Introduction

System Overview

The board incorporates system board, ISA I/O and PCI IDE in one board that provides all the PC solutions. The mainboard is a Cyrix GXm^{TM} micro processor based PC/ATX system, supports ISA Bus and PCI Local Bus to upgrade your system performance. It is ideal for multi-tasking and fully supports MS-DOS, Windows, Windows NT, Novell, OS/2, Windows95, UNIX, SCO UNIX etc. This manual also explains how to install the mainboard for operation, and how to setup your CMOS configuration with BIOS setup program.

Features

● **Hardware**

CPU

   – Cyrix GXm^{TM} CPU.

Green Function

   – Supports power management operation via BIOS.
   – Power down timer from 2 Mins to 30 Mins.
   – Wakes up by any key pressed or mouse activity.
   – Wake on LAN supported.
   – Ringin resume on external modem supported.

Speed

   – Supports CPU core clock 200MHz/233MHz/266MHz.
   – Supports 33 MHz PCI Bus speed.
   – I/O clock 8 MHz for ISA Bus.

Shadow RAM

   – A memory controller that provides shadow RAM and supports 8-bit ROM BIOS.

Plat Form

   – ATX.

DRAM Memory

   – Supports total DRAM 2 banks; 168-pin DIMM module sockets.
   – Supports DRAM memory 8MB to 256MB on board.
   – Supports 3.3V Unbuffered Synchronous DRAM.

Power Supplier

– ATX.

– AT.(Optional)

BUS Slots

– Provides 2 16-bit ISA Bus slots.

– Two 32-bit Master PCI Bus slots, One 32-bit Slave PCI Bus Slot.

Flash Memory

– Supports PnP function for better system compatibility.

– For friendly system BIOS update.

PCI Enhanced IDE Built-in On Board

– Supports 4 IDE hard disk drives.

– Supports PIO Mode4, high performance hard disk drives.

– Supports IDE interface with CD-ROM.

– Supports high capacity hard disk drives.

– Supports LBA mode.

– Supports LS120 / Zip 100 high capacity removable disk drives.

ISA I/O Built-in On Board

– Supports one multi-mode Parallel Port.

  (1) Standard & Bidirection Parallel Port (SPP).

  (2) Enhanced Parallel Port (EPP).

  (3) Extended Capabilities Port (ECP).

– Supports two serial ports, 16550 UART with 16 bytes FIFO.

– Supports one Infrared transmission (IR). (optional)

– Supports PS/2 Mouse.

– Supports 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB floppy disk drives.

Universal Serial Bus

– Supports two Universal Serial Bus (U.S.B.) Port.

16 bit Xpress AUDIO Built-in On-board

– 16 bit Stereo FM synthesis

– OPL3 emulation
– AC97 CODECs interface
– PCI Buffered Bus Mastering interface
– Full duplex

2D Graphics Acclerator Built-in On-board

– Full VGA and VESA mode support.
– Accelerates BitBLTs, Line draw, text.
– Hardware frame buffer compressor / decompressor.
– Supports up to 1280x1024x8 BPP and 1024x768x16 BPP.
– MPEG Assist Supported.

Dimension

– 24.5 cm X 20 cm (W x L)

• Software

BIOS

– AWARD legal friendly BIOS.
– Supports PnP functions.

O.S.

