GT-500V

Pentium-based All-In-One
5 1/4" DiskSize SBC

User's Manual

Acknowledgments

All trademarks and registered trademarks mentioned herein are the property of their respective owners.

Packing List

_____

Before getting started, please ensure that the following materials are included:

Pentium-Based All-In-One Single Board Computer
Utility Disks
- VGA Driver & Utility disks
- Ethernet driver & Utility disk
- Updating BIOS Utility disk
- Audio driver & Utility disk
- Video Capture driver & Utility disk

Accessories
- FDD cable
- HDD cable
- COM / Printer cables with bracket x 1
- Composite Video input with bracket x 1
- User's Manual

If any of above mentioned is missed or damaged, please contact with your supplier immediately.

Table of Contents

Chapter 1

Introduction

This manual describes the GT-500V single board computers. Chapter 1 provides general information and specifications. Chapter 2 contains dimensional drawings and jumper setting information. Chapter 3 describes component installations. Chapter 4 describes AWARD BIOS setup information and BIOS POST code. Chapter 5 contains the information of display unit. Appendix A provides sample code for the watchdog timer. Appendix B list the connectors pin assignment. Appendix C describes how to install M_system Disk On Chip into the system. Appendix D describes the updating the system BIOS. Appendix E provides the system resource information. Appendix F describes the 10/100 Mb Ethernet information and Appendix G for the Audio driver installation.

General

The GT-500V is a full featured, industrialized, single board computer with a high-frequency Intel (low power) Pentium MMX, or AMD K6 processor that brings advanced CPU technology and processing power. The 430HX chipset built in to the single board computer provides reliable and stable on the Pentium-mmx technology.

The GT-500V single board computer is further enhanced by the CHIPS 69000 Graphics Accelerator to deliver the most advanced graphics and video support available. The 69000 supports a wide variety of monochrome and color Single-Panel, Single-Drive (SS) and Dual-Panel, Dual-Drive (DD), standard and high resolution, passive STN and active matrix TFT LCD, and EL panels. With **HiQColor** technology, up to 256 gray scales are supported on passive STN LCDs. Up to 16.7M different colors can be displayed on passive STN LCDs and up to 16.7M colors on 24 bit active matrix LCDs.

The GT-500V combines the many features needed for system operation into one compact single board computer, including Ethernet controller, composite video input / output interface, IDE drive controllers, sound controller, high performance serial ports, enhanced parallel port, and the latest BIOS features. Additional enhancements to the GT-500V include two USB ports and a programmable watchdog timer.

Year 2000 Compliance

Industrial Computer Source warrants that the GT-500V has been tested for Year 2000 compliance. The boards have been verified to "roll over" to the year 2000 properly and to indicate the proper date for the leap year. This warranty applies to the board components only and does not guarantee that improperly written application software will report the year correctly.

Specifications

This chapter provides the specifications and an illustration of the GT-500V single board computer.

Processors Supported

• Intel Pentium MMX up to 233 MHz.
• Intel low power Pentium MMX up to 266 MHz.
• AMD K5 / K6 /K6-2 up to 450 MHz.
• Cyrix M1 / M2 up to 366 MHz.

Cache Memory

• 512 KB pipeline synchronous burst SRAM

Memory Capacity

• 16MB minimum
• 128MB maximum

BIOS

• Hi-Flex Pentium AWARD BIOS, Flash EPROM support, Plug-and-Play
  compatible
• 2Mb flash upgradeable supporting BIOS upgrade via software
• Full support for Year 2000 and leap-year date functions

Chip Set

• Intel 430HX
  - 82439HX Host Bridge Controller
  - 82371SB PCI/ISA/IDE Accelerator (PIIX3).
• C&T 69000 PCI bus with Windows accelerator and Video playback.
• Rockwell BT878 video capture chip for composite video input.

Display

• C&T 69000 integrated 2M SDRAM for the graphics/video frame buffer.

  - Support Flat-panel resolutions up to 640x480, 800x600, 1024x768
  - Support non-interlace CRT monitors, 1024x768 64K colors
  - Display connector: DB-15 VGA connector for CRT monitor and 2x22 pin header for Flat-panel

Ethernet

• Realtek RTL8139B Ethernet controller, 10/100 base T with RJ-45 connector.

Audio

•ESS 1898 Sound chip with audio Amplifier on board

SSD

• Socket for M-system Disk on Chip

EIDE Disk Controller

• Two fixed disk drives supported (two each on primary and secondary)
• PIO Mode 4 supported.
• Full support for LS-120 HD floppy drive.

Floppy Diskette Controller

• Supports slim type1.44MB and 720K floppy drives.

Serial Ports

• Three RS232, 16C550-compatible, FIFO buffer
• One RS232 / RS422 / RS485 selectable

Parallel Port

• Single parallel port controller with bi-directional compatibility
• EPP and ECP enhanced port modes.

PS/2 Keyboard port

• Microsoft compatible
• Six-pin mini-DIN connector at rear panel
• Power supplied through +5VDC self-healing fuse

PS/2 Mouse controller

• Microsoft compatible
• Six-pin mini-DIN connector at rear panel
• Power supplied through +5VDC self-healing fuse

Universal Serial Bus (USB)

• Universal Host Controller Interface (UHCI) configuration
• Dual USB connectors at rear panel via separate cable and bracket assembly
  (optional)
• Power supplied through +5VDC self-healing fuse

Watchdog Timer

• Reset CPU automatically if CPU stops operating
• Reset CPU automatically if +5VDC varies more than 10%
• Jumper or software disable/enable

Real-time Clock

• SGS-THOMSON M48T86PC1 compatible
• 256 bytes of battery-backed RAM
• On chip lithium battery with 10 years data retention.

Operating Environment

Temperature
• 5 to 55°C
Humidity
• 5 to 95% RHNC

Storage Environment

Temperature
• -20 to 70°C
Humidity
• 5 to 90% RHNC

Current Requirements

• +5V typical current draw: 6 - 10A
• +5V maximum current draw: 8 - 18A
• +12V maximum current draw: 600mA
Note: 1) +5V current draw is processor dependent.
          2) Onboard +3.3 V is regulated down from the +5V source.

Chapter 2
Jumpers and Connectors

GT-500V COMPONENT DRAWING

2.1 Jumpers Setting

CPU BUS/CORE RATIO (JP9, 1-6)

Bus/Core ratio	JP9
2.5 (P54C/K5/M1)	1-2,3-4
3.0 (P54C/K5/M1)	3-4
2.0 (P54C/K5/M1)	1-2
1.5 (P54C/K5/M1)	OPEN
3.5 (P55C/K6/M2)	OPEN
4.0 (P55C/K6/M2)	1-2,5-6
4.5 (K6/M2)	1-2,3-4,5-6
5.0 (K6/M2)	3-4,5-6
5.5 (K6/M2)	5-6
6.0 (K6/M2)	1-2

CPU BASE SPEED SELECT (JP4)

	JP4
50 MHz	1-2, 3-4
55 MHz	OPEN
60 MHz	1-2
66 MHz	3-4

Speaker/Key_lock/Reset/Turbo/LED (JP1)

function	JP1
Internal buzzer	1-3
External speaker(remove 1-3)	1-7
Power LED, Pin 2+, Pin6-	2-6
Keylock	8-10
System reset switch	13-14
HDD LED, Pin16+, Pin15-	15-16

External Power Connector (P1)

	P1
+5V	4
Ground	2,3
+12V	1

CPU VCORE Voltage Select (JP2, 1-10)

	JP2				
	1-2	3-4	5-6	7-8	9-10
1.30V	CLOSE	OPEN	OPEN	OPEN	OPEN
1.35V	CLOSE	OPEN	OPEN	OPEN	CLOSE
1.40V	CLOSE	OPEN	OPEN	CLOSE	OPEN
1.45V	CLOSE	OPEN	OPEN	CLOSE	CLOSE
1.50V	CLOSE	OPEN	CLOSE	OPEN	OPEN
1.55V	CLOSE	OPEN	CLOSE	OPEN	CLOSE
1.60V	CLOSE	OPEN	CLOSE	CLOSE	OPEN
1.65V	CLOSE	OPEN	CLOSE	CLOSE	CLOSE
1.70V	CLOSE	CLOSE	OPEN	OPEN	OPEN
1.75V	CLOSE	CLOSE	OPEN	OPEN	CLOSE
1.80V	CLOSE	CLOSE	OPEN	CLOSE	OPEN
1.85V	CLOSE	CLOSE	OPEN	CLOSE	CLOSE
1.90V	CLOSE	CLOSE	CLOSE	OPEN	OPEN
1.95V	CLOSE	CLOSE	CLOSE	OPEN	CLOSE
2.00V	CLOSE	CLOSE	CLOSE	CLOSE	OPEN
2.05V	CLOSE	CLOSE	CLOSE	CLOSE	CLOSE
No CPU	OPEN	OPEN	OPEN	OPEN	OPEN
2.1V	OPEN	OPEN	OPEN	OPEN	CLOSE
2.2V	OPEN	OPEN	OPEN	CLOSE	OPEN
2.3V	OPEN	OPEN	OPEN	CLOSE	CLOSE
2.4V	OPEN	OPEN	CLOSE	OPEN	OPEN
2.5V	OPEN	OPEN	CLOSE	OPEN	CLOSE
2.6V	OPEN	OPEN	CLOSE	CLOSE	OPEN
2.7V	OPEN	OPEN	CLOSE	CLOSE	CLOSE
2.8V	OPEN	CLOSE	OPEN	OPEN	OPEN
2.9V	OPEN	CLOSE	OPEN	OPEN	CLOSE
3.0V	OPEN	CLOSE	OPEN	CLOSE	OPEN
3.1V	OPEN	CLOSE	OPEN	CLOSE	CLOSE
3.2V	OPEN	CLOSE	CLOSE	OPEN	OPEN
3.3V	OPEN	CLOSE	CLOSE	OPEN	CLOSE
3.4V	OPEN	CLOSE	CLOSE	CLOSE	OPEN
3.5V	OPEN	CLOSE	CLOSE	CLOSE	CLOSE

CPU VCC3 Select (JP5, 1-6)

	JP5
P54C,K5,M1	1-3, 2-4
P55C,K6,M2	3-5, 4-6

External keyboard/ mouse (K-M)

Signals	K-M
Keyboard clock	TOP-5
Keyboard data	TOP-1
Keyboard ground	TOP-3
Keyboard power	TOP-4
Mouse clock	BOTTOM-5
Mouse data	BOTTOM-1
Mouse ground	BOTTOM-3
Mouse power	BOTTOM-4

M-System Address Select (JP6, 1-8)

Disk On Chip address	JP6
E0000-E7FFF	1-2
D8000-DFFFF	3-4
D0000-D7FFF	5-6
C8000-CFFFF	7-8

LCD Panel Type Select (JP9, 7-14)

7-8,9-10,11-12,13-14 four jumpers to select up to 14-type panel

Panel Clock Select (JP8)

Signals	JP8
Invert Clock	1-2
Normal Clock	2-3

Panel VCC Select (JP10)

Signals	JP10
PANEL VCC = 5 V	1-2
PANEL VCC = 3.3 V	2-3

COM2 Select (JP7)

Function	JP7
RS232	5-6,9-11,10-12,15-17,16-18
RS422	3-4,7-9,8-10,13-15,14-16
RS485	1-2,7-9,8-10,13-15,14-16

Ethernet LED (JP3)

Signals	JP3
Tx LED (pin1 - ,pin2 +)	1-2
Rx LED (pin3 - ,pin4 +)	3-4
10/100 LED (pin5 - ,pin6 +)	LED ON (10), LED OFF (100)

Video Interface (J4)

Signals	J4
Composite output	2
Luminance output	4
Chrominance output	6
Video in 4	8
Video in 3	10
Video in 2	12
Video in 1	14
reserve	16

Audio Speaker Out (SPK1)

Signals	SPK1
Speaker Out Right	1
Speaker Out Ground	2
Speaker Out Ground	3
Speaker Out Left	4

USB connector (USB)

Signals	USB0	USB1
VCC	1	10
Ground	7,9	2,4
USB-	3	8
USB+	5	6

Watchdog/Power detect (JP6, 9-10)

	JP6
Watchdog time out gen. system reset	9-10

CMOS clear (JP6, 11-12)

Closed this jumper, power on system 1minute then power off, Remove this jumper

CPU Fan (J2)

	J2
Ground	1
+12V	2

2.2 Connectors

The connectors allow the board to connect with other parts of the system. Some problems encountered with your system may be caused by loose or improper connections.   Ensure that all connectors are in place and firmly attached.

