USER'S MANUAL
BEK-V429S

Table of Contents

CHAPTER 1
Introduction

1.1 VESA Local Bus Introduction

Welcome to the New VESA Local Bus 486 board!

The VESA VL-Bus is a proposed standard from the Video Electronics Standard Association committee.

Due to the increasing speed of CPU performance in recent years, traditional I/O capability has become insufficient, and has become a burden to enhancing system performance. Therefore, how to expand the I/O capability with the earlier AT bus and the current EISA and MCA bus has become a point of much concern.

The local bus has existed in the system for a long time, but no offical standard has been introduced until it was standardized by the VESA VL-Bus version 1.0, announced in September, 1992.

This standard is mainly provided for PC systems, motherboards, Video Graphics cards, and Chipset manufacturers, to increase the performance of graphics display and peripherals.

The VL-Bus 486 motherboard is a high performance motherboard that supports 486 CPU family such as : 486/487SX-20/25, 486DX/25/33/50, 486DX2-50/66/80 and 486DX4-75/100/120MHz

This manual provides basic information to help you better understand your VESA VL-Bus 486 motherboard. If you are in any way unsure of how to change or upgrade your system, please contact your retail agent for further guidance.

1.2 Green PC Introduction

As PC has gradually become important equipment for many usage in commerce, eduction and family. It is necessary in the era of information. The demand is getting grown up drastically in the world. After turning on, PC may be under unprocessing condition on many situations. Provided that all of PC under this idle period, the working frequency can be slow down, it will save a lot of electric power.

Most of power in the world is transfered by fired plant which brings a lot of pollution. In order to solve this problem, we design some smart functions on PC which decide under what circumstance its process can be slow down but not turned off to decrease pollution and we call it "GREEN PC".

With the growth of eclogical awareness around the globe, especially in the form of the "ENERGY STAR PROGRAM", has spawned a new wave of green PC products. These new machines embody environmental concerns in that they save considerable amounts of energy. Most of the world's electricity comes from coaloil-fired power plants. The energy savings of green PCs reducess pollution in two ways: First by reducing current energy needs and secondly by reducing the need to build new "DIRTY" power plants.

2. WHAT IS LIGHT GREEN?

Initially, Most green PCs are the light green variety because their CPUs could only partially slow down during idle periods, usually to 8MHz, even in SMM mode. These CPUs include the 486DX4/DX2/DX/SX/SL from INTEL and AMD, CYRIX.

3. AND DEEP GREEN:

A deep green PCs CPU can virtually shut down (ZERO MHz) and display no signal during idle periods, with power savings approaching 90% These savings are made possible by new (ER) CPUs USING SMM (SYSTEM MANAGEMENT MODE) Produced by INTEL and CYRIX. These CPUs not ONLY conserve energy when idle, they also reduce energy consumption by up to 50% during normal operation. These deep green CPUs include INTEL SLE486SX. SLE486DXII. SLE486DX. CYRIX...ETC., they can down to 0MHz as long as motherboard can support SMM mode. But at present this kind of CPU is very few in the market. Although some CPUs support SMM mode, but it is still printed old mark and difficult to be distinguished.

SMM

The function of SMM is based on system management interrupt(SMI), A nonmaskable interrupt that lets a 486 CPU slow down, suspend or shut down various system components. After SMI is activated. The current CPU state is saved in a separate protected memory region-system management RAM. When the system power management routine is complete or interrupted, the CPU is restored from that memory transparently or interrupted. The CPU is restored from that memory, transparently to the OS as well as application software.

3

CHAPTER 2
Features of the Mainboard

OPTI 486 SINGLE CHIP FOR TRUE GREEN FUNCTION VL/ISA

2.1 Introduction
The mainboard is a cache-base IBM PC/AT Compatible system board. The board is tailored to be 2/3 baby-AT size. With the highly integrated OPTI 895(895A) Chip set, The board is layed out in only 4 layer but still with high performance and reliability.