– Offers the highest performance for MS-DOS, OS/2, Windows, Windows NT, Windows 95, Novell, UNIX, SCO UNIX etc.
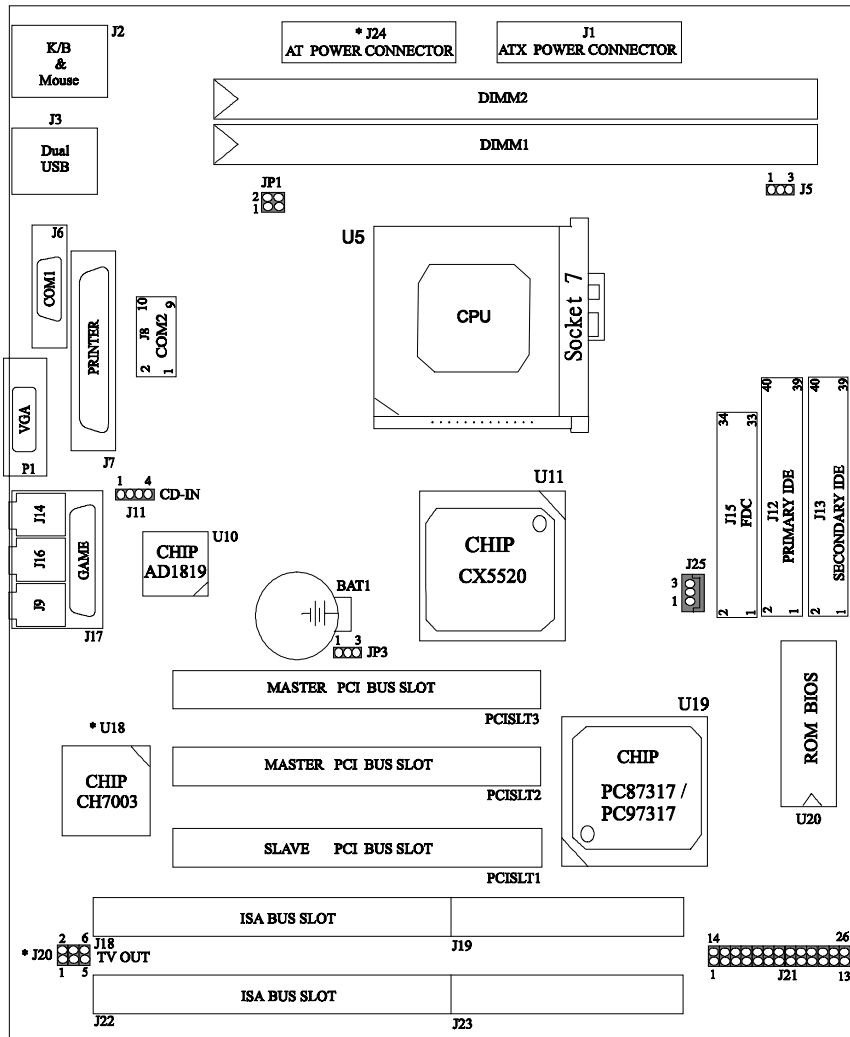
• Attachments

– HDD Cable
– FDD Cable
– Flash Memory Writer for BIOS Update (optional)
– Rear I/O Panel for ATX case
– Driver Disk

Mainboard Installation

Layout of Mainboard

Model No. M5CNA and afterwards

* U18, J20, J24 : Optional

Jumpers Setting

A jumper is several pins which may or may not be covered by a plastic jumper cap. A jumper is used to select different system options.

(A)   JP3   CMOS Function Selection
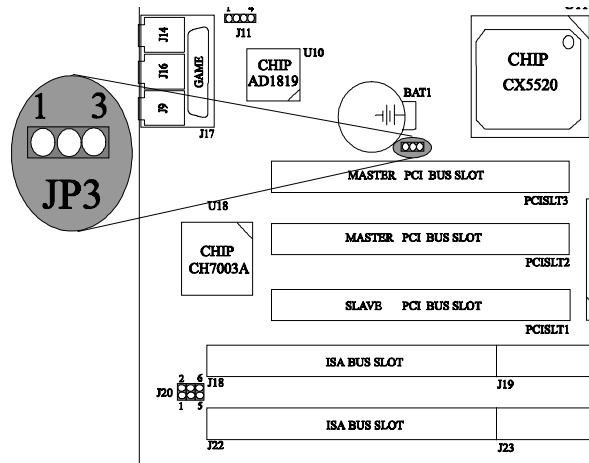
JP3	Assignment
1 3 ◯◯◯ 1-2 Closed	Normal Operation
1 3 ◯◯◯ 2-3 Closed	Clear CMOS Data
1 3 ◯◯◯ Open	Onboard Battery Disabled

Note : Please follow the procedure as below to clear BIOS Password if your password is lost or forgotten.