Component	Label
HDD (IDE) connector	IDE
FDD connector	FDC
VGA connector	VGA
Flat panel connector	J3
Video in / out	J4
Networking connector	J1
Parallel port	PRN
PC/104 connector	PC104
Keyboard connectors	K-M
Mouse connectors	K-M
Reset switch connector	JP1 (13-14)
External speaker connector	JP1(1-7)
HDD LED connector	JP1 (15-16)
USB connector	USB
SBC power connector	P1
CPU fan power connector	J2
RS-232 serial port	COM1, COM2, COM3, COM4
RS422,485 serial port	COM2
CMOS RAM clear	JP6(11-12)

Chapter 3
Installation

This chapter describes the procedures for installing the Pentium All-in-One board into your system.

The following is a list of typical peripherals required to build a minimum system:

- ■ Power supply
- ■ IBM PC/AT keyboard
- ■ Display monitor
- ■ Floppy or hard disk with MS-DOS or Flash Disk emulator

3.1 Installing the SIMMs

You can install from 2MB up to 128-MB memory on board using 1, 2,4,8,16,32 or 64MB 72-pin FPM/EDO SIMMs.

1. Ensure that all power supplies to the system are switched off.
2. Insert the first SIMM edge connector at a slight angle into the socket of SIMM 1 close to the center of the board. Note that the SIMM is keyed and will only go in one direction.
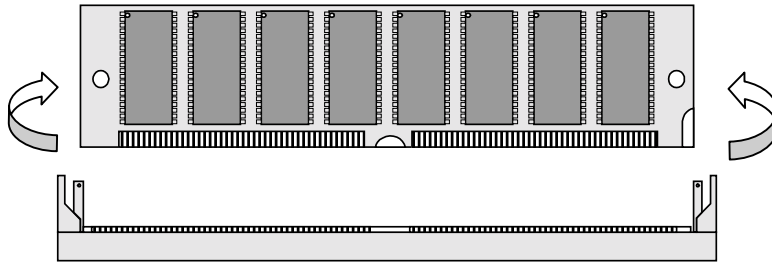
3. Push the SIMM back into the connector carefully until it snaps into place.
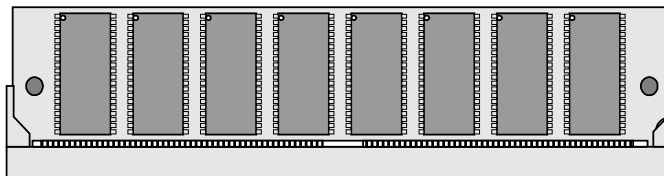
4.   Check to make sure the SIMM is inserted securely.
5.   Repeat Steps 2-4 for the remaining SIMM in <u>SIMM 2</u>.

3.2 Installing the CPU

1.   Match pin one (triangle area) on the CPU with pins one of the PGA sockets. Note pin one is marked on the board. In addition, the PGA socket has a diagonal corner or may have an arrow marked on the base of the socket denoting the side-containing pin one.

Triangle area
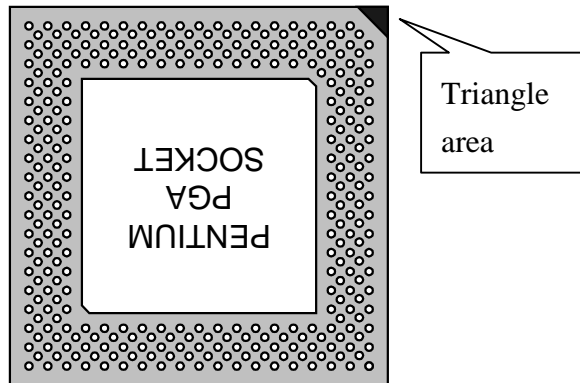
2.   To complete the installation, gently press the CPU onto place.
3.   Double-check the insertion and orientation of the CPU before applying power. Improper installation will result in permanent damage to the CPU.

3.3 Completing the Installation

To complete the installation, the following steps should be followed:

1.   Make sure the power is off.
2.   Set the configuration jumpers in accordance with Chapter 2.
3.   Connect the applicable I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, Ethernet, audio, power supply and etc.

   NOTE: the color of pin one is usually red or blue, while others are gray.

4.   Turn on the power.

Chapter 4
Award's BIOS Setup

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-backup RAM (CMOS RAM). When the power is off, it will retain the Setup information.

4-1 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 message below 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

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Award SETUP program will appear on the screen.

You may use the cursor up/down keys to highlight the individual menu items. As you highlight each item, a brief description of that item's function appears in the lower windows. If you have a color monitor you can use the <Shift>, <F2> keys to scroll through the various color combinations available.

The Main Menu

Once you enter Award's 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 PCI/ISA BIOS
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 SETUP	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

Standard CMOS setup

This setup page includes all the items in standard compatible BIOS. See Page 4-5 to Page 4-8 for details.

BIOS features setup

This setup page includes all the items of Award special enhanced features. See Page 4-9 to Page 4-13 for details.

Super / User password setting

Changes, sets or disables password. It allows you to limit access to the system and Setup, or just to Setup.

Chipset features setup

This setup page includes all the items of chipset special features. See Page 4-14 to Page 4-19 for details.

Integrated Peripherals

This section includes all the items of IDE hard drive and Programmed Input / Output features. See Page 4-20 to 4-21 for details.

Power Management setup

This category determines the power consumption of system after selecting items below. Default value is Disable. See Page 4-22 to Page 4-25 for details.

PnP/PCI Configuration setup

This category specifies the setup of PNP/PCI related devices. See Page 4-26 to Page 4-27 for details.

Load BIOS defaults

BIOS default indicates the most appropriate value of the system parameter that the system will be in minimum performance.

Load setup defaults

Chipset default indicates the values required by the system for the maximum performance.

Password setting

Changes, sets, or disables password. It allows you to limit access to the system and Setup, or just to Setup. See Page 4-28 for details.

IDE HDD auto detection

Automatically configures hard disk parameters. See Page 4-29 to Page 4-31 for details.

HDD low level format

Hard disk low level format utility. See Page 4-32 to Page 4-33 for details.

Save & exit setup

Saves CMOS value changes to CMOS and exits setup.

Exit without save

Abandons all CMOS value change and exit setup.

Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu divided into 10 categories. Each category includes one or more than one setup item. 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.

Standard CMOS Setup Menu (Support Enhanced IDE)

```
                    ROM PCI/ISA BIOS
                  STANDARD CMOS SETUP
                  AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────────┐
│ Date (mm:dd:yy) : Fri., Jul 18 1998                                   │
│ Time(hh:mm:ss)   : 00:00:00                                           │
│                                                                       │
│ HARD DISKS   TYPE  SIZE  CYLS  HEAD  PRECOMP  LANDE  SECTOR  MODE      │
│ Primary Master : Auto    0     0     0       0        0        0    Auto │
│ Primary Slave  : None    0     0     0       0        0        0    Auto │
│                                                                       │
│                                                                       │
│ Drive A : 1.44M , 3.5 in            │ Base Memory     :    640K       │
│ Drive B : None                      │ Extended Memory : 31744K        │
│ Video   : EGA / VGA                 │ Other Memory    :    384K       │
│ Halt On : All Errors                │  Total Memory   : 32768K        │
│                                                                       │
│   ESC : Quit          ↑↓→← : Select Item      PU / PD / + / - : Modify│
│   F1  : Help          (Shift) F2 : Change Color                       │
└─────────────────────────────────────────────────────────────────────┘
```

Date

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

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), can be key in with the numerical / function key
month	The month of the year. Jan. through Dec.
year	The year, depends on the year of BIOS

Time

The time format is <hour> <minute> <second>, which accepts both function key and numeral key. The time calculated is based on the 24-hour military-time clock. For example, (1 p.m.) is 13:00:00.

Primary Master/Primary Slave

This category identifies the types of one channel that has been installed in the computer.   There are 45 predefined types and 4 user definable types of Enhanced 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 unmatched or unlisted, you can use Type User to define your own drive type manually.

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

If the controller of HDD interface is ESDI, the selection shall be "Type 1 ".
If the controller of HDD interface is SCSI, the selection shall be "None".
If the controller of HDD interface is CD-ROM, the selection shall be "Auto".

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

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

Drive A type/Drive B type

This category identifies the type of floppy disk drive A and drive B that are installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	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 monitor can be supported, you do not have to select the type in Setup for secondary monitor.

There are two ways to boot up the system:
1. If the system has two display cards installed, VGA card as primary and monochrome card as secondary, the selection of display type shall be "VGA Mode".
2. If the system has two display cards installed, monochrome as primary and VGA as secondary, the selection of video type shall be "Monochrome mode".

EGA/VGA	Enhanced Graphics Adapter/video Graphics Array. For EGA, VGA, SEGA, or XGA 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 the power up procedure.

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

Memory

This category is display-only and 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 typically is 512K for systems with 512K memory installed on the motherboard, or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory
> The BIOS determines how much extended memory is exists in the system 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 memory 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 of this area is for Shadow RAM.

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

BIOS Features Setup Menu

ROM PCI/ISA BIOS
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	:	Disabled	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	Cyrix 6x86/MII CPUID	:	Enabled
Boot Up System Speed	:	High			
Gate A20 Option	:	Fast			
Typematic Rate Setting	:	Disabled	ESC : Quit ↑↓→←: Select Item		
TypematiRate(Chars/Sec)	:	6	F1 : Help PU/PD/+/- : Modify		
Typematic Delay (Msec)	:	250	F5 : Old Values Shift) F2 : Color		
Security Option	:	Setup	F6 : Load BIOS Defaults		
PCI/VGA Palette Snoop	:	Disable	F7 : Load Setup Defaults		
OS Select for DRAM >64MB	:	Non-OS2			

Virus Warning

This category flashes the screen when the system boots up. 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 run an 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	The virus warning activates automatically and will cause warning message, when any attempt to access the boot sector or hard disk partition table during the system's boot up process.
Disabled	No warning message appears.

