MAIN BOARD
User's Guide
(VER : 5AVP3)

User's Manual

Before you start reading the manual,

Table of Contents

Chapter 1 Introduction

This VT82C597AT mainboard combines the advanced capabilities of the VIA Apollo VP3 chipset with a high performance concurrent PCI local bus architecture to provide the ideal platform for unleashing the unsurpassed speed and power of the Intel Pentium® processor, Cyrix® 6x86 and AMD® K5/K6 processors, and can be easily upgraded for 321 pin ZIF socket.

The processor's advanced performance is complemented by a second level write back PB-SRAM up to 512KB and main memory up to 512MB RAM. The main memory is initialed using the board's two 72-pin SIMM sockets and two 168-pin DIMM sockets that accept either the new high performance EDO, BEDO, or Fast Page mode DRAM.

 VT82C597AT VP3 integrates a full set of I/O features on board, including two 16550 UART   compatible serial ports, one EPP/ECP capable port, one floppy disk controller, and one infrared communication controller.   One chip built in Enhanced IDE controller provides convenient, speedy PCI bus Master connection capable of four IDE devices, including Hard disk and CD-ROM.

VIA builds all products to exacting standards, using the highest quality components available. We are proud to provide this system board and hope it brings you years of reliable service.

1-1 Main Features

Socket 7/ 321 Pins for CPU
1. Intel Pentium® P54C/ 55C CPU speed 75- 233 MHz processors
2. Cyrix® 6x86/6x86L/6X86 MX P120+/133+/150+/166+/200+/233+ processors
3. AMD® K5/K6 PR75/90/100/150/166/200/233 processors

☺ **Special Note: Cyrix 200+/233+ need 75MHz, which are very critical to PCI Bus(75/2= 37.5MHz). Excellent quality of PCI add-on cards are required.**

SRAM   * Support on board 512K synchronous PBSRAM.

MEMORY

1. Support synchronous DRAM using 168-pin DIMM modules of 8,16,32, 64MB
2. Take up to 256MB RAM in one bank using 72-pin SIMM modules of 1,2,4,8,
   16,32,64 or 128MB with supports for EDO,BEDO or Fast Page mode memory.

PCI & ISA Slots   *Three 16-bit ISA expansion slots and four 32-bit PCI expansion slots

I/O Functionm
1. Integrated Enhanced PCI local bus IDE controller with two connectors support
   up to four IDE devices such as Hard disk, CD-ROM.
2. Integrated ITE IT8661F/RF multi I/O chipset that offer two
   16550 UART compatible serial ports, one EPP/ECP capable port, one IR port,
   and one Floppy Disk Drive connector.

Flash Rom   * Supports 128KB Flash ROM

PCB SIZE   * PCB size : 20 x 30.5 cm

One AGP Expansion Slot: AGP V1.0 compliant with 1x or 2x mode up to 133 MHz

Note: **VIA Apollo VP3 chipset includes:**
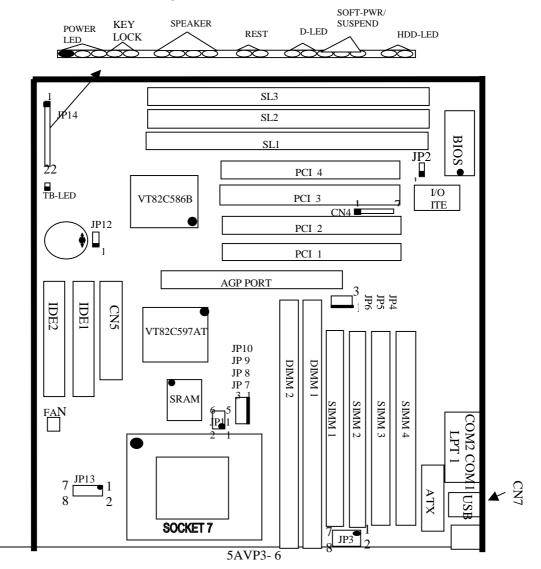1. CPU interface controller   2. Advanced cache controller
3. Integrated DRAM controller   4.   Synchronous PCI local bus interface

5. Integrated power management unit   6. Internal keyboard controller
7. Real-time Clock   8. AGP Controller

Chapter 2 Mother Board Specification
2-1 Motherboard Layout

POWER LED KEY LOCK SPEAKER REST D-LED SOFT-PWR/ SUSPEND HDD-LED

JP14
1
22
TB-LED
VT82C586B
JP12
1
IDE2
IDE1
CN5
VT82C597AT
SRAM
FAN
JP13
7 1
8 2
SOCKET 7

SL3
SL2
SL1
PCI 4
PCI 3
CN4 1 — 7
PCI 2
PCI 1
AGP PORT
3
1 JP6 JP5 JP4
JP10
JP 9
JP 8
JP 7
3 — 1
6 — 5
JP11
2 — 1
DIMM 2
DIMM 1
SIMM 1
SIMM 2
SIMM 3
SIMM 4
7 1
8 JP3 2