Power off → JP3(2-3) closed → JP3(1-2) closed →

(B)   JP1   →   Power on   →   CPU COR   Reset your desired password   **Ratio Selection**

JP1

2
1
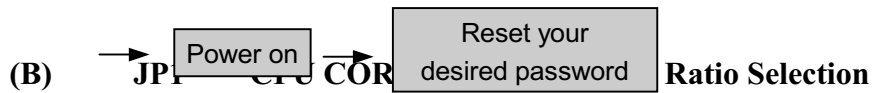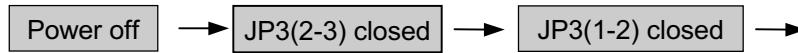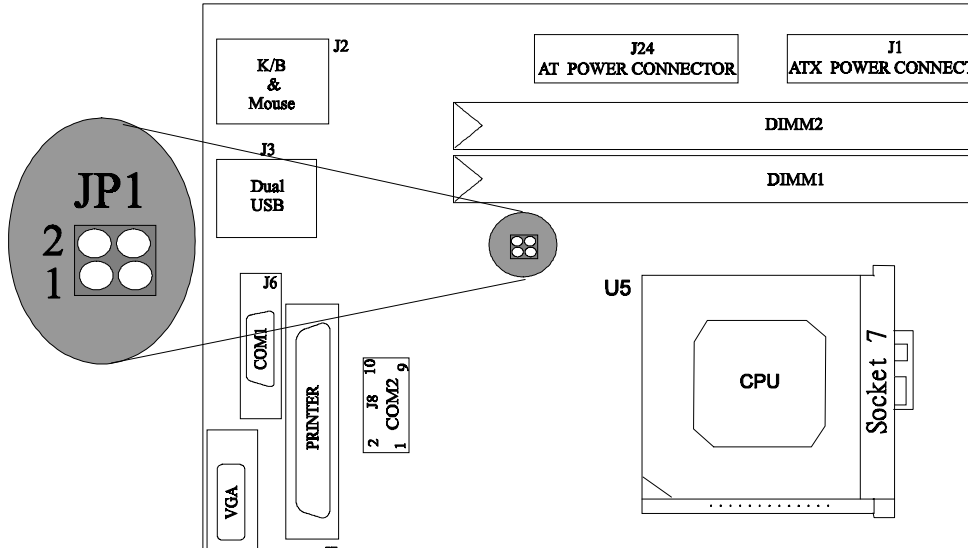
JP1 (Pin 1-2)	JP1 (Pin 3-4)	CPU CORE BUS FREQUENCY
closed	open	200MHz
open	closed	233MHz
open	open	266MHz

Connectors

(A)   J21
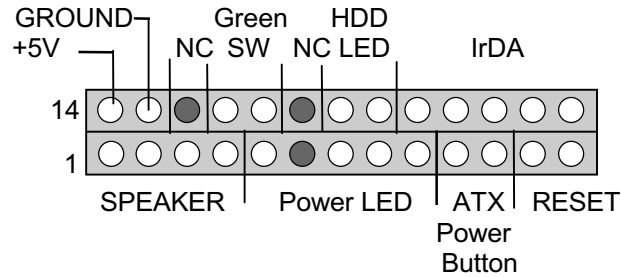
Pin No.	Assignment	Function	Pin No.	Assignment	Function
1	Speaker	Speaker Connector	**14**	+5V	VCC
2	NC		**15**	Ground	Ground
3	Ground		**16**	NC	NC
4	+5V (DC)		**17**	Power Saving Control	Green Switch
5	Power LED(+)	Power LED	**18**	Ground	
6	NC		**19**	NC	NC
7	Power LED(-)		**20**	HDD LED(-)	HDD LED
8	NC		**21**	HDD LED(+)	
9	NC		**22**	+5V	IrDA Connector
10	ATX Power Botton	ATX Power Button	**23**	NC	
11	Standby Voltage		**24**	IR IN	
12	Reset Control	Reset	**25**	Ground	
13	Ground		**26**	IR OUT	