2.2 Features
- This mainboard supports true green function
- CPU Socket for INTEL's 80486DX4/DX2/DX/SX/SL Enhanced, P24D/P24T CPU and CYRIX, AMD upto 120MHz CPU & normal 486 CPU
- Built in power management unit, support for SMM Mode feature
- Provide external SWITCH control pin, With GREEN POWER cut off VGA MONITOR power
- Secondary cache memory 64K/128K/256K/512K
- SIMM Socket with 30pinx4+72pinx3 Memory support from 1MB to 128MB
- ISA SLOT 16BITX8
- VESA SLOT 32BITX3
- AWARD BIOS

2.3 System Performance

Software/CPU Type	486DX4-100	486DX4-75	486DX2-80	486DX2-66
Landmark V2.00	361.62Mhz	272.43Mhz	267.63Mhz	222Mhz
Power Meter V1.81	29.3Mips	21.5Mips	25.2Mips	21.1Mips
Norton V6.0	197.3Index	148.6Index	173Index	143.5Index

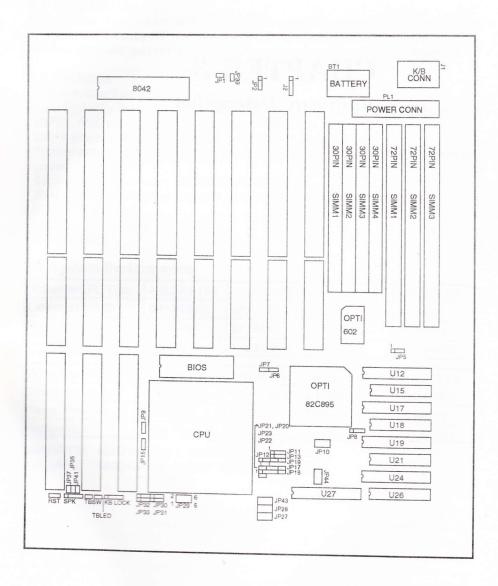| Software/CPU Type	486DX2-50	486DX-40	486DX-33	486DX4-120
Landmark V2.00	167.24Mhz	131.94Mhz	111Mhz	401.44Mhz
Power Meter V1.81	15.8Mips	13Mips	10.8Mips	33.9Mips
Norton V6.0	108.1Index	86.5Index	71.7Index	237.8Index

Using INTEL   486DX4-100/75, 486DX-33
Using AMD   486DX4-120, 486DX2-80/66/50, 486DX-40

CHAPTER 3
Hardware Description

3.1 Location of Components and Jumpers on the Mainboard

3.2 Jumpers and Connectors Summary

Before installing your 486VESA system board, make sure the jumpers and connectors are set to the correct position.