JP2
1
BIOS
I/O ITE
COM2 COM1 USB
LPT 1
ATX
CN7

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2-2 Jumper Setting

Intel® Pentium® Processor Installation

CPU Clock	SYS. Clock	JP4	JP5	JP6	JP7	JP8	JP9	JP10	JP11	JP13	Ratio
P54C 75 MHZ 3.3V	50 MHZ	2-3	2-3	2-3	1-2	1-2	1-2	1-2	OPEN	1-2, 5-6, 7-8	1.5X
P54C 90 MHZ 3.3V	60 MHZ	2-3	1-2	1-2	1-2	1-2	1-2	1-2	OPEN	1-2, 5-6, 7-8	1.5X
P54C 100 MHZ 3.3V	66 MHZ	1-2	1-2	1-2	1-2	1-2	1-2	1-2	OPEN	1-2, 5-6, 7-8	1.5X
P54C 120 MHZ 3.3V	60 MHZ	2-3	1-2	1-2	2-3	1-2	1-2	1-2	OPEN	1-2, 5-6, 7-8	2X
P54C 133 MHZ 3.3V	66 MHZ	1-2	1-2	1-2	2-3	1-2	1-2	1-2	OPEN	1-2, 5-6, 7-8	2X
P54C 150 MHZ 3.3V	60 MHZ	2-3	1-2	1-2	2-3	2-3	1-2	1-2	OPEN	1-2, 5-6, 7-8	2.5X
P54C 166 MHZ 3.3V	66 MHZ	1-2	1-2	1-2	2-3	2-3	1-2	1-2	OPEN	1-2, 5-6, 7-8	2.5X
P55C 166 MHZ 2.8/3.3V	66 MHZ	1-2	1-2	1-2	2-3	2-3	1-2	1-2	1-2, 3-4, 5-6	7-8	2.5X
P54C 180 MHZ 3.3V	60 MHZ	2-3	1-2	1-2	1-2	2-3	1-2	1-2	OPEN	1-2, 5-6, 7-8	3X
P54C 200 MHZ 3.3V	66 MHZ	1-2	1-2	1-2	1-2	2-3	1-2	1-2	OPEN	1-2, 5-6, 7-8	3X
P55C 200 MHZ 2.8/3.3V	66 MHZ	1-2	1-2	1-2	1-2	2-3	1-2	1-2	1-2, 3-4, 5-6	7-8	3X
*P55C 233 MHZ 2.8/3.3V	66 MHZ	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2, 3-4, 5-6	7-8	3.5X

AMD® K5/K6 Processor Installation

CPU Clock	SYS.Clock	JP4	JP5	JP6	JP7	JP8	JP9	JP10	JP11	JP13	Ratio
K5-PR75 3.52V	50 MHZ	2-3	2-3	2-3	1-2	1-2	1-2	1-2	OPEN	1-2,3-4,5-6,7-8	1.5X
K5-PR90/PR120 3.52V	60 MHZ	2-3	1-2	1-2	1-2	1-2	1-2	1-2	OPEN	1-2,3-4,5-6,7-8	1.5X
K5-PR100/PR133 3.52V	66 MHZ	1-2	1-2	1-2	1-2	1-2	1-2	1-2	OPEN	1-2,3-4,5-6,7-8	1.5X
K5-PR166 3.52V	66 MHZ	1-2	1-2	1-2	2-3	2-3	1-2	1-2	OPEN	1-2,3-4,5-6,7-8	2.5X
K6-PR166 2.9/3.3V	66 MHZ	1-2	1-2	1-2	2-3	2-3	1-2	1-2	1-2,3-4, 5-6	1-2,7-8	2.5X
K6-PR200 2.9/3.3V	66 MHZ	1-2	1-2	1-2	1-2	2-3	1-2	1-2	1-2,3-4, 5-6	1-2,7-8	3X
K6-PR233 3.2/3.3V	66 MHZ	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2,3-4, 5-6	5-6,7-8	3.5X
K6-PR233 3.3/3.3V	66 MHZ	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2, 3-4, 5-6	1-2, 5-6, 7-8	3.5X
K6-PR266 2.2/3.3V	66 MHZ	1-2	1-2	1-2	2-3	1-2	2-3	1-2	1-2, 3-4, 5-6	2-3	4X
K6-PR300 2.2/3.45V	66 MHZ	1-2	1-2	1-2	2-3	2-3	2-3	1-2	1-2, 3-4, 5-6	2-3	4.5X