(B)   J25   Wake-On-LAN Header
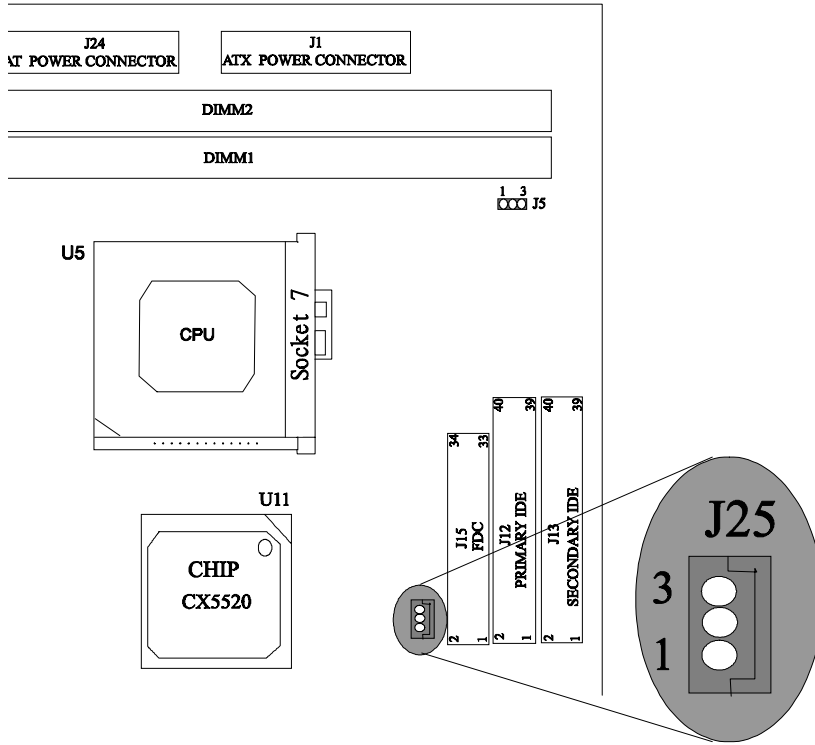
Pin No.	Assignment
3	Wake Signal Input
2	Ground
1	5V Standby Voltage

(C)   J20   TV Video Output (Optional)
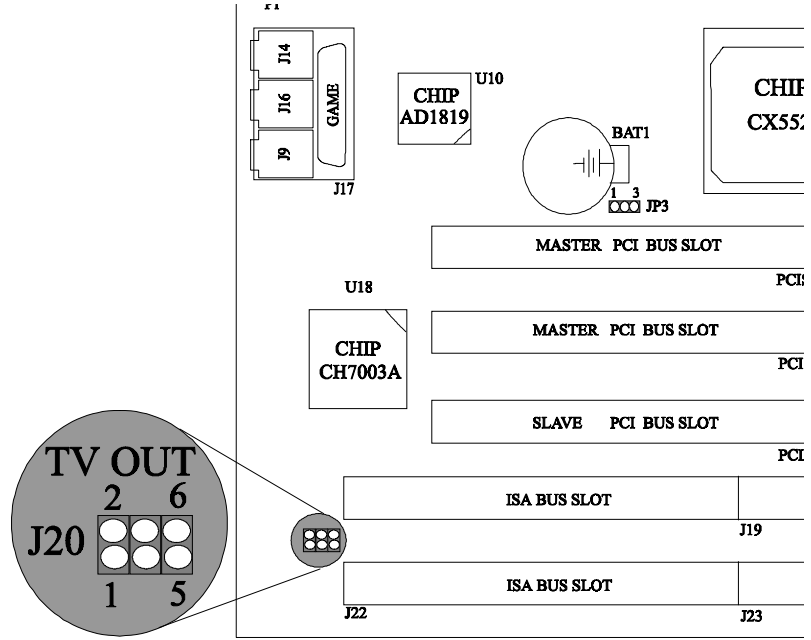
Pin No.	Signal	Pin No.	Signal	Function
1	Y-Signal	2	Ground	S-OUT
3	CbCr-Signal	4	Ground	
5	Video Composit Signal	6	Ground	AV-OUT