Note: Many disk diagnostic programs that attempt to access the boot sector table can cause the above warning message. If you are going to run such a program, we recommend that you disable the Virus Protection beforehand.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is Enable. If your CPU does not have Internal Cache then this item "CPU Internal Cache" will not appear.

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 that the computer searches first for the disk operating system. i.e., DOS. Default value is "C,CDROM,A".

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

Boot Up Floppy Seek

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

Enabled	BIOS searches the floppy disk drive to determine if it is 40 or 80 tracks. Note that the BIOS can not distinguish the difference among 720K, 1.2M or 1.44M drive type. The BIOS considers as an 80 tracks' disk drives.
Disabled	BIOS will not search the type of floppy disk drive by track number. Hence there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

The default value is On.

On	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

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

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

Gate A20 Option

Normal	The A20 signal controlled by keyboard controller or chipset hardware.
Fast	Default : Fast. The A20 signal controlled by Port 92 or chipset specific method.

Typematic Rate Setting

This determines the typematic rate.

Enabled	Enable typematic rate and typematic delay programming
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default controlled by keyboard.

Typematic Rate (Chars/Sec)

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When user is holding a key, Typematic Delay means the time delay between the first and second character displayed.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

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

System	The system will not boot up and access to Setup will deny if the wrong password is entered at the prompt.
Setup	The system will bootup, but access to Setup will deny if the wrong password is entered at the prompt.

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

OS Select for DRAM >64

This item allows you to access the memory over 64MB in OS/2.

The choice: Non-OS2, OS2.

PCI / VGA palette snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	PCI/VGA can work with MPEG ISA/VESA VGA Card.
Disabled	PCI/VGA can not work with MPEG ISA/VESA VGA Card.

Video BIOS Shadow

It determines whether video BIOS will be copied to RAM or not. However, it is optional in Chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

These categories determine whether optional ROM will be copied to RAM. An example of such optional ROM would be supported. i.e. on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

Chipset Features Setup Menu

ROM PCI/ISA BIOS
CHIPSET FEATURES SETUP
AWARD SOFTWARE INC.

Auto Configuration	: Enabled	Memory Parity / ECC Check	: Disaabled
DRAM Timing	: 70ns	Single Bit Error Report	: Enabled
DRAM RAS# Precharge Time	: 4	L2 Cache Cacheable Size	: 64MB
DRAM R/W Leadoff Timing	: 7/6	Chipset NA# Asserted	: Enabled
Fast RAS# To CAS# Delay	: 3	Pipline Cache Timing	: Faster
DRAMRead Burst(EDO/FPM)	: x333/x444	Passive Release	: Enabled
DRAM Write Burst Timing	: x333	Delayed Transaction	: Disabled
Turbo Read Leadoff	: Disabled		
DRAM Speculative Leadoff	: Disabled		
Turn-Around Insertion	: Disabled		
ISA Clock	: PCICLK/4		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
8 Bit I/O Recovery Time	: 1	ESC : Quit ↑↓→←	: Select Item
16 Bit I/O Recovery Time	: 1	F1 : Help PU/PD/+/-	: Modify
Memory Hole At 15M-16M	: Disabled	F5 : Old Values (Shift)	F2 : Color
Peer Concurrency	: Enabled	F6 : Load BIOS Defaults	
Chipset Special Features	: Enabled	F7 : Load Setup Defaults	
DRAM ECC/PARITY Select	: Parity		

This section allows you to configure the system based on specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating condition for your system. The only time you might consider making any change would be if you discovered data lost while using your system.

DRAM settings

The first chipset setting deals with CPU access to dynamic random access memory (DRAM). The default timings have been careful chosen, and should be altered if data is losing. Such a scenario might occur if your system had mixed speed DRAM chips installed so that a greater delay may be require to preserve the integrity of the data held in the slower memory chips.

Auto Configuration

Values are pre-defined for DRAM and cache. The timing is set according to CPU type & system clock.
The Choice: Enabled, Disabled.

Note: When this item is enabled, the pre-defined items become SHOW-ONLY.

DRAM Timing

The DRAM timing controlled by the DRAM Timing Register inside the chip. Depend on the system design, appropriate timing will de programmed into the register. A slower rate may be required in certain system designs to support loose layout or slower memory.

60ns	DRAM Timing Type.
70ns	DRAM Timing Type.

DRAM RAS# precharge time

DRAM must be refreshed constantly or it will lose its data. Normally, DRAM is refreshed entirely after a single request. This option allows you to determine the number of CPU clock allocated for the **R**ow **A**ddress **S**trobe to accumulate its charge before the DRAM is refreshed. If there is no sufficient time, refresh may be uncompleted and data may lose.

3	Three clocks.
4	Four clocks.

DRAM R/W leadoff timing

This function sets the number of CPU clocks allowed before reads and writes to DRAM.

7/6	Seven clocks leadoff for reads and six clocks leadoff for writes.
6/5	Six clocks leadoff for reads and five clocks leadoff for writes.

Fast RAS# to CAS# delay

When DRAM is accessed, both the rows and the columns are addressed separately. This setup item allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS).

3	Three CPU clock delay.
2	Two CPU clock delay.

DRAM Read <EDO/FPM>

This function sets the timing for burst mode reads from two different DRAM (EDO/FPM). Burst read and writes requests generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write takes place while the remaining three parts provides the actual data. The lower the numbers of the timing, the faster the system will address memory.

x222/x333	Read DRAM (EDO/FPM) timings are 2-2-2/3-3-3
x333/x444	Read DRAM (EDO/FPM) timings are 3-3-3/4-4-4
x444/x444	Read DRAM (EDO/FPM) timings are 4-4-4/4-4-4

DRAM write burst timing

This function sets the timing of burst mode writes to DRAM. Burst read and writes requests generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write takes place while the remaining three parts provides the actual data. The lower the number of the timing, the faster the system will address memory.

x222	Write DRAM timings are 2-2-2-2
x333	Write DRAM timings are 3-3-3-3
x444	Write DRAM timings are 4-4-4-4

Turbo read leadoff

The turbo read leadoff may be required in certain system design to support layouts or faster memories.
The Choice: Enabled, Disabled.

DRAM speculative leadoff

The 430HX chipset is capable of allowing a DRAM read request to be generated slightly before the address has been fully decoded. This can reduce all read latencies.
More simply, the CPU will issue a memory read request to the DRAM controller. When the speculative Leadoff is enabled, the DRAM controller will issue the read command slightly before it has finished determining the address.
The Choice: Enabled, Disabled.

Turn-Around insertion

When this is enabled, the chipset will insert one extra clock to the turn-around of back-to-back DRAM cycles.
The Choice: Enabled, Disabled.

ISA Clock

This item allows you to select the ISA clock speed.

PCI CLK/3	ISA clock =PCI clock/3
PCI CLK/4	ISA clock =PCI clock/4

Cache Features

System BIOS Cacheable

When this function is enabled, the BIOS ROM's addresses at F0000H-FFFFFH will be duplicated into the SRAM. It will work with the cache controller that is enabled.

Enabled	BIOS access cached
Disabled	BIOS access not cached

Video BIOS Cacheable

As with caching the System BIOS above, enabling the Video BIOS cache will cause access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.

Enabled	Video BIOS access cached
Disabled	Video BIOS access not cached

8 Bit I/O recovery time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

16 Bit I/O recovery time

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

Memory hole at 15M-16M

In order to improve performance, certain space in memory has been reserved for ISA cards. This memory must be mapped into the memory space less then 16 MB. Please be sure that the system memory size at least 16MB when this option ENABLED.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

Peer concurrency

Peer concurrency means that more than one PCI device can be active at a time.

Enabled	Multiple PCI devices can be active.
Disabled	Only one PCI device can be active at a time.

Chipset special features

When this is disabled, the chipset behaves as if it were the earlier version.

The Choice: Enabled, Disabled.

DRAM ECC/Parity select

This item allows you to select between two methods of DRAM error checking, ECC and Parity.

Memory Parity ECC check

This item allows you to Enable and Disable memory error checking.

Single bit error report

When a single bit error is detected, the offending DRAM row ID is latched. The latched Value is held until the software explicitly clears the error status flag. You can select Enabled or Disabled.

L2 cache cacheable size

This item determines the size of the L2 cacheability : 64MB / 512MB .

Chipset NA# asserted

This item allows you to Enable or Disable the Chipset's NA# assertion, during the CPU writes cycles and CPU line fills cycles.

Pipeline cache timing

This item allows you to select two timings of pipeline cache, Faster and Fastest.

Integrated Peripherals

The Integrated peripherals will appear on your screen like this:

```
                        ROM PCI/ISA BIOS
                    INTEGRATED PERIPHERALS
                     AWARD SOFTWARE, INC.
```

IDE HDD Block Mode	: Enabled	Onboard Serial Port 4	: 2E8
PCI Slot IDE 2nd Channel	: Enabled	Serial Port 4 Use IRQ	: IRQ11
On-Chip Primary PCI IDE	: Enabled		
IDE Primary Master PIO	: Auto		
IDE Primary Slave PIO	: Auto		
USB Controller	: Enabled		
USB Keyboard Support	: Enabled		
Onboard FDC Controller	: Enabled		
Onboard UART 1	: Auto		
Onboard UART 2	: Auto		
Onboard Parallel Port	: 378/IRQ7		
Parallel Port Mode	: Normal	ESC: Quit	↑↓→←: Select Item
		F1 : Help	PU / PD / + / - : Modify
Onboard Serial Port 3	: 3E8	F5 : Old Values (shift)F2 : Color
Serial Port 3 Use IRQ	: IRQ10	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

IDE HDD block mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

PCI slot IDE 2nd Channel

This item allows you to designate an IDE controller board inserted into one of the physical PCI slots as your secondary IDE controller.

Enabled	External IDE controller designated as the secondary controller
Disabled	No IDE controller occupying any PCI slot.

IDE PIO

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship determined by the cabling configuration that is used to attach them to the controller. Your system supports two IDE hard disks.

PIO means Programmed Input / Output. If the BIOS issues a series of commands to effect a transfer to or from the disk drive. PIO allows the BIOS to communicate with IDE controller, and then lets the controller and the CPU performs a complete task by themselves. This is simpler and more efficient (and faster).

Your system supports five modes, numbered 0 (default) to 4, which stand for five different timings. When *Auto* is selected, the BIOS select the best available mode.

On-Chip Primary PCI IDE

As stated above, your system includes two built-ins IDE controllers, both of which operate on the PCI bus. This setup item allows you to enable or disable the primary controller. You can choose to disable the controller if you want to add a higher performance or specialized controller.

Enabled	Primary HDD controller used -- Default
Disabled	Primary HDD controller not used.