Cyrix® 6x86 Processor Installation

CPU clock	SYS. Clock	JP4	JP5	JP6	JP7	JP8	JP9	JP10	JP11	JP13	Ratio
120+ M1 .3.52V	50 MHZ	2-3	2-3	2-3	2-3	1-2	1-2	2-3	OPEN	1-2,3-4,5-6,7-8	2X
150+ M1 3.52V	60 MHZ	2-3	1-2	1-2	2-3	1-2	1-2	2-3	OPEN	1-2,3-4,5-6,7-8	2X
166+ M1 3.52V	66 MHZ	1-2	1-2	1-2	2-3	1-2	1-2	2-3	OPEN	1-2,3-4,5-6,7-8	2X
6X86L 150 2.8/3.3V	60 MHZ	2-3	1-2	1-2	2-3	1-2	1-2	2-3	1-2,3-4, 5-6	7-8	2X
6X86L 166 2.8/3.3V	66 MHZ	1-2	1-2	1-2	2-3	1-2	1-2	2-3	1-2,3-4, 5-6	7-8	2X
6X86L 200 2.8/3.3V	75 MHZ	1-2	2-3	1-2	2-3	1-2	1-2	2-3	1-2,3-4, 5-6	7-8	2X
6X86MX 166 2.9/3.3V	**66 MHZ**	**1-2**	**1-2**	**1-2**	**2-3**	**1-2**	**1-2**	**2-3**	**1-2,3-4, 5-6**	**1-2,7-8**	**2X**
6X86 MX166 2.9V/3.3V	**60 MHZ**	**2-3**	**1-2**	**1-2**	**2-3**	**2-3**	**1-2**	**2-3**	**1-2, 3-4, 5-6**	**1-2, 7-8**	**2.5X**
6X86 MX 200 2.9V/3.3V	**66 MHZ**	**1-2**	**1-2**	**1-2**	**2-3**	**2-3**	**1-2**	**2-3**	**1-2, 3-4, 5-6**	**1-2, 7-8**	**2.5X**
6X86MX 200 2.9/3.3V	**75 MHZ**	**1-2**	**2-3**	**1-2**	**2-3**	**1-2**	**1-2**	**2-3**	**1-2,3-4, 5-6**	**1-2,7-8**	**2 X**
6X86MX 233 2.9/3.3V	**75 MHZ**	**1-2**	**2-3**	**1-2**	**2-3**	**2-3**	**1-2**	**2-3**	**1-2,3-4, 5-6**	**1-2,7-8**	**2 .5X**
MII 300 2.9/3.3V	**66 MHZ**	**1-2**	**1-2**	**1-2**	**1-2**	**1-2**	**1-2**	**2-3**	**1-2, 3-4, 5-6**	**1-2, 7-8**	**3.5X**

NOTE: EXPLANATION OF JUMER SETTING

1. JP2 - Flash ROM Voltage Selector

Description	JP2
5V (SST,Winbond)	1-2
12V (Intel,MXIC)	2-3

2. JP3 - DIMM Voltage Selector

Description	JP3
5V DIMM	1-2, 3-4
3.3V DIMM	5-6, 7-8

3. JP4-JP6 - CPU Speed Selector

Jumper	50MHz	60MHz	66MHz	75MHz
JP4	2-3	2-3	1-2	1-2
JP5	2-3	1-2	1-2	2-3
JP6	2-3	1-2	1-2	1-2
PCICLK	25	30	33.3	37

4. JP7-JP9 - CPU/BUS Ratio

Ratio	JP7	JP8	JP9
1.5X	1-2	1-2	1-2
2X	2-3	1-2	1-2
2.5X	2-3	2-3	1-2
3X	1-2	2-3	1-2
3.5X	1-2	1-2	1-2
4X	2-3	1-2	2-3
4.5X	2-3	2-3	2-3

5. JP10 –Cache Function Selector

JP10	Description
1-2	Interface Burst for Intel, AMD, CPU
2-3	Linear Burst for Cyrix & IBM CPU

6. JP12 - CMOS Selector

JP12	Description
1-2	Normal (default)
2-3	Clear CMOS (clear password)

7. P13 - CPU Voltage Selector

JP13	VCORE
7-8	2.8V
1-2, 7-8	2.9V
5-6, 7-8	3.2V
1-2, 5-6, 7-8	3.3V
1-2, 3-4, 5-6 7-8	3.5V
3-4	2.2V
1-2	2.1V
1-2, 3-4, 5-6	2.7V

2-3 Connectors

1. CN4 - Infrared Connector : IR

Pin	Signal Name
1	IRRX
2	Ground
3	IRTX
4	VCC
5	IRRXH
6	VCC
7	GND

2. USB: USB(Universal Serial Bus) Connector

USB Pin Out	
USB 1	USB 2
PIN 1 +5V	PIN2 +5V
PIN 3 USBP0-	PIN6 USBP1-
PIN5 USBP0+	PIN6 USBP1+
PIN7 GND	PIN8 GND

3. Others

MOUSE- PS/2 Mouse Connector
KBD- PS/2 Keyboard Connector
CN3 - External PS/2 Mouse Connector
CN 7 - USB Connector (OPTIONAL)
CN8 - Printer Port Connector
CN9 - Floppy Disk Connector
IDE1 - Primary IDE Connector
IDE2 - Secondary IDE Connector
COM1, 2 - Serial Ports Connector

2-4 DRAM Configuration

System memory RAM is comprised of industrial standard 72-pin Single In-line Memory Modules (SIMMs) and .   Burst Extended Data Out (BEDO) and Extended Data Out (EDO) memory are the latest DRAM chip designs that perform a lot better than the Fast Page mode DRAM type. With BEDO and EDO memory, CPU accesses to memory is 10% to 15% faster. The VT82C580VP3 is able to support standard FPM (Fast Page Mode), EDO (Extended Data Out), or BEDO (Burst Extended Data Out); memory can be installed in a variety of config., as shown in the following table:

Total Memory	Bank 0/1 (SIMM1,SIMM2)	Bank 2/3 (SIMM3,SIMM4)	Bank2/3 (DIMM1)	Bank4/5 (DIMM2)
8MB	4MB & 4MB			
8MB		4MB & 4MB		
8MB			4MB	4MB
8MB			8MB	
8MB				8MB
12MB			4MB	8MB
12MB			8MB	4MB
16MB	4MB & 4MB	4MB & 4MB		
16MB	8MB & 8MB			
16MB		8MB & 8MB		
16MB			8MB	8MB
16MB			16MB	
16MB				16MB
16MB	4MB & 4MB		8MB	
16MB	4MB & 4MB			8MB
16MB		4MB & 4MB		8MB
24MB	8MB & 8MB		8MB	
24MB	8MB & 8MB			8MB
24MB		8MB & 8MB		8MB
32MB	8MB & 8MB	8MB & 8MB		
32MB	8MB & 8MB		16MB	
32MB	8MB & 8MB			16MB
32MB		8MB & 8MB		16MB
32MB			16MB	16MB
32MB			32MB	
32MB				32MB
40MB	4MB & 4MB		32MB	
40MB	4MB & 4MB			32MB
40MB		4MB & 4MB		32MB
40MB			32MB	8MB
40MB			8MB	32MB