CPU TYPE SELECTION

CPU TYPE	JP9	JP10	JP11	JP12	JP13	JP15	JP19	JP20	JP21	JP22	JP30	JP32	JP23	JP17	JP18	JP29
INTEL SL																
SX-25	OP	CLS	1-2	1-2	OP	OP	OP	CLS	CLS	OP	OP	OP	2-3	OP	OP	1-3, 2-4
SX-33	OP	CLS	1-2	1-2	OP	OP	OP	CLS	CLS	OP	OP	OP	2-3	CLS	CLS	1-3, 2-4
SX2-50	OP	CLS	1-2	1-2	OP	OP	OP	CLS	CLS	OP	OP	OP	2-3	OP	OP	1-3, 2-4
DX-33	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
DX2-50	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	OP	OP	1-3, 2-4
DX2-66	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
DX4-75	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	OP	OP	3-5, 4-6
DX4-100	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
DX4-100(EW)	OP	CLS	2-3	1-2	1-2	CLS	1-2	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
INTEL NOL																
SX-25	OP	OP	1-2	OP	OP	OP	OP	OP	OP	OP	OP	OP	2-3	OP	OP	1-3, 2-4
SX-33	OP	OP	1-2	OP	OP	OP	OP	OP	OP	OP	OP	OP	2-3	CLS	CLS	1-3, 2-4
DX-33	OP	OP	1-2	OP	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
DX2-66	OP	OP	1-2	OP	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
INTEL P24T	OP	CLS	2-3	1-2	1-2	OP	OP	CLS	CLS	OP	OP	2-3	1-2, 3-4	CLS	CLS	1-3, 2-4
INTEL P24D	OP	CLS	2-3	1-2	1-2	CLS	1-2	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
CYRIX																
DX-33	CLS	OP	2-3	2-3	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
DX-40	CLS	OP	2-3	2-3	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	OP	1-3, 2-4
DX2-50	CLS	OP	2-3	2-3	1-2	OP	OP	OP	OP	CLS	OP	OP	1-2, 3-4	OP	OP	1-3, 2-4
DX2-66(+5V)	CLS	OP	2-3	2-3	1-2	OP	OP	OP	OP	OP	CLS	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
DX2-80	CLS	OP	2-3	2-3	1-2	OP	OP	OP	OP	OP	CLS	OP	1-2, 3-4	CLS	OP	3-5, 4-6
DX4-100	CLS	OP	2-3	2-3	OP	OP	OP	OP	OP	OP	CLS	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
5X86-100	OP	CLS	2-3	1-2	1-2	CLS	1-2	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
5X86-120	OP	CLS	2-3	1-2	1-2	CLS	1-2	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	OP	3-5, 4-6
AMD SL																
DX4-120SV8B	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	OP	3-5, 4-6
DX4-100SV8B	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	OP	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
5X86-133(X5)	OP	CLS	1-2	1-2	1-2	OP	OP	CLS	CLS	OP	1-2	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
AMD NOL																
DX-33	OP	OP	1-2	OP	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	CLS	1-3, 2-4
DX-40	OP	OP	1-2	OP	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	OP	1-3, 2-4
DX2-66NV8T	OP	OP	1-2	OP	1-2	OP	OP	2-3	OP	OP	OP	OP	1-2, 3-4	CLS	CLS	3-5, 4-6
DX2-80NV8T	OP	OP	1-2	OP	1-2	OP	OP	2-3	OP	OP	OP	OP	1-2, 3-4	CLS	OP	3-5, 4-6
DX4-100NV8T	OP	OP	1-2	OP	1-2	OP	OP	OP	OP	OP	OP	OP	1-2, 3-4	CLS	CLS	3-5, 4-6

CPU CLOCK SELECTION

	SX/DX-25 DX2-50 DX4-75	SX/DX-33 DX2-66 DX4-100 5X86-133/100	DX-40 DX2-80 DX4-120 5X86-120	DX-50
JP17	OPEN	CLOSE	CLOSE	OPEN
JP18	OPEN	CLOSE	OPEN	CLOSE

CPU VOLTAGE SELECTION

	5V	3.3V
JP29	1-3, 2-4	3-5, 4-6

Power Connector (PL1)

The power connector is used to connect power lines and power good signal from the power supply's P8 & P9 connectors to the system board.
The pin assignments are:

PINOUT	ASSIGNMENTS
1	POWER GOOD
2	+5V
3	+12V
4	-12V
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	-5V
10	+5V
11	+5V
12	+5V

Keyboard Connector (J1)

The keyboard connector is a 5-pin DIN connector
The pin assignments are:

PINOUT	ASSIGNMENTS
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	NO CONNECTION
4	GROUND
5	+5V

9

External Battery (J2)

PINOUT	ASSIGNMENTS
1	BATTERY POSITIVE
2	NO CONNECTION
3	GROUND
4	GROUND

Battery Selection:

BATTERY SELECTION	JP2
DISCHARGE	1-2
CHARGE	2-3
EXTERNAL BATTERY	OPEN

Reset Switch Connector (S1)

PINOUT	ASSIGNMENTS
1	RESET INPUT
2	GROUND

Speaker Connector (JP38)

PINOUT	ASSIGNMENTS
1	SPEAK OUT
2	GROUND
3	GROUND
4	+5V

Turbo Switch Connector (JP36)

PINOUT	ASSIGNMENTS
1	TURBO INPUT
2	GROUND

Turbo LED Connector (JP34)

PINOUT	ASSIGNMENTS
1	LED OUT
2	GROUND

Keylock Connector (J22)

PINOUT	ASSIGNMENTS
1	LED OUTPUT
2	NO CONNECTION
3	GROUND
4	KEYLOCK
5	GROUND

VESA VL-BUS Identifier Jumpers
The identifier jumpers allow VL-BUS slave to identify the speed of the host CPU.