Power Management Setup

The Power management setup will appear on your screen like this:

```
                        ROM PCI/ISA BIOS
                    POWER MANAGEMENT SETUP
                     AWARD SOFTWARE, INC.
┌─────────────────────────────────┬───────────────────────────────────────┐
│  Power Management    : Disable   │    ** Power Down & Resume Events   **  │
│  PM Control by APM   : Yes       │  IRQ3 (COM2)              : ON          │
│ .Video Off Method    : DPMS      │  IRQ4 (COM1)              : ON          │
│  MODEM Use IRQ       :  3        │  IRQ5 (LPT2))            : ON          │
│                                  │  IRQ6 (Floppy Disk)      : OFF         │
│                                  │  IRQ7 (LPT1)             : ON          │
│ Doze Mode            : Disable   │  IRQ8   (RTC Alarm)      : OFF         │
│ Standby Mode         : Disable   │  IRQ9 (IRQ2 Redir)       : ON          │
│ Suspend Mode         : Disable   │  IRQ10 (Reserved)        : ON          │
│ HDD Power Down       : Disable   │  IRQ11 (Reserved)        : ON          │
│                                  │  IRQ12 (PS/2 Mouse)      : ON          │
│                                  │  IRQ13 (Coprocessor)     : ON          │
│    ** Wake Up Events In Doze & Standby ** │ IRQ14 ( Hard Disk)  : ON       │
│ IRQ3   (Wake-Up Event)   : ON    │  IRQ15 (Reserved)        : ON          │
│ IRQ4   (wake-Up Event)   : ON    │                                        │
│ IRQ8   (Wake-Up Event)   : ON    │ ESC  : Quit      ↑↓→←: Select Item     │
│ IRQ12 (Wake-Up Event)    : ON    │ F1   : Help    PU / PD / + / - : Modify │
│                                  │ F5   : Old Values   (Shift)F2  : Color │
│                                  │ F6   : Load BIOS Defaults              │
│                                  │ F7   : Load Setup Defaults             │
└─────────────────────────────────┴───────────────────────────────────────┘
```

Power Management

This category allows you to select the type (or degree) of power saving and directly related to the following modes:

1. Doze Mode

2. Standby Mode

3. Suspend Mode

4. HDD Power Down

There are four selections of the Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allow you to set each mode individually. When not disabled, each of the ranges is from 1 min. to 1 hr. Except for HDD Power Down that ranges from 1 min. to 15 min.

PM control APM

When this is enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.
If the Max. Power Saving is not enabled, this will be preset to *No*.

Video off method

This determines the manner that the monitor is blank.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and writes blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling

PM Timers

The following four modes are Green PC power saving functions that are user configurable when *User Defined* Power Management selected. See above for available selections.

Doze Mode

When this mode is enabled, after a set time of system being inactive, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode

When this mode is enabled, after a set time of system being inactive, the fixed disk drive and the video will shout off while all other devices still operate at full speed.

Suspend Mode

When this mode is enabled, after a set time of system being inactive, all devices except the CPU will shutoff.

HDD Power Down

When this mode is enabled, after a set time of system being inactive, the hard disk drive will be powered down while all other devices remain active.

Power Down & Resume Events

Power Down and Resume events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In the effect, the system remains alert for anything that occurs to a device that is configured as *On*, even when the system is in a power down mode.

The following is a list of IRQ, **I**nterrupt **R**e**Q**uests, which can be exempted as much as the COM ports and LPT ports above can. When an I/O device wants to get the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

Same as the above, the choices are *On* and *Off*. *Off* is the default.

When it is set *Off*, this function will neither prevent the system from going into a power management mode nor awake the system.

- IRQ3 (COM 2)

- IRQ4 (COM 1)

- IRQ5 (LPT 2)

- IRQ6 (Floppy Disk)

- IRQ7 (LPT 1)

- IRQ8 (RTC Alarm)

- IRQ9 (IRQ2 Redir)

- IRQ10 (Reserved)

- IRQ11 (Reserved)

- IRQ12 (PS/2 mouse)

- IRQ13 (Coprocessor)

- IRQ14 (Hard Disk)

- IRQ15 (Reserved)

PnP/PCI Configuration Setup

This section describes how to configure the PCI bus. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system that allows I/O devises to operate at a speed close to the speed of the CPU itself when it communicates with its own special components. This section cover several technical items and we strongly recommend that only experienced users should make any change to the default settings.

ROM PCI/ISA BIOS
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

Resources Controlled By	Manual	PCI IRQ Actived By	:	Level
Reset Configuration Data	Disabled	PCI IDE IRQ Map To	:	PCI-AUTO
		Primary IDE INT#	:	A
IRQ-3 assigned to	: Legacy ISA	Secondary IDE INT#	:	B
IRQ-4 assigned to	: Legacy ISA			
IRQ-5 assigned to	: PCI/ISA PnP	Used MEM base addr	:	N/A
IRQ-7 assigned to	: PCI/ISA PnP			
IRQ-9 assigned to	: PCI/ISA PnP			
IRQ-10 assigned to	: PCI/ISA PnP			
IRQ-11 assigned to	: PCI/ISA PnP			
IRQ-12 assigned to	: PCI/ISA PnP			
IRQ-14 assigned to	: PCI/ISA PnP			
IRQ-15 assigned to	: PCI/ISA PnP			
DMA-0 assigned to	: PCI/ISA PnP			
DMA-1 assigned to	: PCI/ISA PnP			
DMA-3 assigned to	: PCI/ISA PnP	ESC : Quit	↑↓→←: Select Item	
DMA-5 assigned to	: PCI/ISA PnP	F1 : Help	PU / PD / + / - : Modify	
DMA-6 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift)F2 : Color		
DMA-7 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults		
		F7 : Load Setup Defaults		

Resource Controlled by

The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play compatible devices.   However, it only works under a Plug and Play operating system such as Windows® 95.

Choices are *Auto* and *Manual*.

Reset configuration data

This item allows you to reset the configuration data or not.

Choices are *Enabled* and *Disabled*.

IRQ and DMA assigned to

This item allows you to assign the IRQ / DMA channel to the legacy ISA bus slot or PCI/ISA bus slot.

Choices are *Legacy ISA* and *PCI/ISA PnP*.

PCI IRQ activated by

This option allows you to configure the active condition of PCI IRQ signals.

Choices are *Level* and *Edge*.

PCI IDE IRQ map to

This option allows you to configure PCI IDE device. By default, *PCI-AUTO*, the BIOS will scan for PCI IDE devices and determine the location of the PCI IDE device.

If you have equipped your system with a PCI IDE controller and specify the location of *PCI SLOTx*, the BIOS will assign IRQ14 for primary IDE INT#, IRQ 15 for secondary IDE INT#.

If you set this option as *ISA*, the BIOS will not assign any IRQs even if PCI IDE card is found, because some IDE cards connect the IRQ14 and IRQ15 directly from the ISA slot through a cord. (This cord is called Legacy Header).

Password Setting

When you select this function, the following message will appear at the center of your 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 should 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 the password, just press <Enter> when you are prompted to enter password. A message will confirm that the password is disabled. Once the password disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password each time when the system is rebooted or any time when 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.

IDE HDD Auto Detection

The Enhance IDE features are included in all Award BIOS.   The following is a brief description of this feature.

1. Setup Changes
    <I> Auto-detection

BIOS setup will display all possible modes that are supported by the HDD including NORMAL, LBA and LARGE mode.

If the HDD does not support LBA modes, no 'LBA' option will be show.

If the number of cylinders is less than or equal to 1024, no 'LARGE' option will be shown.

Users can select a mode, which is appropriate for them.

ROM/PCI/ISA BOPS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Drive C : (Mb)						

Select Drive C Option (N = Skip) : N

OPTION	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
2 (Y)	2112	1023	64	0	4091	63	LBA
1	2112	4092	16	65535	4091	63	NORMAL
3	2112	1023	64	65535	4091	63	LARGE

Note: Some Oses (SCO-UNIX Before v5.0) must use "NORMAL" for installation.

<II> Standard CMOS Setup

		CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
Drive C :	User (516MB)	1120	16	65535	1119	59	NORMAL
Drive D :	None (203MB)	684	16	65535	685	38	----------

When the HDD type is in 'user' type, the "MODE" option is open for users to select their own HDD mode.

(2) HDD Modes

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

NORMAL mode

This is a generic access mode, neither the BIOS nor the IDE controller can make any transformation during access the HDD.

The maximum numbers of cylinders head and sectors for NORMAL Mode are 1024, 16 & 63.

$$
\begin{array}{lll}
 & \text{no. Cylinder} & (1024) \\
\times & \text{no. Head} & (\quad 16) \\
\times & \text{no. Sector} & (\quad 63) \\
\times & \text{no. per sector} & (\quad 512) \\
\hline
 & 528 & \text{Megabytes}
\end{array}
$$

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.

LBA (Logical Block Addressing) mode

This is a new HDD accesses method to overcome the 528 Megabytes bottleneck. The number of cylinders, heads & sectors shown in the setup may not be the number physically contained in the HDD.

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

The maximum HDD size supported by the LBA mode is 8.4 Gigabytes that obtained by the following formula:

$$
\begin{array}{lll}
 & \text{no. Cylinder} & (\ 1024) \\
\times & \text{no. Head} & (\quad 255) \\
\times & \text{no. Sector} & (\quad 63) \\
\times & \text{bytes per sector} & (\quad 512) \\
\hline
 & 8.4 & \text{Gigabytes}
\end{array}
$$

LARGE mode

This is an Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinders without LBA support (in some cases, users do not want LBA). The Award BIOS provides an alternative to support these kinds of HDD.
Example of the LARGE mode:

CYLS.	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks the DOS (or other OS) that the number of cylinders is less than1024 by dividing it by 2. At the same time, 2 will multiply the number of heads. A reverse transformation process is made inside INT13h in order to access the right HDD address.

Maximum HDD size:

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

$$1 \quad \text{Gigabytes}$$

(3) Remarks

In order to support the LBA or the LARGE mode of HDDs, some software must be involved in the BIOS. All of the software is located in the Award HDD Service Routine (INT 13h). If your system is under an Operating System that replaces the whole INT 13h, you may not be able to access a HDD with LBA (LARGE) mode.

Hard Disk Low Level Format Utility

The Award Low-Level-Format Utility is designed to save your time when you format your hard disk. This Utility automatically looks for the necessary information of the drive you selected. It also searches for bad tracks and lists them for your reference.

Shown below is the Main Menu when you enter the Award Low-Level-Format Utility.

Hard Disk Low Level Format Utility	BAD TRACKS TABLE
	NO. CYLS HEAD

SELECT DRIVE						
BAD TRACKE LIST						
PREFORMAT						
Current select drive is : C						
DRIVE: C CYLINDER : 0 HEAD: 0						

	CYLINDER	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Drive C: 6450 Mb	13330	15	65535	13329	63	AUTO
Drive D: None	0	0	0	0	0	AUTO

Up/Down - Select item	Enter - Accept	ESC-Exit/Abort
Copyright © Award Software, Inc. 1992 – 1998 All Rights Reserved		

Control Keys

You may use the Up and Down arrow keys to move among the selections displayed on the upper screen. Press <Enter> to set the selection. Press <Esc> to abort the selection or exit the Utility.

SELECT DRIVE

You may select the installed hard disk drive C or D. Listed at the bottom of the screen is the drive automatically detected by the utility.

BAD TRACK LIST

Auto scan bad track

   This utility automatically scans bad tracks and lists the bad tracks on the
   window at the right side of the screen.

Add bad track

   You may directly type in the known bad tracks on the window at the right side
   of the screen.

Modify bad track

   You may modify the bad track's information on the window at right side of the
   screen.

Delete bad track

   You may delete the added bad tracks on the window at the right side of the
   screen.

Clear bad track table

   You may clear the whole bad track list on the window at the right side of the
   screen.