Total	SIMM 1 & 2	SIMM 3 & 4	DIMM 1	DIMM 2
48MB	8MB & 8MB		32MB	
48MB	8MB & 8MB			32MB
48MB	16MB & 16MB		16MB	
48MB	16MB & 16MB			16MB
48MB		16MB & 16MB		16MB
48MB			16MB	32MB
48MB			32MB	16MB
64MB	16MB & 16MB	16MB & 16MB		
64MB	16MB & 16MB		32MB	
64MB	16MB & 16MB			32MB
64MB		16MB & 16MB		32MB
64MB			32MB	32MB
64MB			64MB	
64MB				64MB
72MB	4MB & 4MB		64MB	
72MB	4MB & 4MB			64MB
72MB		4MB & 4MB		64MB
72MB	32MB & 32MB		8MB	
72MB	32MB & 32MB			8MB
72MB		32MB & 32MB		8MB
72MB			8MB	64MB
80MB	8MB & 8MB	32MB & 32MB		
80MB	32MB & 32MB	8MB & 8MB		
80MB	8MB & 8MB		64MB	
80MB	8MB & 8MB			64MB
80MB		8MB & 8MB		64MB
80MB	32MB & 32MB		16MB	
80MB	32MB & 32MB			16MB
80MB		32MB & 32MB		16MB
80MB			16MB	64MB
96MB	16MB & 16MB	32MB & 32MB		
96MB	16MB & 16MB		64MB	
96MB	16MB & 16MB			64MB
96MB		16MB & 16MB		64MB
96MB	32MB & 32MB		32MB	
96MB	32MB & 32MB			32MB
96MB		32MB & 32MB		32MB
96MB			32MB	64MB
128MB	32MB & 32MB	32MB & 32MB		
128MB	32MB & 32MB		64MB	
128MB	32MB & 32MB			64MB
128MB		32MB & 32MB		64MB
128MB			64MB	64MB
128MB			128MB	
128MB				128MB

⚠ **Please note that SIMM 3 & SIMM 4 and DIMM 1 belong to the same bank, so they can not be used at the same time.**

⚠ **Do not mix 3.3DIMM with 5V SIMM. Its better for 5V DIMM with 5V SIMM.**

Chapter 3   BIOS Setup

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS ram so data will be retained even when the power is turned off.   In general, the information saved in the CMOS ram stay unchanged unless there is config. change in the system, such as hardisk driver replacement or changes of new equipment.

It is possible that CMOS has a battery failure which causes data loss in CMOS ram.   If so,   re-entering system config. parameters becomes necessary.

TO ENTER SETUP PROGRAM

Power on the computer and press <Del> key immediately, which brings you into BIOS CMOS SETUP UTILITY.

ROM PCI/ISA BIOS (2A5LEL19) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD SETUP DEFAULTS	SAVE & EXIT SETUP
	EXIT WITHOUT SAVING
ESC : Quit	↑↓→←: Select Item
F10 : Save & Exit Setup	(Shift)F2 : Change Color

The menu displays all the major selection items and allows user to select any of shown items.   The selection is made by moving cursor (press any direction key) to the item and press "enter" key.   An on line helps message is displayed at the bottom of the screen as cursor is moving to various items which provides user better understanding of each function.   When a selection is made, the menu of selected item will appear. Thus, the user can modify associated configuration parameters.

3-1 Standard CMOS setup

```
                    ROM PCI/ISA BIOS (2A5LEL19)
                      STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC.
 Date (mm:dd:yy) : Wed, Dec 10  1 1997
 Time (hh:mm:ss) :  11: 19: 26
 HARD DISKS       TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE
 Primary Master :   Auto    0    0    0       0      0      0   Auto
 Primary Slave :    Auto    0    0    0       0      0      0   Auto
 Secondary Master : Auto    0    0    0       0      0      0   Auto
 Secondary Slave :  Auto    0    0    0       0      0      0   Auto

 Driver A : 1.44M, 3.5 in
 Driver B : None              ┌─────────────────────────────┐
 Floppy 3 Mode Support: Disabled  Base Memory     :     640K
 Video : EGA/VGA              Extended Memory  :   64512K
 Halt On : All Errors         Other Memory     :     384K
                              ─────────────────────────────
                              Total Memory     :   65536K
 ──────────────────────────────────────────────────────────
   ESC : Quit          ↑↓→← : Select Item     PU/PD/+/- : Modify
   F1 : Help              (shift)F2 : Change Color
```

The Standard CMOS setup screen is displayed as above. System BIOS
automatically detects memory size. No changes are necessary since it
has a few items for setting.   Each item may have one or more option
settings. It allows you to change the system Date and Time, IDE hard
disk, floppy disk drive types for drive A: and B: boot up video display
mode, and POST error handling selection. 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.

Hard Disk Configurations

Type :
> Select from "1" to "45" to fill in remaining fields with redefined values of disk
> drives. Select "User" to fill in the remaining fields. Select "Auto" to detect
> the HDD type automatically.