CPU SPEED	JP37
<=33MHZ	OPEN
> 33MHZ	CLOSE

WRITE WAIT STATE	JP35
0WS	OPEN
1WS	CLOSE

LRDY	JP33
0 WAIT	2-3
1 WAIT	1-2

11

Other Jumper Setting

JP1	ON : Color Monitor
	OFF : Mono monitor
JP39	Support external GREEN POWER control pin cut off VGA monitor
JP41	sleep LED
JP6	Sleep Button
JP7	ON (DEFAULT)
JP31	2-3(DEFAULT)

3.3 Installation of Cache Memory

Cache RAM Size

MEMORY	64K	128K	256K	256K	512K
TAG RAM	8K8*1	8K8*1	16K8*1 or 32K8*1	16K8*1 or 32K8*1	32K8*1
Bank0	8K8*4	32K8*4	32K8*4	64K8*4	128K8*4
Bank1	8K8*4	EMPTY	32K8*4	EMPTY	EMPTY

TAG RAM : U27
Bank0 : U12, U17, U19, U24
Bank1 : U15, U18, U21, U26

Cache RAM Jumper Setting

	64K DOUBLE BANK	128K SINGLE BANK	256K DOUBLE BANK	256K SINGLE BANK	512K SINGLE BANK
JP8	2-3	1-2	2-3	1-2	1-2
JP27	OPEN	CLOSE	CLOSE	CLOSE	CLOSE
JP28	OPEN	OPEN	CLOSE	CLOSE	CLOSE
JP43	OPEN	OPEN	OPEN	OPEN	CLOSE

JP44 : 1-2 (TAG RAM : 8K8, 32K8)
      2-3 (TAG RAM : 16K8)

V 429s

3.4 Installation of RAM Modules

SIMM Memory Configuration

Table 1.

MEMORY TOTAL	SIMM1-4 30 PIN	SIMM1 72 PIN	SIMM2 72 PIN	SIMM3 72 PIN	JP5
1MB	256K	X	X	X	2-3
2MB	256K	1M	X	X	2-3
4MB	1M	X	X	X	2-3
4MB	256K	1M	1M	1M	2-3
5MB	256K	4M	X	X	2-3
6MB	256K	1M	4M	X	2-3
8MB	1M	4M	X	X	2-3
8MB	1M	X	4M	X	2-3
10MB	256K	1M	4M	4M	2-3
12MB	1M	X	4M	4M	2-3
16MB	4M	X	X	X	2-3
16MB	1M	4M	4M	4M	2-3
17MB	256K	16M	X	X	2-3
20MB	1M	16M	X	X	2-3
20MB	1M	X	16M	X	2-3
32MB	4M	16M	X	X	2-3
64MB	4M	16M	16M	16M	2-3

Table 2.

MEMORY TOTAL	SIMM1 72 PIN	SIMM2 72 PIN	SIMM3 72 PIN	JP5
1MB	1M	X	X	1-2
4MB	4M	X	X	1-2
8MB	4M	4M	X	1-2
12MB	4M	4M	4M	1-2
16MB	16M	X	X	1-2
20MB	4M	16M	X	1-2
32MB	16M	16M	X	1-2

CHAPTER 4

BIOS Setup

AWARD BIOS
CMOS SETUP UTILITY

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously press <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system dose not boot, an error message will be displayed and you will again be asked to,

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

15

Control Keys

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc Key	Main Menu - Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
PgUp / "+" key	Increase the numeric value or make changes
PgDn / "–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

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

16

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
                              ROM ISA BIOS
                           CMOS SETUSP UTILITY
                          AWARD SOFTWARE, INC.