PREFORMAT

Interleave

   Select the interleave number of the hard disk drive you wish to perform at low
   level format. You may select from 1 to 8.Check the documentation that came
   with the drive for the correct interleave number, or select 0 for utility automatic
   detection.

Auto scan bad track

   This allows the utility to scan first then format each track.

Start
   Press <Y> to start low level format.

Power-On Boot

After you made all the changes to the CMOS values, the system cannot boot up with the CMOS values selected in Setup. Restart the system 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. Upon restart the system, immediately press <Insert> to load the BIOS default CMOS value for boot up.

BIOS Reference - POST Codes

NOTE: ISA POST codes output to the port address 80h typically.

POST(hex)	Description

C0	1. Turn off OEM specific cache, shadow...
	2. Initialize all the standard devices with default values
	      Standard device includes:
	         -DMA controller (8237)
	         -Programmable Interrupt Controller (8259)
	         -Programmable Interval Timer (8254)
	         -RTC chip

C1	Auto-detection of onboard DRAM & Cache
C3	1. Test system BIOS checksum 2. Test the first 256K DRAM 3. Expand the compressed codes into temporary DRAM area including the compressed System BIOS & Option ROMs
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster
01-02	Reserved
03	Initialize EISA registers (EISA BIOS only)
04	Reserved
05	1. Keyboard Controller Self-Test 2. Enable Keyboard Interface
06	Reserved
07	Verifies CMOS's basic R/W functionality
BE	Program defaults values into chipset according to the MODBINable Chipset Default Table
08	Test the first 256K DRAM
09	1. Program the configuration register of Cyrix CPU according to the MODBINable Cyrix Register Table 2. OEM specific cache initialization (if needed)
POST(hex)	Description

POST (hex)	Description
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers Initialize INT no from 33-120 with Dummy(Spurious) Interrupt Handler 2. Issue CPUID instruction to identify CPU type 3. Early Power Management initialization (OEM specific)

0B	1. Verify the RTC time is valid or not
	2. Detect bad battery
	3. Read CMOS data into BIOS stack area
	4. PnP initialization include (PnP BIOS only)
	        -Assign CSN to PnP ISA card
	        -Create resource map from ESCD
	5. Assign IO & Memory for PCI devices (PCI BIOS only)

0C	Initialization of the BIOS Data Area (40 : 0N – 40:FF)
0D	1. Program some of the Chipset values according to Setup. (Early Setup Value Program) 2. Measure CPU speed for display & decide the system clock speed 3. Video initialization including Monochrome, CGA, EGA / VGA. If no display device is found, the speaker will beep

0E	1. Initialize the APIC (Multi-Processor BIOS only)
	2. Test video RAM (If Monochrome display device is found)
	3. Shown messages include:
	    -Award Logo, Copyright string, BIOS Date code & Part No.
	    -OEM specific sign on messages
	    -Energy Star Logo (Green BIOS ONLY)
	    -CPU brand, type & speed
	    -Test system BIOS checksum(Non-Compress Version only)

0F	DMA channel 0 test
10	DMA channel 1 test
11	DMA page registers test
12-13	Reserved
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1
16	Test 8259 interrupt mask bits for channel 2
17	Reserved
19	Test 8259 functionality
1A-1D	Reserved
1E	If EISA NVM checksum is good, then execute EISA initialization (EISA BIOS only)
1F-29	Reserved
30	Detect Base Memory & Extended Memory Size
31	1. Test Base Memory from 256K to 640K Test Extended Memory from 1M to the Max. of theMemory
POST (hex)	Description

32	1. Display the Award Plug & Play BIOS Extension message
	   (PnP BIOS only)
	2. Program onboard super I/O chip (if any) including COM
	   ports, LPT ports, FDD port.. according to setup value

33-3B	Reserved
3C	Set flag to allow users to enter CMOS Setup Utility
3D	1. Initialize Keyboard 2. Install PS2 mouse
3E	Try to turn on Level 2 cache Note: Some chipset may need to turn on the L2 cache on this stage. But usually, the cache is turned on later in POST 61h
3F-40	Reserved

BF	1.Program the rest of the chipset value according to setup.
	   (Later Setup Value Program)
	2.If auto-configuration is enabled, programmed the chipset
	   with pre-defined values in the MODBINable Auto-Table

41	Initialize floppy disk drive controller
42	Initialize Hard drive controller
43	If it is a PnP BIOS, initialize serial & parallel ports
44	Reserved
45	Initialize math coprocessor.
46-4D	Reserved
4E	If any error is detected (such as video, kb...), show all the error messages on the screen & wait for user to press <F1> key
4F	1. If a password is needed, ask for the password 2. Clear the Energy Star Logo (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS
51	Reserved

52	1. Initialize all ISA ROMs
	2. Later PCI initialization (PCI BIOS only)
	        -assign IRQ to PCI devices
	        -initialize all PCI ROMs
	3. PnP Initialization (PnP BIOS only)
	        -assign IO, Memory, IRQ & DMA to PnP ISA devices
	        -initialize all PnP ISA ROMs
	4. Program shadows RAM according to the Setup settings
	5. Program parity according to Setup setting
	6. Power Management Initialization
	      -Enable/Disable global PM
	      -APM interface initialization

53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports 3.Initialize time value in the BIOS data area by translating the RTC time value into a timer tick value
60	Setup the Virus Protection (Boot Sector Protection) function according to Setup setting

POST (hex)	Description

61	1. Try to turn on Level 2 cache
	    Note: if L2 cache is already turned on in POST 3E, this
	    part will be skipped
	2. Set the boot up speed according to the Setup setting
	3. Last chance for Chipset initialization
	4.Last chance for Power Management initialization
	    (Green BIOS only)
	5. Show the system configuration table

62	1. Setup daylight saving according to Setup value 3. Program the NUM Lock, typematic rate & typematic Speed according to the Setup setting
63	1. If there is any change in the hardware configuration, update the ESCD information (PnP BIOS only) 2. Clear the memory that has been used 3. Boot the system via INT 19H
FF	System Booting. This means that the BIOS already pass the control right to the operating system

Unexpected Errors:

POST (hex)	Description
B0	Interrupt occurs in protected mode.
B1	Unclaimed NMI occurs

Chapter 5
Display

The on-board VGA interface of the GT-500V supports traditional analog CRT monitors and a wide range of popular LCD, EL, and gas plasma flat panel displays. It can drive CRT displays with resolutions up to 1024x768 in 64K colors. It is also capable of driving color panel displays with resolutions of 800x600 in 16.7M colors.

5.1 Drivers and Utilities

5.1.1 Microsoft Windows 95/98 installation

1. ENSURE that the MS Windows 95/98 is up and running properly using the VGA driver that has been detected.
2. OPEN the "*My computer*" program group and SELECT the "*Control Panel*" icon.
3. SELECT the "*Display*" icon and then SELECT the "*Settings*" page.
4. SELECT the "*Change Display Type*" selection bar, and then SELECT the "*Change*" button next to the Adapter Type.
5. On the "*Select Device*" page, SELECT the "*Have Disk*" button to install the display driver from the diskette.
6. After the "*Have Disk*" button selected a "*Install From Disk*" window will appear. SELECT the "*Browse*" button to browse the directory "X:\WIN95" of your diskette drive. (X=A or B)
7. The files ***.INF** will appear under the file name list.   SELECT "*OK*" to return to the "*Install From Disk*" window.   Under the statement "*Copy manufacturer's files from*" SELECT "*OK*" to start installing the driver files from the FLOPPY drive.
8. "*Select device*" window will appear.   Under Models, the driver file name will be listed, SELECT "*OK*" to close "*Select Device*" window and select   "*Color Palette*" and   "*Desktop Area*" of your choice.
9. Once the desired color palette   (the number of colors) and desktop area (resolution) has been chosen, the Windows 95 or 98 system will be restarted to load this accelerated driver.

5.1.2 MS Windows NT 4.0 Driver Install

1. Click the Start button, then go to Settings and click on Control Panel.
2. Click on the Display icon to start the Display Properties window.
3. Click on the Settings tab, and then click on Display Type.
4. In the Change Display Type window, click on Change in Adapter Type.
5. This will bring up the Select Device Window.

Chips & Technologies display drivers can be installed from a manufacturer supplied Installation Diskette, or from the default drivers provided on the Windows NT 4.0 CDROM.

Installing from Manufacturer supplied diskette

In the Change Display window, click on <Have Disk>. Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press <enter>.

Select Chips Video Accelerator from Display list provided, then click OK or press <enter>.

You will then see a warning panel about Third Party Drivers. Click on Yes to finish the install.

Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.

Installing Drivers provided on NT 4.0 CDROM

In the Change Display window, from the list of Manufacturers, select Chips & Technologies. In the Display Window, select Chips & Technologies Video Accelerator, then click OK or press <enter>.

You will then see a warning panel about Third Party Drivers. Click on Yes to finish the install.

Follow the directions on the screen to supply the directory where the Windows NT driver files are located. Then select OK, or press <enter>.

Once the installation is complete, the system must be shut down and restarted for the new drivers to take effect.

When the system has restarted, the default graphics mode (usually 640x480x256 colors) has been automatically selected.

1. Click the Start button, then go to Settings and click on Control Panel.
2. Click on the Display icon to start the Display Properties window.
3. Click on the Settings tab.
4. A new screen setting can be selected using either of the following methods:

    1: Use the slide-bar in the Desktop Area to select new setting.

    2: Click on List All Modes. From the list provided, select a new setting, then click <OK> or press <enter>.

5. Click on Test to test the newly selected graphics mode. Follow the instructions given on the screen. A test screen should appear, followed by the Testing Mode window. Click on <Yes> to continue. Click on <Apply> to switch to the new graphics mode.
6. Graphics modes are changed dynamically on NT 4.0, so you do not need to shutdown and restart for the new screen settings to work.

5.1.3 MS Windows 95/98 Refresh Rate Utility Regulation

1. Open the "*My computer*" program group and <u>SELECT</u> the "*Control panel*" icon.
2. Double click on *DISPLAY* and <u>SELECT</u> "*CHIPS*". There will now be a refresh tab for changing the refresh rate. You may click the tab to change the refresh rate.

5.2 Panel Support

The GT-500V board provides a very convenient way to setup panels that are up to 14 types.