Size :
> The hard disk size. The unit is Mega Byte

Cyls :
> The cylinder number of the hard disk

Head :
> The read/write head number of hard disk. The range is from
> "1" to "16"

Preccomp :
> The cylinder number at which the disk drive changes the
> written timing

Landz :

The cylinder number that the disk drive heads (read/write) are seated when The disk drive is parked

Sector :

The sector number of each track defined on the hard disk. The range is from "1" to "64."

Mode :

Select "AUTO" to detect the mode type automatically. If your hard disk supports the LBA mode, select "LBA" or "Large". However, if your hard disk cylinder is more than 1024 and does not support the LBA function, you have to set at "Large". Select "Normal" if your hard disk supporting cylinder is below 1024.

3-2 BIOS Features Setup

ROM PCI/ISA BIOS (2A5LEL19)
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, 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		
Gate A20 Option	: Normal		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
IDE Second Channel Control	: Enabled		
PS/2 Mouse Function Control	: Enabled		
PCI/VGA Palette Snoop	: Disabled	ESC : Quit ↑↓→← : Select Item	
OS Select for DRAM>64MB	: Non-OS2	F1 : Help PU/PD/+/- : Modify	
Report No FDD For Win95	: No	F5 : Old Values (Shift)F2 : Color	
		F7 : Load Setup Defaults	

Selecting the "BIOS FEATURE SETUP" option in the CMOS setup utility menu allows user to change system related parameters in the display menu. This menu shows all of the manufacturer's default values of SV-P55V. Again, user can move the cursor by pressing direction keys and <PgDn> or <PgUp> key to modify the parameters. Pressing [F1] key to display help message of the selected item.   The setup program also provides 2 convenient ways to load the default parameter data from CMOS [F7] area if shown data is corrupted. This provides the system with a capability to recover from any possible error.

Virus Warning:
When enabled, it assigns the BIOS to monitor the master boot sector and the DOS boot sector of the first hard disk drive. The options are: Enabled, Disabled (Default)

CPU Internal Cache:
When enabled, it improves the system performance. Disable this item when testing or trouble-shooting. The options are: Enabled (Default), Disabled

External Cache:
When enabled, it supports an optional cache SRAM. The options are: Enabled (Default), Disabled.

Quick Power On Self Test:
When enabled, it allows the BIOS to bypass the extensive memory test. The options are : Enabled, Disabled (Default).

Boot Sequence:
Allows the system BIOS to try first to boot the operating system from the selected disk drive. The options are : A, C, SCSI (Default); C, A, SCSI; C, CDROM, A; CDROM, C, A; D, A, SCSI; E, A, SCSI; F, A, SCSI; SCSI, A, C; SCSI, C, A; C only; LS/ZIP, C.

Swap Floppy Drive:
When enabled, it allows you to switch the order in which the operating system accesses the floppy drives during boot up. The options are : Enabled, Disabled (Default)

Boot Up Floppy Seek:
When enabled, it assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands. The options are : Enabled (Default), Disabled

Boot Up Numlock Status:
When set to On, it allows the BIOS to automatically enable the Num Lock function when the system boots up. The options are: On (Default), Off.

Port 92H Fast A20G:
When enabled, it allows the A20G bus line signal generated from the chipset 82C586 PC/AT to directly pass to port 92H, instead of the keyboard controller. It will speed up the system performance. The options are fast, Normal (Default).

Typematic Rate Setting:
The term "typematic" means that when a keyboard key is held down, the character is repeatedly entered until the key is released. When this item is enabled, you may change the typematic repeat rate. The options are : Disabled (Default), Enabled

Typematic Rate (Chars/Sec):
It sets the rate of a character repeat when the key is held down. The options are: 6 (Default), 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec):
It sets the delay time before a character is repeated. The options are: 250 (Default), 500, 750, 1000 millisecond.

Security Option:
Allows you to set the security level of the system. The options are :
Setup (Default), System.

PCI/VGA Paiette Snoop:
When enabled, it allows you to install an enhanced graphics adapter
card. If your graphics adapter card does not support the Palette Snoop
function, please set at Disable to avoid system malfunction. The
options are: Enabled, Disabled (Default).

Video BIOS Shadow:
When enabled, it allows the BIOS to copy the video ROM code of the
add-on video cards to the system memory for faster access. The options
are : Enabled (Default), Disabled.

C8000-CBFFF to DC000-DFFFF Shadow:

When enabled, it allows the BIOS to copy the BIOS ROM code of the
add-on card to system memory for faster access. It may improve the
performance of the add-on card. Some add-on cards will not function
properly if it's BIOS ROM code is shadowed. To use these options
correctly, you need to know the memory address range used by the
BIOS ROM of each add-on card. The options are: Enabled, Disabled
(Default).

