For standard spec. (default)
+ 3.4 V	3-4	For VR spec.
+ 3.5 V	5-6	For VRE spec.

(I) JP20   CMOS Discharge switch
     Pin #   Function
     1-2   Normal operation (default)
     2-3   Clear CMOS

(J) CN11   Pin A6-A7 and Pin B6-B7
     Pin #   Function
     open   VRM installed
     short   VRM non-installed (default)

(K) Additional jumpers

   (1) While 40-pin Keyboard controller (8042) used, mode selection

Mode	JP1	JP7	JP8	JP11
AT mode	2-3	open	open	1-2
PS/2 mode	1-2 , 3-4	short	short	2-3

   (2) While I/O chip W83877F is used
        (a) JP2   CR address selection
             Pin #   Function
             1-2   3F0H (default)
             2-3   250H

        (b) JP9   I/O chip W83877F function selection
             Pin #   Function
             1-2   W83877F function enable
             2-3   W83877F function disable

5. AWARD BIOS SETUP

5.1 GETTING STARTED

When the system is first powered on or reset, the BIOS will enter the Power-On Self Test routines (POST : Display a copyright message on the first line of the screen followed by a diagnostics and initialization procedure.) (If an EGA or VGA card is installed, the copyright message of the video card maybe displayed on the screen first.) The BIOS will indicate any error or malfunction by a series of beeps or display the error message on screen.

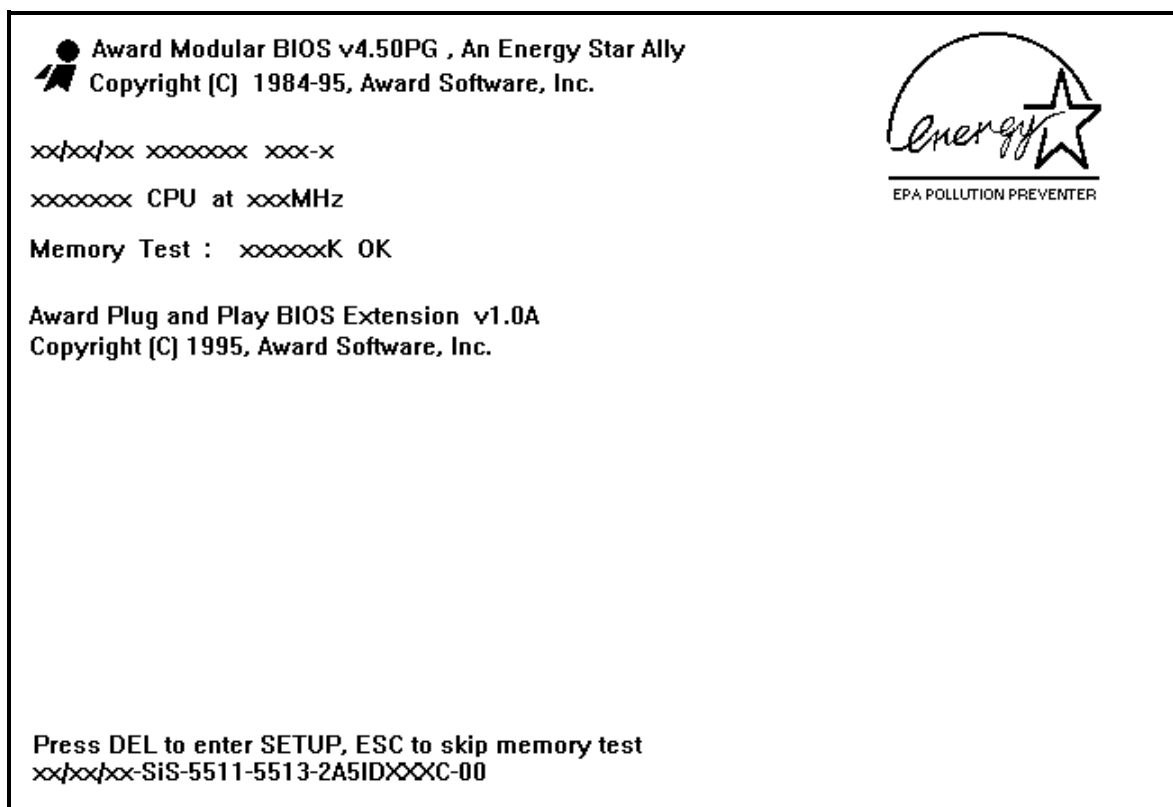Normally, the simulate figure 5-1 will display on the screen when the system is powered on.

Fig. 5-1 Initial Power-On screen.

After the POST routines are completed, the following message appears :

" Press **DEL** to enter SETUP "

To progess the Award BIOS Setup program, press **DEL** key. The simulate screen in figure 5-2 MAIN MENU will be displayed at this time.