I.   For 40K BIOS

If you install a standard 40K BIOS on the board, the GT-500V board supports 8 panels as follows:

Panel #	Panel Type
1	1024x768 Dual Scan STN Color Panel
2	1280x1024 TFT Color Panel
3	640x480 Dual Scan Color Panel
4	800x600 Dual Scan Color Panel
5	640x480 Sharp TFT Color Panel
6	640x480 18-bit TFT Color Panel
7	1024x768 TFT Color Panel
8	800x600 TFT Color Panel

Meanwhile, please also set the jumpers on **JP9** as the following:

Panel #	13-14	11-12	9-10	7-8
1	Open	Close	Close	Close
2	Open	Close	Close	Open
3	Open	Close	Open	Close
4	Open	Close	Open	Open
5	Open	Open	Close	Close
6	Open	Open	Close	Open
7	Open	Open	Open	Close
8	Open	Open	Open	Open

II. For 44K BIOS

If you install a standard 44K BIOS on the board, the GT-500V board supports 14 panels as the following:

Panel #	Panel Type
1	1024x768 Dual Scan STN Color Panel
2	1280x1024 TFT Color Panel
3	640x480 Dual Scan Color Panel
4	800x600 Dual Scan Color Panel
5	640x480 Sharp TFT Color Panel
6	640x480 18-bit TFT Color Panel
7	1024x768 TFT Color Panel
8	800x600 TFT Color Panel
9	800x600 TFT Color Panel (44K BIOS only)
10	800x600 TFT Color Panel (44K BIOS only)
11	800x600 Dual Scan Color Panel (44K BIOS only)
12	800x600 Dual Scan Color Panel (44K BIOS only)
13	1024x768 TFT Color Panel (44K BIOS only)
14	1024x 768 TFT Color Panel (44K BIOS only)
15	Reserved
16	Reserved

Meanwhile, please also set the jumpers on **JP9** as the following:

Panel #	13-14	11-12	9-10	7-8
1	Close	Close	Close	Close
2	Close	Close	Close	Open
3	Close	Close	Open	Close
4	Close	Close	Open	Open
5	Close	Open	Close	Close
6	Close	Open	Close	Open
7	Close	Open	Open	Close
8	Close	Open	Open	Open
9	Open	Close	Close	Close
10	Open	Close	Close	Open
11	Open	Close	Open	Close
12	Open	Close	Open	Open
13	Open	Open	Close	Close
14	Open	Open	Close	Open
15	Open	Open	Open	Close
16	Open	Open	Open	Open

5.3 Video Modes

This display card supports all standard VGA modes as well as a wide selection of extended modes. The following table lists the modes and vertical refresh rates that BIOS can support.

Table 1: Standard Video Display Modes

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color Res.	Mode Type	Display Adapter	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
00h	--	320x200	16(gray)	Text	CGA	8x8	40x25	25	31.5	70	256
		320x350	16(gray)		EGA	8x14	40x25	25	31.5	70	256
		360x400	16		VGA	9x16	40x25	28	31.5	70	256
01h	--	320x200	16	Text	CGA	8x8	40x25	25	31.5	70	256
		320x350	16		EGA	8x14	40x25	25	31.5	70	256
		360x400	16		VGA	9x16	40x25	28	31.5	70	256
02h	--	640x200	16(gray)	Text	CGA	8x8	80x25	25	31.5	70	256
		640x350	16(gray)		EGA	8x14	80x25	25	31.5	70	256
		720x400	16		VGA	9x16	80x25	28	31.5	70	256
03h	--	640x200	16	Text	CGA	8x8	80x25	25	31.5	70	256
		640x350	16		EGA	8x14	80x25	25	31.5	70	256
		720x400	16		VGA	9x16	80x25	28	31.5	70	256
04h	--	320x200	4	Graph	All	8x8	40x25	25	31.5	70	256
05h	--	320x200	4(gray)	Graph	CGA	8x8	40x25	25	31.5	70	256
		320X200	4(gray)		EGA	8x8	40x25	25	31.5	70	256
		320X200	4		VGA	8x8	40x25	25	31.5	70	256
06h	--	640x200	2	Graph	All	8x8	80x25	25	31.5	70	256
07h	--	720x350	Mono	Text	MDA	9x14	80x25	28	31.5	70	256
		720x350	Mono		EGA	9x14	80x25	28	31.5	70	256
		720x400	Mono		VGA	9x16	80x25	28	31.5	70	256
08h-0Ch	--	Reserved			-		-				
0Dh	--	320x200	16	Graph	E/VGA	8x8	40x25	25	31.5	70	256
0Eh	--	640x200	16	Graph	E/VGA	8x8	80x25	25	31.5	70	256
0Fh	--	640x350	Mono	Graph	E/VGA	8x14	80x25	25	31.5	70	256
10h	--	640x350	16	Graph	E/VGA	8x14	80x25	25	31.5	70	256
11h	--	640x480	2	Graph	VGA	8x16	80x30	25	31.5	60	256
12h	--	640x480	16	Graph	VGA	8x16	80x30	25	31.5	60	256
13h	--	320x200	256	Graph	VGA	8x8	40x25	25	31.5	70	256

Table 2: Extended Low Resolution Video Modes

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color	Mode Type	Mem. Org.	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
14h	--	320x200	256	Graph(L)	Pack Pix	8x16	40x12	12.587	31.5	70	256
15h	--	320x200	64K	Graph(L)	Pack Pix	8x16	40x12	12.587	31.5	70	256
16h	--	320x200	16M	Graph(L)	Pack Pix	8x16	40x12	12.587	31.5	70	256
17h	--	320x240	256	Graph(L)	Pack Pix	8x16	40x15	12.587	31.5	60	256
18h	--	320x240	64K	Graph(L)	Pack Pix	8x16	40x15	12.587	31.5	60	256
19h	--	320x240	16M	Graph(L)	Pack Pix	8x16	40x15	12.587	31.5	60	256
1Ah	--	400x300	256	Graph(L)	Pack Pix	8x16	50x18	20	37.5	60	256
1Bh	--	400x300	64K	Graph(L)	Pack Pix	8x16	50x18	20	37.5	60	256
1Ch	--	400x300	16M	Graph(L)	Pack Pix	8x16	50x18	20	37.5	60	352
1Dh	--	512x384	256	Graph(L)	Pack Pix	8x16	64x24	32.5	48.4	60	256
1Eh	--	512x384	64K	Graph(L)	Pack Pix	8x16	64x24	32.5	48.4	60	384
1Fh	--	512x384	16M	Graph(L)	Pack Pix	8x16	64x24	32.5	48.4	60	576
31h	100h	640x400	256	Graph(L)	Pack Pix	8x16	80x25	25.175	31.5	70	256
62h	--	640x400	64K	Graph(L)	Pack Pix	8x16	80x25	25.175	31.5	70	500
63h	--	640x400	16M	Graph(L)	Pack Pix	8x16	80x25	25.175	31.5	70	750

Notes: I = Interlaced;   L = Linear

Table 3: Extended Video Modes

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color	Mode Type	Mem. Org	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
20h	120h	640x480	16	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	256
								31.5	37.5	75	256
								36	43.3	85	256
22h	122h	800x600	16	Graph(L)	Pack Pix	8x16	100x3	36	35.1	56	256
								40	37.9	60	256
								49.5	46.9	75	256
								56.25	53.7	85	256
24h	124h	1024x768	16	Graph(L)	Pack Pix	8x16	128x4	44.9	35.5	43(I)	384
								65	48.4	60	384
								78.75	60	75	384
								94.5	68.7	85	384
28h	128h	1280x1024	16	Graph(L)	Pack Pix	8x16	160x6	78.75	47	43(I)	640
								108	64	60	640
								135	79.98	75	640
2Ah*	--	1600x1200	16	Graph(L)	Pack Pix	8x16	200x7	135	79.98	75	938
30h	101h	640x480	256	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	300
								31.5	37.5	75	300
								36	43.3	85	300
31h	100h	640x400	256	Graph(L)	Pack Pix	8x16	80x25	25.175	31.5	70	256
32h	103h	800x600	256	Graph(L)	Pack Pix	8x16	100x3	36	35.1	56	469
								40	37.9	60	469
								49.5	46.9	75	469
								56.25	53.7	85	469
34h	105h	1024x768	256	Graph(L)	Pack Pix	8x16	128x4	44.9	35.5	43(I)	768
								65	48.4	60	768
								78.75	60	75	768
								94.5	68.7	85	768
38h	107h	1280x1024	256	Graph(L)	Pack Pix	8x16	160x6	78.75	47	43(I)	1280
								108	64	60	1280
								135	79.98	75	1280
3Ah*	--	1600x1200	256	Graph(L)	Pack Pix	8x16	200x7	162	75	60	1875
40h	110h	640x480	32K	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	600
								31.5	37.5	75	600
								36	43.3	85	600

Notes: I = Interlaced; L = Linear * =Modes 2A,3Ah is for flat panel only

Table 3: Extended Video Modes (continued)

Video Mode	VESA VBE Mode	Pixel Reso- lution	Color Res.	Mode Type	Mem. Org	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
41h	111h	640x480	64K	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	600
								31.5	37.5	75	600
								36	43.3	85	600
42h	113h	800x600	32K	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	938
								40	37.9	60	938
								49.5	46.9	75	938
								56.25	53.7	85	938
43h	114h	800x600	64K	Graph(L)	Pack Pix	8x16	100x37	36	35.1	56	938
								40	37.9	60	938
								49.5	46.9	75	938
								56.25	53.7	85	938
44h	116h	1024x768	32K	Graph(L)	Pack Pix	8x16	128x48	44.9	35.5	43(I)	1536
								65	48.4	60	1536
								78.75	60	75	1536
								94.5	68.7	85	1536
45h	117h	1024x768	64K	Graph(L)	Pack Pix	8x16	128x48	44.9	35.5	43(I)	1536
								65	48.4	60	1536
								78.75	60	75	1536
								94.5	68.7	85	1536
46h	--	Generic	32K	Graph(L)	Pack	8x16	--	--	--	--	--
47h	--	Generic	64K	Graph(L)	Pack	8x16	--	--	--	--	--
50h	112h	640x480	16M	Graph(L)	Pack Pix	8x16	80x30	25.175	31.5	60	900
								31.5	37.5	75	900
								36	43.3	85	900
52h	115h	800x600	16M	Graph(L)	Pack Pix	8x16	100x37	36	35.5	56	1407
								40	37.9	60	1407
								49.5	46.9	75	1407
								56.25	53.7	85	1407
6Ah	102h	800x600	16	Graph(L)	Planar	8x16	100x37	36	35.1	56	256
								40	37.8	60	256
								49.5	46.9	75	256
								56.25	53.7	85	256

Notes: I = Interlaced   L = Linear

Table 3: Extended Video Modes   (continued)

Video Mode	VESA VBE Mode	Pixel Reso-lution	Color Res.	Mode Type	Mem. Org	Font Size	Char. Disp.	Dot Clock (MHz)	Horiz. Freq. (MHz)	Vert Freq (Hz)	Video Mem. (KB)
64h	104h	1024x768	16	Graph	Planar	8x16	128x48	44.9	35.5	43(I)	384
								65	48.4	60	384
								78.75	60	75	384
								94.5	68.7	85	384
68h	106h	1280x1024	16	Graph	Planar	8x16	160x64	78.75	47	43(I)	640
								108	64	60	640
								135	79.98	75	640
70h	101h	640x480	256	Graph	Pack Pix	8x16	80x30	25.175	31.5	60	300
								31.5	37.5	75	300
								36	43.3	85	300
71h	100h	640x400	256	Graph	Pack Pix	8x16	80x25	25.175	31.5	70	256
72h	103h	800x600	256	Graph	Pack Pix	8x16	100x37	36	35.1	56	469
								40	37.9	60	469
								49.5	46.9	75	469
								56.25	53.7	85	469
74h	105h	1024x768	256	Graph	Pack Pix	8x16	128x48	44.9	35.5	43(I)	768
								65	48.4	60	768
								78.75	60	75	768
								94.5	68.7	85	768
78h	107h	1280x1024	256	Graph	Pack Pix	8x16	160x64	78.75	47	43(I)	1280
								108	64	60	1280
								135	79.98	75	1280

Notes: I = Interlaced   L = Linear

Appendix A
Watchdog Timer

Watchdog Timer Configuration

The watchdog timer would reset the system automatically if the system program didn't refresh the watchdog timer during the watchdog time out interval. It is defined at I/O port **0443H** and **043H** to enable/disable the watchdog time out function.