3-3 Chipset Features Setup

ROM PCI/ISA BIOS (2A5LEL19) **CHIPSET FEATURES SETUP** **AWARD SOFTWARE, INC.**

```
Bank 0/1 DRAM Timing        : 70 ns          On Chip USB:  Disabled
Bank 2/3 DRAM Timing        : 70ns
Bank 4/5 DRAM Timing        : 70ns
SDRAM Cycle Length          : 2
SDRAM Bank Interleave       :  2 Bank
DRAM Read Pipeline          : Enabled
CacheSustained 3T write     : Enabled
Cache Rd+CPU Wt Pipeline    : Enabled
Read Around Write           : Enabled
Cache Timing                :  Fast

Video BIOS Cacheable        :  Enabled
System BIOS Cacheable       : Enaabled
Memory Hole At 15MB Addr.   : Disabled    _____
AGP Aperture Size           : 256M        ESC : Quit   ↑↓→←  : Select item
                                          F1 : Help            PU/PD/+/- : modify
                                          F5 : Old Values      (Shift)F2 : Color
                                          F7 : Load Setup Defaults
```

Video BIOS Cacheable:
When enabled, it allows the system to use the video BIOS codes C0000H-C7FFFH from cache, instead of the slower DRAMs or ROMs. Video BIOS must be shadowed first. The options are: Enabled (Default), Disabled.

System BIOS Cacheable:
When enabled, it allows the ROM area E0000H-FFFFFH to be cacheable when cache controller is activated. The options are: Enabled (Default), Disabled.

Memory Hold At 15MB Addr.:
When enabled, the memory hole at the 15MB address will be relocated to the 15~16MB address range of the ISA cycle when the processor accesses the 15~16MB address area. When disabled, the memory hole at the 15MB address will be treated as a DRAM cycle when the processor accesses the 15~16MB address. The options are: Enabled, Disabled (Default).

Sustained 3T Write:
The cache architecture adopts Write Through. When Write Through is enabled, the performance is better under most application environment because the VP3 FIFO queue is deep. The options are: Enabled, Disabled (Default)

Read/Write Pipeline:
Turn on Read/Write Pipeline operation to increase performance.

DRAM Timing Control:
It allows you to speed up the data access of 82C597AT.

For example:	DRAM type	60ns	70ns
	FP-7		V
	EDO-6	V	
	EDO-7		V

The options are: Turbo, Fast, Medium, Normal.

3-4 Power Management Setup

ROM PCI/ISA BIOS (2A5LEL19)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

```
Power Management      : User Defined        Primary INTR          : On
PM Control by APM     : Yes                 IRQ3  (COM 2)         : Primary
Video off Option      : Suspend->Off        IRQ4  (COM 1)         : Primary
Video off Method      : V/H SYNC+ Blank     IRQ5  (LPT 2)         : Primary
Modem Use IRQ         : 3                   IRQ6  (Floppy Disk)   : Primary
Soft-Off by PWRBTN    : Instant- Off        IRQ7  (LPt 1)         : Primary
**PM Timers **                             IRQ8  (RTC Alarm)     : Disabled
HDD Power Down        : Disabled            IRQ9  (IRQ2 Redir)    : Secondary
Doze Mode             : Disabled            I RQ10 (Reserved)     : Secondary
Suspend Mode          : Disabled            IRQ11 (Reserved)      : Secondary
        **PM Events**                       IRQ12  (PS/2 Mouse)   : Primary
VGA                   : Off                 IRQ13  (Coprocessor)  : Primary
LPT & COM             : LPT/COM             IRQ14  (Hard Disk)    : Primary
HDD & FDD             : ON                  IRQ15  (Reserved)     : Disabled
DMA/Master            : OFF
Modem Ring Resume     : Disabled            ESC : Quit   ↑↓→←        : Select Item
RTC Alarm Resume      : Disabled            F1 : Help          PU/PD/+/- : Modify
                                            F5 : Old Values    (Shift) F2 : Color
                                            F7 : Load Setup Defaults
```

Power Management:
When enable, it allows you to use Power Management features.

PM Control by APM:
The option "**No**" allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting "**Yes**" allows the BIOS to wait for APM's prompt before it enters Doze mode, Standby mode, or Suspend mode. If APM is installed, it will prompt BIOS to set the system into the power saving mode after all tasks are done.

Video off Option:
This feature provides the selections of the video display power saving mode. The option "**Suspend -> Off**" allows the display blanks if the system enters Suspend mode. The option "**All modes -> Off**" allows the video display banks if the system enters Doze mode or Suspend mode. The option "**Always On**" allows the video display to stay in Standby mode even the system enters Doze or Suspend mode.

Video Off Method:
The option "**V/H SYNC+ Blank**" allows the BIOS to blank off screen display by turning off the V-Sync signals sent from add-on VGA card. "**DPMS Supported**" allows the BIOS to blank off screen display by your add-on VGA card which supports DPMS. (Display Power Management Signaling function). "**Blank Screen**" allows the BIOS to blank screen display by turning off the red-green-blue signals.

Conserve Mode:

When the Doze Mode of the system being happened, the Doze Mode is handled by hardware not by SMI function.

Modem use IRQ:
When the system is in green function, modem wakes up the system through IRQ.

HDD Power Down:
Selecting "Disabled" will turn off the hard disk drive (HDD) motor.
Selecting "1Min ...15Min" allows you to define the HDD idle time before the HDD enters Power Saving mode. The option "When Suspend" lets the BIOS turn the HDD motor off when the system is in Suspend mode. The options "1Min ... 15Min" and "When Suspend" will not work concurrently. When HDD is in Power Saving Mode, any access to the HDD will wake the HDD up.

Doze Mode:
When disabled, the system will not enter Doze mode. The specified time option define the idle time the system takes before it enters Doze mode.

Suspend Mode:
When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode.

VGA:
Selecting "ON" will enable the power management timers when a "no activity" events is
detected in the VGA. Selecting "OFF" to disable the PM timer even if a "no activity" event is detected.