5.2 MAIN MENU

```
                    ROM PCI / ISA  BIOS  (2A5DXXX)
                       CMOS  SETUP  UTILITY
                      AWARD  SOFTWARE,  INC.
┌─────────────────────────────────────────────────────────────────┐
│   STANDARD CMOS SETUP            PASSWORD  SETTING                 │
│                                                                   │
│   BIOS  FEATURES  SETUP          IDE  HDD  AUTO  DETECTION         │
│                                                                   │
│   CHIPSET  FEATURES  SETUP       HDD  LOW  LEVEL  FORMAT           │
│                                                                   │
│   POWER  MANAGEMENT  SETUP       SAVE  &  EXIT  SETUP              │
│                                                                   │
│   PCI  &  ONBOARD  I/O  SETUP    EXIT  WITHOUT  SAVING             │
│                                                                   │
│   LOAD  SETUP  DEFAULTS                                            │
├─────────────────────────────────────────────────────────────────┤
│ ESC  :  Quit                              :  Select  Item         │
│ F10  :  Save  &  Exit  Setup      (Shift)F2  :  Change  Color     │
├─────────────────────────────────────────────────────────────────┤
│              Time,  Date,  Hard Disk  Type ...                    │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘
```

Fig. 5-2 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.

5.3 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.
F6	: Loads the BIOS default values from BIOS default table, 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.

The following pages will show the simulate screens of CMOS SETUP, each figure contains the setup items and the default settings of them. Below each figure may or may not be contained a lists of function description for commonly used settings. For the other settings' function description you needed, connet to your supplier please.

5.4 STANDARD CMOS SETUP

ROM PCI / ISA BIOS (2A5IDXXX)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

```
 Date (mm : dd : yy) : Wed, Nov 10 1995
 Time (hh : mm : ss) :  11 : 10 : 10


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.
  Drive B  :  None                          Base Memory :     640 K
                                        Extended Memory :  xxxxxx K
  Video    :  EGA/VGA                      Other Memory :  xxxxxx K
  Halt On  :  All  Errors                  Total Memory :  xxxxxx K

ESC  :  Quit              :  Select  Item          PU/PD/+/-  :  Modify
F1   :  Help         (Shift)F2  :  Change  Color
```

Fig. 5-3 STANDARD CMOS SETUP screen.

MODE :
For IDE hard disks, this 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 used 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 specifition which may not be fully supported by all operation systems. Now it can only be used with the MS-DOS and is uncommon.

Note : Some OSes (like SCO-UNIX) must use "NORMAL" for installation.

5.5 BIOS FEATURES SETUP

```
                    ROM  PCI / ISA  BIOS (2A5IDXXX)
                        BIOS  FEATURES  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           │ 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           │                                          │
│ Memory  Parity  Check    : Disabled       │                                          │
│ Typematic  Rate  Setting : Disabled       │                                          │
│ Typematic  Rate  (Chars/Sec) : 6          │                                          │
│ Typematic  Delay  (Msec) : 250            │ ESC : Quit              : Select Item    │
│ Security  Option         : Setup          │ F1   : Help       PU/PD/+/- : Modify     │
│ PCI/VGA  Palette  Snoop  : Disabled       │ F5   : Old Values   (Shift)F2 : Color    │
│                                           │ F6   : Load  BIOS  Default               │
│                                           │ F7   : Load  Setup  Default              │
└─────────────────────────────────────────┴──────────────────────────────────────────┘
```

Fig. 5-4 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.

CPU Internal Cache :
This option enables CPU's internal (L1) cache memory. If you want to use the internal (L1) cache memory and external (L2) cache memory, this option must be enabled.

External Cache :
This option enables L2 (secondary) external cache memory. If none external cache memory on board you must set this option to "disabled", otherwise, you can select enabled or disabled.

5.6 CHIPSET FEATURES SETUP

ROM PCI / ISA BIOS (2A5IDXXX)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto configuration	: Enable	Slow Refresh (1:4)	: Enabled
		ISA Bus Clock Frequency	: PCICLK/4
L1 Cache Update Mode	: WB	System BIOS Cacheable	: Disabled
L2 Cache Update Mode	: WB	Video BIOS Cacheable	: Enabled
L2 (WB) Tag Bit Length	: 7bits	Memory Hole At 15-16M	: Disabled
Asyn. SRAM Leadoff Tim.	: R3 W4 Ck		
Asyn. SRAM Burst Tim.	: 2 Ck		
Sync. SRAM Leadoff Tim.	: 3 Ck		
DRAM RAS to CAS delay	: 3 Ck		
RAS Active When Refresh	: 6 Ck		
CAS Delay In Posted-WR	: 1 Ck		
FP DRAM CAS Prec. Timing	: 1 Ck		
FP DRAM RAS Prec. Timing	: 4 Ck		
EDO CAS Pulse Width	: R1 W2 Ck		
EDO CAS Precharge Time	: 1 Ck		
EDO MDLE Timing	: 1 Ck	ESC : Quit : Select Item	
EDO BRDY# Timing	: 1 Ck	F1 : Help PU/PD/+/- : Modify	
EDO RAS Precharge Timing	: 3 Ck	F5 : Old Values (Shift)F2 : Color	
EDO RAMW# Power Saving	: Disabled	F6 : Load BIOS Default	
		F7 : Load Setup Default	

Fig. 5-5 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 !*

Auto Configuration :
When "Enabled", this parameter automatically enters and locks some of the optimum values for the chipset and
CPU (Depend on system clock). When "Disaled", this setting allows the values of some parameters may be
changed.