Regarding to the watchdog function, user must have a program to set the watchdog time out value, and refresh the watchdog timer cycle. If the system program goes into a dead loop or goes into an abnormal cycle, the watchdog timer cannot be refreshed immediately. Meanwhile, the system will be reset by watchdog timer automatically. The watchdog timer will be refreshed by "disable watchdog output" then "enable watchdog output".

The following flowchart shows the normal structure of system program.

Watchdog timer examples:

(1) **Setup watchdog timer time out value**:

```
        mov al,0ah
        mov dx,70h
        out dx,al
        jmp short $+2
        mov dx,71h
        in al,dx
        jmp short $+2
        and al,0f0h
        add ax,TimeValue        ; TimeValue= 00h..0fh, reference as following
                                  watchdog time out table

        out dx,al
        jmp short $+2
        mov al, 0bh
        mov dx, 70h
        out dx, al
        jmp short $+2
        mov dx, 71h
        in al, dx
        jmp short $+2
```

```
    or al, 08h
  out dx, al
  jmp short $+2
```

Watchdog Time Out Table:

Time Value	Time Out	Time Value	Time Out
0	None	8	0.5 sec.
1	0.5 sec.	9	1 sec.
2	1 sec.	A	2 sec.
3	0.015sec.	B	4 sec.
4	0.03 sec.	C	8 sec.
5	0.06 sec.	D	16 sec.
6	0.125 ec.	E	32 sec.
7	0.25 sec.	F	64 sec.

(2) **Enable watchdog output**:

```
  mov dx, 443h              ; SET WATCH DOG ENABLE
  in al, dx
  jmp short $+2
```
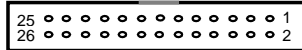
(3) **Disable watchdog output:**

```
  mov dx,043h               ; SET WATCH DOG DISABLE
  in al,dx
  jmp short $+2
```

Appendix B
Connectors' Pin Assignment

Parallel port connector

PRN

```
25 o o o o o o o o o o o o o 1
26 o o o o o o o o o o o o o 2
```

Drawing of parallel port box header

Parallel/Printer connector (PRN)

Pin no.	Signal
1	Strobe
2	Data 0
3	Data 1
4	Data 2
5	Data 3
6	Data 4
7	Data 5
8	Data 6
9	Data 7
10	-Acknowledge
11	Busy
12	Paper Empty
13	+ Select
14	- Auto Feed
15	- Error
16	- INIT Printer
17	- Select Input
18-25	Ground
26	N.C.

HDD Connector (IDE)

IDE

```
43○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○1
44○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○2
```
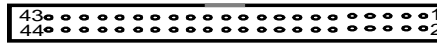
Drawing of IDE 44 pin box header

Pin no.	Signal	Pin no.	Signal
1	- RST	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C.
21	N.C.	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	N.C.
29	N.C.	30	GND
31	IRQ	32	-IO CS16
33	A1	34	N.C.
35	A0	36	A2
37	CS0	38	CS1
39	-ACT	40	GND
41	VCC	42	VCC
43	GND	44	N.C.

FDD Connector (FDD)

FDD

26 ▭▭▭▭▭▭ 1
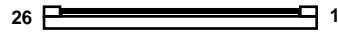
Drawing of FDD 26 pin box header

Pin no.	Signal
1,3,5	+5V
7,11,13,19,21	Unused
2	Index
4	Driver Select
6	Disk Change
8	High Density
9	RPM
10	Motor Select
12	Direction
14	Step Pulse
16	Write Data
18	Write Enable
20	Track 0
22	Write Protect
24	Read Data
26	Select Head
15,17,23,25	Ground

CRT Display Connector (VGA)

VGA
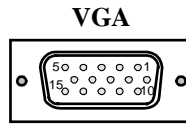
Drawing of VGA connector

Pin no.	Signal
1	RED
2	GREEN
3	BLUE
4,9,11,12,15	N/C
5,6,7,8,10	GND
13	H-SYNC
14	V-SYNC

Composite Video input Connector (J4)
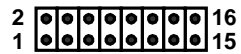
Video input pin header

Video Interface (J4)

Pin no.	Signal
1,3,5,7,9,11,13,15	GND
2	Composite video output
4	Luminance output
6	Chrominance output
8	Composite video input 4
10	Composite video input 3
12	Composite video input 2
14	Composite video input 1
16	reserved

Flat Panel Display Connector

LCD

```
43 o o o o o o o o o o o o o o o o o o o o o o 1
44 o o o o o o o o o o o o o o o o o o o o o o 2
```

Drawing of flat panel 44 pin box header

Pin no.	Signal	Pin no.	Signal
1	+12V	2	+12V
3	GND	4	GND
5	VDD	6	VDD
7	ENVEE	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	GND	34	GND
35	CLOCK	36	FLM
37	M	38	LP
39	GND	40	EN_BKL
41	GND	42	ENVDD
43	VDD	44	VDD

Serial port connector
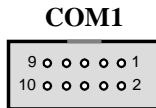
COM1

Drawing of serial port box header

RS-232 Connector (COM1)

Pin no.	Signal
1	DCD
2	DSR
3	RX
4	RTS
5	TX
6	CTS
7	DTR
8	RI
9	GND
10	+5V

COM2 Connector
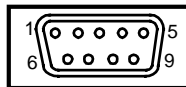
RS-232/422/485 Connector (COM2)

Pin no.	RS232	RS422	RS485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR	RTS -	
7	RTS	RTS +	
8	CTS	CTS +	
9	RI	CTS -	

COM3, 4 Connector
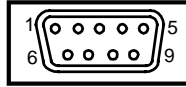
RS-232Connector (COM3, 4)

Pin no.	Signals
1	DCD
2	RX
3	TX
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Ethernet connector (J1)

LAN
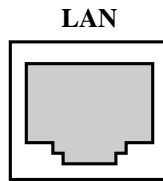
Drawing of ethernet connector RJ-45

Pin no.	signals
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	N.C.

PC/104 Connector
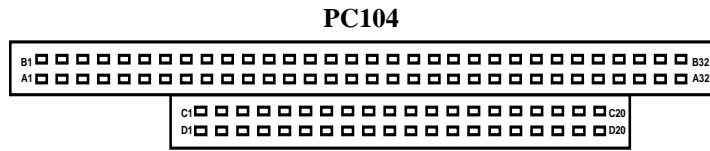
PC104

Drawing of PC104 pin header

Pin no.	A	B	C	D
1	IOCHCHK*	GND	SBHE	MEMCS16*
2	SD7	RESETDRV	LA23	IOSC16*
3	SD6	+5V	LA22	IRQ10
4	SD5	IRQ9	LA21	IRQ11
5	SD4	-5V	LA20	IRQ12
6	SD3	DRQ2	LA19	IRQ15
7	SD2	-12V	LA18	IRQ14
8	SD1	OWS*	LA17*	DACK0*
9	SD0	+12V	MEMR*	DRQ0*
10	IOCHRDY*	GND	MEMW*	DACK5*
11	AEN	SMEMW*	SD8	DRQ5
12	SA19	SMEMR*	SD9	DACK6*
13	SA18	IOW*	SD10	DRQ6
14	SA17	IOR*	SD11	DACK7*
15	SA16	DACK3*	SD12	DRQ7
16	SA15	DRQ3	SD13	+5V
17	SA14	DACK1*	SD14	MASTER*
18	SA13	DRQ1	SD15	GND
19	SA12	REFRESH*	NC	GND
20	SA11	SYSCLK	--	--
21	SA10	IRQ7	--	--
22	SA9	IRQ6	--	--
23	SA8	IRQ5	--	--
24	SA7	IRQ4	--	--
25	SA6	IRQ3	--	--
26	SA5	DACK2*	--	--
27	SA4	TC	--	--
28	SA3	BALE	--	--
29	SA2	+5V	--	--
30	SA1	OSC	--	--
31	SA0	GND	--	--
32	GND	GND	--	--

PCI bus pin assignment

```
B62   B52 B49                SOLDER SIDE              B1
▮▮▮▮▮▮▮▮▮▮▮│▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
▮▮▮▮▮▮▮▮▮▮▮│▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮
A62   A52 A49              COMPONENT SIDE            A1
```
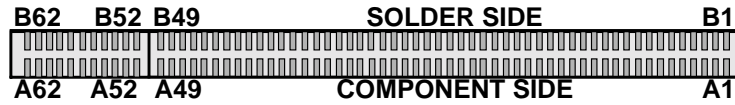
Pin no.	A	B	Pin no.	A	B
1	TRST*	-12V	32	AD16	AD17
2	+12V	TCK	33	NC	C/BE2*
3	TMS	GND	34	FRAME*	GND
4	TDI	TDO	35	GND	IRDY*
5	+5V	+5V	36	TRDY*	NC
6	INTA*	+5V	37	GND	DEVSEL*
7	INTC*	INTB*	38	STOP*	GND
8	+5V	INTD*	39	NC	LOCK*
9	CLKC	REQ3*	40	SDONE	PERR*
10	+5V(I/O)	REQ1*	41	SBO*	NC
11	CLKD	GNT3*	42	GND	SERR*
12	GND	GND	43	PAR	NC
13	GND	GND	44	AD15	C/BE1*
14	GNT1*	CLKA	45	NC	AD14
15	RST*	GND	46	AD13	GND
16	+5V(I/O)	CLKB	47	AD11	AD12
17	GNT0*	GND	48	GND	AD10
18	GND	REQ0*	49	AD9	GND
19	REQ2*	+5V(I/O)	50	KEY	KEY
20	AD30	AD31	51	KEY	KEY
21	NC	AD29	52	C/BE0*	AD8
22	AD28	GND	53	NC	AD7
23	AD26	AD27	54	AD6	NC
24	GND	AD25	55	AD4	AD5
25	AD24	NC	56	GND	AD3
26	GNT2*	C/BE3*	57	AD2	GND
27	NC	AD23	58	AD0	AD1
28	AD22	GND	59	+5V(I/O)	+5V(I/O)
29	AD20	AD21	60	REQ64*	ACK64*
30	GND	AD19	61	+5V	+5V
31	AD18	NC	62	+5V	+5V

Appendix C
Installing DiskOnChip of M-systems

. Installing the DiskOnChip 2000 :

When installing or removing the DiskOnChip be sure to first touch a grounded surface to discharge any static electricity from your body.
Use the following procedure to install the DiskOnChip:
1. Align pin 1 on the DiskOnChip with the pin1 of socket.
2. Push the DiskOnChip into the socket carefully until it is fully seated.
3. Check to make sure the DiskOnChip is installed securely, and there are no bent pins.
    Caution: The DiskOnChip may be permanent damaged if installed incorrectly.
4. To install the DiskOnChip as drive C on a system without a hard disk, set the CMOS setup of drive C to NOT INSTALLED (indicating that no physical magnetic disk is installed), and reboot the computer. The DiskOnChip 2000 will installed as drive C. The DiskOnChip needs to formatted with the system files in order for it to be a bootable drive.