LPT & COM:
Selecting "**LPT & COM**" will enable the power management timers when a "no activity"
event is detected in the LPT and COM ports. Selecting "**LPT**" ("**COM**") will enable the power management timers when a "no activity" event is detected in the LPT (COM) ports.
Selecting "**NONE**" to disable the PM timer even if a "no activity" event is detected.

HDD & FDD:
Selecting "ON" will enable the power management timers when a "no activity" event is detected in the hard disk drive and floppy disk drive.

Selecting "OFF" to disable the PM timer event if a "no activity" event is detected.

DMA/master:
When the master is working, the system will not have SMI signal until the master is finished.

Primary INTR:
When enabled, you can choose any IRQ#.

IRQ#:
When set at "**Primary**" the processor will power down only after the BIOS detects a "no IRQ activity" during the time specified by the Suspend time. If set at "**Secondary event"**
the system will distinguish whether an interrupt accesses an I/O address or not. If it does, the system enters the standby mode. If not, the system enters the dreaming mode; that is the system goes back full-on status but leaves the monitor blank. For instance, if the system connects to a LAN and receives an interrupt from its file server, the system will enter the dreaming mode to execute the corresponding calling routine.

3-5 PNP/PCI Configuration

ROM PCI/ISA BIOS (2A5LEL19)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

```
PNP OS Installed           : No        CPU to PCI Write Buffer    : Enabled
Resources Controlled By    : Manual    PCI Dynamic Bursting       : Enabled
Reset Configuration Data   : Disabled   PCI Master  0 WS Write     : Enabled
ACPI I/O Device Node       : Disabled   PCI Delay Transaction      :Enabled
IRQ-3   assigned to : Legacy ISA        PCI Master Read Prefetch   : Enabled
IRQ-4   assigned to : Legacy ISA        PCI#2 Access #1 Retry      : Disabled
IRQ-5   assigned to : PCI/ISA PnP       AGP Master 1 WS Wrrte      : Enabled
Q-7    assigned to : Legacy ISA         AGP Master 1 WS Read       : Disabled
IRQ-9   assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP        PCI IRQ Actived By         : Level
IRQ-11 assigned to : PCI/ISA PnP        Assign IRQ For USB         : Enabled
IRQ-12 assigned to : PCI/ISA PnP        Assign IRQ VGA             : Disabled
IRQ-14 assigned to : Legacy ISA
IRQ-15 assigned to : Legacy ISA
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 Valucs  (Shift) F2   : Color
DMA-6 assigned to : PCI/ISA PnP         F7  : Load Setup Defaults
DMA-7 assigned to : PCI/ISA PnP
```

PCI IRQ Actived By:
If your IDE cards is triggered by edge, set it at "Edge". The options are:
Level, Edge (Default).

PCI IDE IRQ Map To: `
Set to auto to allow the system BIOS to automatically detect which
interrupt is used by the PCI master drive. The options are: PCI-AUTO
(Default), PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4, ISA.

CPU to PCI Write Buffer:
When enabled, it allows data and address access to the internal buffer of
82C586B, so the processor can be released from the waiting state. The
options are: Enabled (Default), Disabled.

PCI Dynamic Bursting:
When enabled, the PCI controller allows Bursting PCI to transfer if the
consecutive PCI cycles come with the address falling in the same 1KB
space.   This improves the PCI bus through-put. The options are:
Enabled (Default), Disabled.

PCI Master 0 WS Write:
When enabled, it allows a zero-wait-state-cycle delay when the PCI
master drive writes data into DRAM. The options are: Enabled,
Disabled (Default).

3-6 Load Setup Defaults

Selecting this field loads the factory defaults for BIOS and Chipset
Features which the system automatically detects.

3-7 Integrated Peripherals

ROM PCI/ISA BIOS (2A5LEL19)
INTEGRATED PERIPHEALS
AWARD SOFTWARE, INC.

OnChip IDE first channel	: Enabled	Onboard Parallel Port	: 378/IRQ7
Onchip IDE second channel	: Enabled	Parellel Port Mode	: SPP
IDE Prefetch Mode	: Enabled		
IDE HDD Block Mode	: Enabled		
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
		ESC : Quit ↑↓→← : Select Item	
Onboard FDC Controller	: Enable	F1 : Help PU/PD/+/- : Modify	
Onboard Serial Port 1	: 3F8/IRQ4	F5 : Old Values (Shift)F2 : Color	
Onboard Serial Port 2	: 2F8/IRQ3	F7 : Load Setup Default	
IR Address Select	: Disable		

OnChip IDE First Channel:
When enabled, it allows the IDE driver to use the first channel of the primary
IDE.

OnChip IDE Second Channel:
When enabled, it allows the IDE drive to use the second channel of the primary
IDE.

IDE Prefetch Mode:
When enabled, it allows the system BIOS to utilize the prefetch buffer of
the onboard IDE controller to prefetch the next sequential data of the
current access.

IDE Primary Slave PIO:
The default value is Auto.
Auto: BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD
            accessing mode.7
Mode 0-4 : Manually set the IDE accessing mode.

IDE Secondary Master PIO:
The default value is Auto.
Auto   : BIOS will automatically detect the Onboard Secondary Master
PCI IDE HDD accessing
            mode.
Mode 0-4 : Manually sets the IDE accessing mode.