  ┌──────────────────────────────────┬──────────────────────────────┐
  │  STANDARD CMOS SETUP             │  PASSWORD SETTING            │
  │  BIOS FEATURES SETUP             │  IDE HDD AUTO DETECTION      │
  │  CHIPSET FEATURES SETUP          │  SAVE & EXIT SETUP           │
  │  POWER MANAGEMENT SETUP          │  EXIT WITHOUT SAVING         │
  │  LOAD BIOS DEFAULTS              │                              │
  │  LOAD SETUP DEFAULTS             │                              │
  ├──────────────────────────────────┼──────────────────────────────┤
  │  Esc : Quit                      │  ↑ ↓ →← : Select Item        │
  │  F10 : Save & Exit Setup         │  (Shift)F2 : Change Color    │
  ├──────────────────────────────────┴──────────────────────────────┤
  │                 Change/Set/Disable Password                      │
  └──────────────────────────────────────────────────────────────────┘
```

Standard CMOS Setup

This setup page includes all the items in a standard compatible BIOS.

BIOS Features Setup

This setup page includes all the item of Award special enhanced features.

Chipset Features Setup

This setup page includes all the items of chipset special features.

Power Management Setup

This category determines how much power consumption for system after selecting below items. Default value is Disable.

Load BIOS Defaults

BIOS defaults indicates the most appropriate value of the system parameter which the system would be in minimum performance. The OEM manufacturer may change the defaults through MODBIN before the binary image burn into the ROM.

Load Setup Defaults

Chipset defaults indicates the values required by the system for the maximum perform-ance. The OEM manufacturer may change to defaults through MODBIN before the binary image burn into the ROM.

Password Setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

IDE HDD Auto Detection

Automatically configure hard disk parameters.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

4.2 CMOS Setup Utility

Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
                        ROM ISA BIOS
                     STANDARD CMOS SETP
                     AWARD SOFTWARE, INC.

  Date (mm:dd:yy)  : Sun, Jun 18 1995
  Time (hh:mm:ss)  : 13 : 31 : 13

  HARD DISKS      TYPE  SIZE   CYLS  HEAD  PRECOMP  LANDZ SECTOR    MODE

  Primary Master  : User  421   1010   16     65535   1009     51   NORMAL
  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    : 1.44M, 3.5 in.                Base Memory     :    640K
                                             Extended Memory : 19456K
  Video      : EGA/VGA                       Other Memory    :    384K
  Halt On    : All Errors                    Total Memory    : 20480K

       Esc : Quit          ↑ ↓ →← : Select Item      PU/PD/+/- : Modify
       F1  : Help          (Shift)F2 : Change Color
```

Date

The date format is <day>, <date> <month> <year>

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec
year	The year, depend on the year of BIOS

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

19

Primary Master/Primary Slave, Secondary Master/Secondary Slave

This category identifies the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhonced IDE BIOS. Type 1 to Type 45 are predefined. Type User is user-definable.

Press PgUp/<+> or PgDn/<-> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

CYLS.	number of cylinders
HEADS	number of head
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	HDD access mode

If a hard disk has not been installed select NONE and press <Enter>.

Drive A type/Drive B type

This category identifies the types of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K, 5.25in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

This category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Error Halt

This category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All errors	The system boot will not be stopped for any error that may be detectd.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error, it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

This category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

21

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

Other Memory

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most use for this area is Shadow RAM.

Total Memory

System total memory is the sum of basic memory, extended memory, and other memory.

<div align="center">

ROM ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

</div>

Vinus 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 Floopy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On	E0000-EFFFF Shadow	: Disabled
Boot Up System Speed	: High		
IDE HDD Block Mode	: Disabled	ESC : Quit ↑ ↓ →← : Select Item	
Gate A20 Option	: Fast	F1 : Help PU/PD/+/- : Modifty	
Memory Parity Check	: Disabled	F5 : Old Values (Shift) F2 : Color	
Security Option	: Setup	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

4.3 BIOS Features Setup

BIOS Features Setup Menu

Virus Warning

This category 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 the following error message will appear, in the mean time, you can an run anti-virus program to locate the problem.

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

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

CPU Internal Cache/External Cache

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

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

This category determines which drive computer first searches for the disk operating system (i.e., DOS). Default value is A,C.

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.

Boot Up Floppy Seek

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

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

Boot Up NumLock Status

The default value is On.