. Configuring the DiskOnChip 2000 as the boot device:

In order to configure the DiskOnChip as the boot device, the operating system files need to be copied into it. Copying the operating system files into DiskOnChip should be done like in any other hard disk. The following is an example of a typical initialization process:
1. Set the DiskOnChip as a regular drive in your system (not a boot drive).
2. Install a bootable floppy diskette in drive A, and boot the system from drive A.
3. At the **DOS** prompt, type **SYS C:** to transfer the **DOS** system files to the DiskOnChip. (assuming the DiskOnChip is installed as drive C)
4. Copy any files needed into DiskOnChip.
5. Remove floppy diskette and reboot the system. The system will boot from the DiskOnChip and will allow you to run and access any files that have been copied into the DiskOnChip.

. Configuring the DiskOnChip 2000 as the first drive:

The DiskOnChip can be configured as the last drive (default) or as the first drive in the system. When configured as the last drive, the DiskOnChip is installed as drive D if there is another hard drive installed, and as drive C if no other hard drive is installed. When configured as the first drive, the DiskOnChip is always installed as drive C. To configure the DiskOnChip as first drive, proceed as follows:
1. Boot the system and make sure the DiskOnChip is installed correctly as drive D.
2. At the **DOS** prompt type   **DUPDATE   D: /FIRST   / S:DOC2000.EXB**
3. After rebooting the system, the DiskOnChip will appear as drive C:

Appendix D
Updating BIOS

You should find one diskette for updated BIOS program in the package. The updating procedures are as the following:

1. Insert the diskette(There is a file " AWDFLASH.EXE') in drive A or B.
2. Type AWDFLASH under the prompt A or B.
3. The screen will ask you to enter the file name for programming. Please enter the 'filename' for the updating BIOS that is from your agent. Meanwhile, please type 'N' to answer the question 'Do you want to save BIOS (y/n)?' under the bottom of the screen.
4. After that, please type 'Y' to answer the question 'Are you sure to program (y/n)?' on the bottom line of the current screen.
5. Turn off the power after the system updates the BIOS.
6. Turn on the power again.

Appendix E

System Assignments

I/O Port Address Map

Address (HEX)	Device
000-01F	DMA controller 1
020-021	Interrupt controller 1
040-05F	Timer 1 & 2
043	Disable Watch-dog timer operation (read)
060-06F	Keyboard controller
070-07F	Real Time Clock, Non_Maskable interrupt
080-09F	DMA page register
0A0-0BF	Interrupt controller 2
0C0-0DF	DMA controller 2
0F0	Clear math. Coprocessor busy signal
0F1	Reset math. Coprocessor
0F8-0FF	Math. Coprocessor
1F0-1F8	Fixed disk controller
200-207	Game port
278-27F	Parallel port #2 (LPT3)
2E8-2EF	Serial port #4 (COM 4)
2F8-2FF	Serial port #2 (COM 2)
300-31F	Prototype card / Streaming Tape Adapter
378-37F	Parallel port #1 (LPT2)
380-38F	SDLC, Bisynchronous 2
3A0-3AF	SDLC, Bisynchronous 1
3B0-3BF	Monochrome Display , Parallel port 0 (LPT1)
3C0-3CF	EGA card
3D0-3DF	CGA card
3E8-3EF	Serial port #3 (COM3)
3F0-3F7	Floppy Disk controller
3F8-3FF	Serial port #1 (COM1)
443	Enable Watch-dog timer operation (read)
CF8-CFF	Chipset Address & Data

DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8 bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Interrupt Assignments

Interrupt #	Interrupt Source
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	Serial port 2
IRQ 4	Serial port 1
IRQ 5	Parallel port 2
IRQ 6	Floppy disk controller
IRQ 7	Parallel port 1
IRQ 8	Real-time clock
IRQ 9	Cascade to controller 1 (IRQ 2)
IRQ 10	Available
IRQ 11	Available
IRQ 12	PS/2 Mouse
IRQ 13	Math coprocessor
IRQ 14	Hard disk controller (Primary)
IRQ 15	Hard disk controller (Secondary)

Memory Address Map

Address (HEX)	Device
0000000-009FFFF	System memory
00A0000-00BFFFF	Display memory
00C0000-00C7FFF	VGA BIOS ROM
00C8000-00EFFFF	I/O device BIOS ROM or RAM buffer
00F0000-00FFFFF	System BIOS ROM
0100000-BFFFFFF	System extension memory

System Timer Map

Timer #	Assignment
1	System timer interrupt
2	DRAM Refresh Request
3	Speaker tone generator

Appendix F
Ethernet Software Configuration

On board Ethernet interface of the Pentium All-in-One board supports all major network operating systems. I/O address and interrupts are easily configured via the RSET8139.EXE program. To execute the configuration, to view the current configuration, or to run diagnostics, do the following:

1. Power on the Pentium All-in-One board. Ensure that the RSET8139.EXE file is located in the working drive.
2. At the prompt type RSET8139.EXE and press <Enter>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and Down keys. To change a selected item, press <Enter>, and a screen will appear with available options. Highlight your option and press <Enter>. Each highlighted option has a help message guide displayed at the bottom of the screen for additional information.
4. After you have made your selection and are certain with your choice, press ESC. A prompt will appear asking if you want to save the configuration. Press Y if you want to save.

The Ethernet Setup Menu also offers three useful diagnostic functions. They are:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen, which shows the format and result of any diagnostic test undertaken.

Ethernet Driver Support

The diskette, labeled RTL 8139 Driver Diskette, which comes with the package contains all the software drivers available for various operation system. Different drivers are stored in separate subdirectories, which also include a text file. Select the driver you need and refer to the text file for the installation procedure.

Appendix G
Audio driver installation

Windows 95

1. Power up your computer and wait for Windows 95 to boot up.

2. Once Windows 95 is up and running, a "New Hardware Found" message box will appear and announce the detection of ESS Plug and Play Audio driver. Select the item "Driver form disk provided by hardware manufacturer" and click "OK".

3. In the "Install from Disk" dialog box, select drive **A:\win95** (if A: is your 3.5"floppy drive) and insert the ESS1869 driver disk. Then click "OK".

4. Once you have install your sound card, you can check for it by going into **Control Panel** and select the **SYSTEM** icon. Under Device Manager, select the Sound, video and game controllers form the device list. The ESS ES1869 Plug and Play Audio Drive and game port/joystick device icons will appear showing that Windows 95 has detected the new sound card.

Windows NT

1. Power up your computer and wait for Windows NT to boot up.

2. Once Windows NT is up and running, select "Multimedia" message box will appear and announce the detection of ESS Plug and Play AudioDrive. Select the "devices" page and select item "add", then click "OK".

3. In the "unlisted or Update driver" dialog box, select drive A:\winnt (if A: is your 3.5"floppy drive) and insert the ESS1869 Drivers disk. Then click "OK".

Windows 3.1X

1. Form Program Manager selects Run under File.

2. Type A:\Win3.1\SETUP.EXE.

3. Follow the installation instructions.

4. Once you have installed the Win3.1 driver, you have also installed the DOS

   driver automatically.

DOS

1. Under DOS, insert your audio driver disk into floppy drive A (assume A:>dos).

2. Copy a:\dos*.*   C:\ess1869

3. Edit C:\autoexec.bat

4. Add control parameters by key in:

   c:\ess1869\esscfg

   c:\ess1869\essvol [/?] [/v:xx] [/l:xx] [/w:xx] [/m:xx] [/c:xx] [/s:xx]

note :	no option	display all volume settings
	/?	Display help
	/v	Change master volume
	/l	Change line volume
	/w	Change wave volume
	/m	Change mic volume
	/c	Change cd volume
	/s	Change synthesizer volume
	xx	Volume value. Note: no xx means 0
		the value range of volume is 0-15

OS/2

1. Open an OS/2 Window and run the EINSTALL.EXE program on the installation disk by typing "A:\OS2\EINSTALL". The program first runs ESDETECT.EXE to auto detect the chip, then calls ESUNINST.EXE to remove old drivers. That program will create a backup of CONFIG.SYS named CONFIG.ESS and remove the audio device lines from CONFIG.SYS. It also creates a backup of MMPM2.INI named MMPM2.ESS and removes the audio drivers information from MMPM2.INI. In addition, it removes any other ESS driver information in COMPLIST.INI. After then, the installation program calls Multimedia Application Install program, MINSTALL.EXE. After it finishes, another program, ESCONFIG.EXE, will be called to update CONFIG.SYS if necessary.

2. When Multimedia Application Install program brings up, a check mark beside ES1869 AudioDrive means that item is already selected. To toggle selection, click the mouse on the item. Click the Install button to start the installation. Once the drivers are installed, shutdown OS/2 and reset the computer for the new ES1869 drivers to take effect.

3. If the installation cannot be completed, read the logs EINSTALL.LOG in \MMOS2\INSTALL subdirectory and MINSTALL.LOG in \MMOS2\INSTALL subdirectory or root directory to find out the problem.

4. If during the installation an error saying the audio device is already in use by another application comes up, make sure all applications that utilize audio have been closed. If this is caused by system sounds not closing the audio device, you have three options to remedy this situation:

   A. Remove the audio driver by running ESUNINST.EXE.
   B. Go to Sounds object in System Setup folder and uncheck. Enable system sounds option. After the driver is installed properly, check the option to enable system sounds.

C. Run DINSTSND.CMD in d:\MMOS2\INSTALL subdirectory. After the

driver is installed properly, run INSTSND.CMD d: to enable system sounds.

Perform one of these operations and reboot to disable system sounds. Install the

drivers again.

5. If WIN-OS/2 is installed in the system, start WIN-OS/2 and run "A:\SETUP" to

install WIN-OS/2 drivers. Change the WIN-OS/2 settings to the following if

necessary:

AUDIO_ADAPTER_SHARING = Required

INT_DURING_IO = On

6. Since OS/2 Warp 3.0 MINSTALL.EXE changes the icons of MIDI player and

Digital Video player to that of Digital Audio player in the Multimedia folder,

you may want to change them back to the originals. To change the icon of MIDI

player, right click MIDI player to bring up the menu. Select Settings, select

General, and click the Find... button. In the Start Folder window, enter

\MMOS2\INSTALL.   Click the Find button and a window of all found icons

appears. Select MIDIPLAY.ICO and click OK. Close the MIDI player Settings

notebook. For Digital Video player, repeat the above steps but select

VIDPLAY.ICO instead.

7. If the MIDI plays are not smooth in WIN-OS/2, you need to change the timer

resolution. Edit SYSTEM.INI in your Windows directory. Under [timer.drv] are

TIMERMax386Res and TIMERMax286Res. You need to change the values to

less than 8 from the default of 10.

These are the files copied to your hard disk for the MMPM/2 component:

\MMOS2

ES1869DD.SYS

VAUDDRV.SYS

ESDAEMON.EXE

SPATIAL.EXE

\MMOS2\DLL

  CARDINFO.DLL

  ESSVSD88.DLL

\MMOS2\HELP

  ES1869IN.HLP

\OS2\BOOT

  CLOCK01.SYS

  CLOCK02.SYS

  TIMER0.SYS

Updating the Software Driver

1. Select the SYSTEM icon form Control Panel.

2. Select Device Manager and select the "sound, video and game controllers" icon.

3. Under "sound, video and game controllers", select ESS ES1869 Plug and Play AudioDrive.

4. In the dialog box, select Driver to show the sound card software driver. Click on the button "Change Driver".

5. Click on the button "Have Disk" and insert your new driver disk into the floppy drive. Follow the instructions as they appear on screen.

Appendix H
Mechanical Drawing