5.7 POWER MANAGEMENT SETUP

```
                        ROM PCI / ISA BIOS (2A5IDXXX)
                         POWER  MANAGEMENT  SETUP
                          AWARD  SOFTWARE, INC.
┌─────────────────────────────────────────┬───────────────────────────────────────┐
│ Power Management      : User Define       │ VGA  Activity            : Enable      │
│ PM Control by APM     : No                │ IRQ 3   (COM 2)          : Enable      │
│ Video Off Option      : Susp,stby -> Off  │ IRQ 4   (COM 1)          : Enable      │
│ Video Off Method      : Blank Screen      │ IRQ 5   (LPT 2)          : Disable     │
│ Suspend Switch        : Enable            │ IRQ 6   (Floppy Disk)    : Enable      │
│ Doze Speed (div by)   : 2                 │ IRQ 7   (LPT 1)          : Enable      │
│ Stdby Speed (div by)  : 3                 │ IRQ 8   (RTC Alarm)      : Disable     │
│                                           │ IRQ 9   (IRQ2 Redir)     : Disable     │
│            PM Timers                       │ IRQ 10  (Reserved)       : Disable     │
│ HDD Off After         : Disable           │ IRQ 11  (Reserved)       : Disable     │
│ Doze Mode             : 20 Min            │ IRQ 12  (PS/2 Mouse)     : Enable      │
│ Standby Mode          : 20 Min            │ IRQ 13  (Coprocessor)    : Disable     │
│ Suspend Mode          : 15 Min            │ IRQ 14  (Hard Disk)      : Enable      │
│                                           │ IRQ 15  (Reserved)       : Disable     │
│            PM Events                       ├───────────────────────────────────────┤
│ COM Ports Activity    : Enable            │ ESC : Quit               : Select Item │
│ LPT Ports Activity    : Enable            │ F1  : Help       PU/PD/+/- : Modify    │
│ HDD Ports Activity    : Enable            │ F5  : Old Values   (Shift)F2 : Color   │
│ PCI/ISA Master Act.   : Enable            │ F6  : Load BIOS Default                │
│ IRQ1-15 Activity      : Enable            │ F7  : Load Setup Default               │
└─────────────────────────────────────────┴───────────────────────────────────────┘
```

Fig. 5-6 POWER MANAGEMENT SETUP screen.

WARNING :   *The POWER MANAGEMENT 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 !*

Power Management :
This setting controls the Power Management functions. "User Define" allows the values of all parameters could be modified. "Min Saving", "Max Saving" or "Optimize" fixed the values of three parameters, including "Doze Mode", "Standby Mode" and "Suspend Mode". "Disable" disabled all Power Management functions. Default is "User Define".

5.8 PCI & ONBOARD I/O SETUP

```
ROM  PCI / ISA  BIOS (2A5IDXXX)
PCI  CONFIGURATION  SETUP
AWARD  SOFTWARE, INC.
```

PnP BIOS Auto-Config	: Enabled	Primary IDE Prefetch	: Disabled
1st Available IRQ	: *10*	Secondary IDE Prefetch	: Disabled
2nd Available IRQ	: *11*	IDE Burst Mode	: Disabled
3rd Available IRQ	: *9*	IDE Post Write	: Disabled
4th Available IRQ	: *12*	IDE HDD Block Mode	: Enabled
PCI IRQ Actived By	: Level		
PCI IDE 2nd Channel	: Enabled	Onboard FDD Controller	: Enabled
PCI IDE IRQ Map To	: PCI-AUTO	Onboard Serial Port 1	: COM1/3F8
Primary IDE INT#	: A	Onboard Serial Port 2	: COM2/2F8
Secondary IDE INT#	: B	Onboard Parallel Port	: 378H
		Onboard Parallel Mode	: Normal
CPU-PCI Post Write Rate	: 3 Ck	Serial Port 1 MIDI	: Disabled
Latency for CPU-PCI	: 1 Ck	Serial Port 2 MIDI	: Disabled
CPU-PCI Burst Mem Write	: Enabled		
CPU-PCI Post Mem Write	: Enabled		
Internal PCI/IDE	: Both	ESC : Quit : Select Item	
IDE Primary Master PIO	: Auto	F1 : Help PU/PD/+/- : Modify	
IDE Primary Slave PIO	: Auto	F5 : Old Values (Shift)F2 : Color	
IDE Secondary Master PIO	: Auto	F6 : Load BIOS Default	
IDE Secondary Slave PIO	: Auto	F7 : Load Setup Default	

Fig. 5-7 PCI CONFIGURATION SETUP screen.

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

PnP BIOS Auto-Config :
When Enabled, this parameter locks (and disappears) several settings (1st Available IRQ through 4th Available IRQ) and adjusts the available IRQs for PCI arbiter automatically. When Disabled, it allows the user to adjust the available IRQs individually. Default is "Enabled".

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 "Enabled".

5.9 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.

5.10 PASSWORD SETTING

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.

5.11 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.

5.12 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.

5.13 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.

5.14 EXIT WITHOUT SAVING

This option exites 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.