On	Keyboard is number keys
Off	Keyboard is arrow keys

Boot Up System Speed

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

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

IDE HDD Block Mode

Enabled	Enable IDE HDD Block Mode
Disabled	Disable IDE HDD Block Mode

24

Gate A20 Option

Normal	Keyboard
Fast	Chipset

Memory Parity Check

Enabled	Normal memory parity check. If system DRAM has no parity bit, then the system will display "RAM parity error".
Disabled	Ignore memory parity check even the DRAM has no parity bit. The system will not display "RAM parity error".

Security Option

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

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

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

Video BIOS Shadow

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

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000-CFFFF Shadow/E0000-EFFFF Shadow

These categories determine whether optional ROM will be copied to RAM by 16K byte or 32K byte per/unit and the size depends on chipset.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

25

4.4 Chipset Features Setup

Chipset Features Setup Menu

```
                        ROM ISA BIOS
                  CHIPSET FEATURES SETUP
                   AWARD SOFTWARE. INC.

  Auto Configuration      : Enabled
  AT Clock Option         : Sync
  Synchronous AT Clock    : CLK/4
  DRAM Read Wait State    : 5-4-4-4
  DRAM Write Wait State   : 0 WS
  Cache Read burst        : 3-2-2-2
  Cache Write Wait State  : 0 WS
  Hidden Refresh Option   : Enabled
  System BIOS Cacheable   : Disabled
  Video BIOS Cacheable    : Disabled


                              ESC  : Quit          ↑ ↓ → ← : Select Item
                              F1   : Help      PU/PD/+/-   : Modifty
                              F5   : Old Values (Shift)  F2    : Color
                              F6   : Load BIOS Defaults
                              F7   : Load Setup Defaults
```

4.5 Power Management Setup

Power Management Setup Menu

```
                        ROM ISA BIOS
                  POWER MANAGEMENT SETUP
                   AWARD SOFTWARE, INC.

  PM Mode            : SMI Green      Sleep Button      : Enable
  Power Management   : User Define    LDEV Detection    : Disable
  Doze timer         : Disable        LREQ Detection    : Disable
  Sleep timer        : Disable        Video Detection   : Disable
  HDD Standby Timer  : Disable        HDD Detection     : Enable
  Sleep Clock        : Stop Clock     FDD Detection     : Enable
  CRT Sleep          : BLANK CRT      DRQ0 Detections   : Enable
  PM wait for APM    : Enable
  IRQ3 Detection     : Enable
  IRQ4 Detection     : Enable
  IRQ5 Detection     : Enable
  IRQ6 Detection     : Enable
  IRQ7 Detection     : Enable
  IRQ8 Detection     : Disable
  IRQ9 Detection     : Enable        ESC  : Quit          ↑ ↓ → ← : Select Item
  IRQ10 Detection    : Enable        F1   : Help      PU/PD/+/-   : Modifty
  IRQ11 Detection    : Enable        F5   : Old Values (Shift)  F2    : Color
  IRQ12 Detection    : Enable        F6   : Load BIOS Defaults
  IRQ14 Detection    : Disable       F7   : Load Setup Defaults
  IRQ15 Detection    : Disable
```

4.6 Password Setting

Password Setting Menu

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

ENTER PASSWORD:

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. you may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. One the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

If you sleect System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

4.7 IDE Auto-Detect & HDD Utility

IDE HDD Auto Detection Menu

Automatically configure hard disk paramenters.

ROM ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	:	421	1010	16	65535	1009	51	NORMAL
Primary Slave	:							
Secondary Master	:							
Secondary Slave	:							

Select Secondary Slave Option (N=Ksip) : N

OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
1(Y)	0	0	0	0	0	0	NORMAL

ESC : Skip

Note: HDD Modes

(a) NORMAL Mode

If user set his HDD to NORMAL Mode, the maximum accessible HDD size will be 528 Megabytes even though its Physical size may be greater than that!

(b) LBA Mode

A New HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder number into its own physical address inside the HDD.

(c) 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 do not want LBA). The Award BIOS provides another alternative to support these kinds of HDD!

28

APPENDIX:

If user wants to get the best performance.
Please modify "CHIPSET FEATURES SETUP" as follows:
Auto Configuration   : Disabled
Cache Write Wait State   : 0 WS