IDE Primary Master PIO:

The default value is Auto.

IDE Secondary Slave PIO:
The default value is Auto.

Onboard FDC Controller:
The default value is Enabled.

Enabled : Enabled the onboard I/O Chip's floppy drive interface controller.
Disabled : Disabled the onboard I/O Chip's floppy drive interface controller.
When use on-card
        ISA FDC's controller.

Onboard Serial Port 1:
The field allows the user to select the serial port. The default value is AUTO.
COM1: Enable onboard serial port1 and address is COM1/3F8H
COM2: Enable onboard serial port1 and address is COM2/2F8H
COM3: Enable onboard serial port1 and address is COM3/3E8H
COM4: Enable onboard serial port1 and address is COM4/2E8H
Disabled: Disable onboard I/O Chip's Serial port 1.
AUTO : BIOS will automatically detect the Onboard Serial Port.

Onboard Serial Port 2:
The field allows the user to select the serial port. The default value is AUTO.
COM1: Enable onboard serial port1 and address is COM1/3F8H
COM2: Enable onboard serial port1 and address is COM2/2F8H
COM3: Enable onboard serial port1 and address is COM3/3E8H
COM4: Enable onboard serial port1 and address is COM4/2E8H
Disabled: Disable onboard I/O Chip's Serial port 1.
AUTO : BIOS will automatically detect the Onboard Serial Port.

Onboard Parallel Port:
The field allows the user to select the LPT port. The default value is
378H/IRQ7.
378H : Enable onboard LPT port and address is 378H and IRQ7
278H : Enable onboard LPT port and address is 278H and IRQ5
3BCH : Enable onboard LPT port and address is 3BCH and IRQ7
Disabled : Disable onboard I/O Chip's LPT port

3-8 Supervisor Password

1. If CMOS is corrupted or the option is not used, a default password stored in the ROM will be used. The screen will display the following message:

Enter Password

Press the [Enter] key to continue after proper password is given.

2. If CMOS is corrupted or the option is used earlier, but the user wishes to change default password, the SETUP UTILITY will display a message and ask for a confirmation.

Confirm Password:

3.After pressing the [Enter] key (ROM password if the option was not used) or current password (user-defined password), the user can change the password and store new one in CMOS RAM. A maximum of 8 characters can be entered.

3-9 IDE HDD Auto Detection

The "**IDE HDD AUTO DETECTION**" utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically.   Yet, now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP.   You don't need the"IDE HDD AUTO DETECTION" utility. The BIOS will auto-detect the hard disk size and model on display during POST.

ROM PCI/ISA BIOS (2A5LEL19)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISK TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master	343	665	16	65535	664	63	Normal
Primary Slave							
Secondary Master							
Secondary Slave							

Note: HDD modes

The Award BIOS supports 3 HDD modes: Normal, LBA&LARGE.

Normal mode:

Generic access mode either in BIOS or IDE controller will make any transformation during accessing. The maximum number of cylinders, head & sectors for Normal mode are 1024, 16 & 63.

```
        no.Cyclinder    (1024)
      x no.Head          (16)
      x no.Sector        (63)
      x no.per sector    (512)
      ------------------------------
        528 Megabytes
```

If user sets in Normal mode, the maximum accessible HDD size will be 528 Megabyte even though its physical size may be greater than that !

LBA (Logical Block Addressing) mode:

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, head & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logic address described by sector, head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

```
        no.Cylinder     (1024)
      x no.Head          (255)
      x no.Sector        (63)
      x bytes.per sector  (512)
      ------------------------------
        8.4 Gigabytes
```

LARGE mode:

Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user does not want LBA). The Award BIOS provides another alternative to support these kinds of LARGE mode:

CYLS.	HEADS	SECTOR	MODE
1120	16	59	Normal

560   32   59   Large

BIOS tricks DOS (or other OS) that the number of cylinders is less than
1024 by dividing it into 2. At the same time, the number of heads is
multiplied by 2. Averse transformation process will be made inside
INT 12h in order to access the right HDD addess the right HDD
address !

               no.Cylinder   (1024)
           x no.Head   (32)
           x no.Sector   (63)
           x bytes.per sector (512)
           ----
               1 Gigabytes

Note:
**To support LBA or LARGE mode of HDDs, there must be some
softwares involved. All these softwares are located in the Award HDD
Service Routine (INT 13h). It may fail to access a HDD with LBA
(LARGE) mode selected if you are runninging under a operational
system which replaces the whole INT 13h. UNIX operationl systems do
not support either or LARGE and must utilize the standard mode.
UNIX can support drives larger than 528MB.**

3-10 Save & Exit Setup

After you have made changes under Setup, press <ESC> to return to the
main menu. Move cursor to "Save and Exit Setup," or press "F10" and
then press "Y" to change the CMOS setup. If you dio not change
anything, press <ESC> again or move cursor to "Exit Without Saving"
and press "Y" to retain the Setup settings. The following message will
appear at the center of the screen to allow you to save data to CMOS
and exit the setup utility.

                SAVE to CMOS and EXIT (Y/N)?

3-11 Exit Without Saving

The "**EXIT WITHOUT SAVING**" option will bring you back to
normal boot up procedure without saving any into CMOS RAM. All of

the old data in the CMOS will not be destroyed. If you select this
feature, the following message will appear at the center of the screen to
allow you to exit the setup utility without saving CMOS modifications:

Quit Without Saving(Y/N)?