(D)   J11   CD-ROM Audio-In.
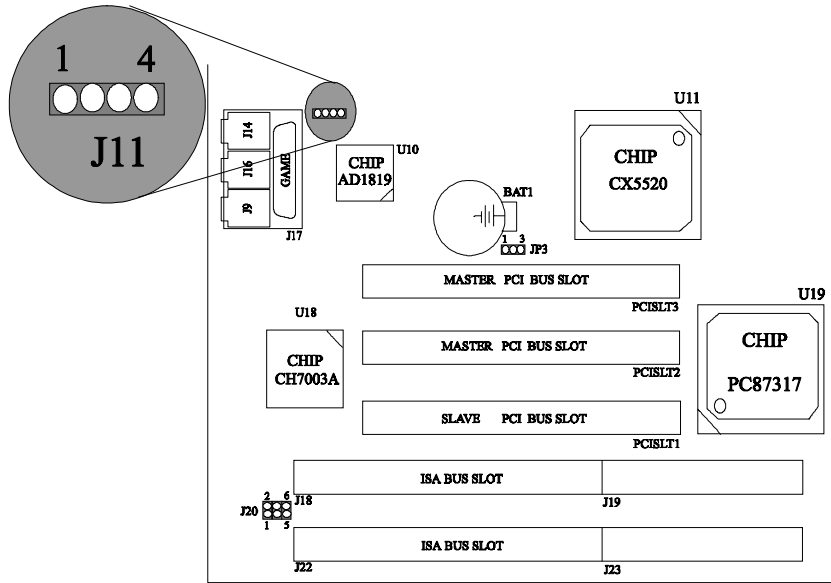
Pin No.	Assignment
1	Right Channel Input
2	Ground
3	Ground
4	Left Channel Input

DRAM Installation

(a) DRAM CONFIGURATION

DRAM Access Time : 3.3V Unbuffered SDRAM 12ns required.
DRAM Type : 8/16/32/64/128MB DIMM Module (168pin)

Total Memory Size (MB)	Bank 0 DIMM 1	Bank 1 DIMM 2
8M	8M x 1 pc	----
16M	16M x 1 pc	----
32M	32M x 1 pc	----
64M	64M x 1 pc	----
128M	128M x 1 pc	----
16M	8M x 1 pc	8M x 1 pc
24M	16M x 1 pc	8M x 1 pc
40M	32M x 1 pc	8M x 1 pc
72M	64M x 1 pc	8M x 1 pc
24M	8M x 1 pc	16M x 1 pc
32M	16M x 1 pc	16M x 1 pc
48M	32M x 1 pc	16M x 1 pc
80M	64M x 1 pc	16M x 1 pc
40M	8M x 1 pc	32M x 1 pc
48M	16M x 1 pc	32M x 1 pc
64M	32M x 1 pc	32M x 1 pc
96M	64M x 1 pc	32M x 1 pc
72M	8M x 1 pc	64M x 1 pc
80M	16M x 1 pc	64M x 1 pc
96M	32M x 1 pc	64M x 1 pc
128M	64M x 1 pc	64M x 1 pc
256M	128M x 1 pc	128M x 1 pc

*Each Bank can be installed and worked individually, the mainboard provides optimal performance and free choices depending on your needs.
*The list show above for DRAM configuration is just for reference.

(b)   How to install a DIMM Module

Single Sided DIMM

Double Sided DIMM
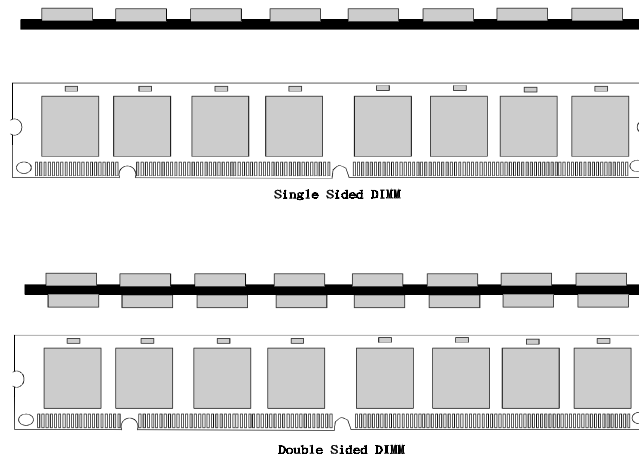
1. The DIMM slot has a " *Plastic Safety Tab"* and the DIMM memory module has a "Notched End", so the DIMM memory module can only fit in one direction.

2. Insert the DIMM memory modules into the socket at 90-degree angle, then push down a vertical position so that it will snap into place.

3. The Mounting Holes and Metal Clips should fit over the edge and hold the DIMM memory modules in place.
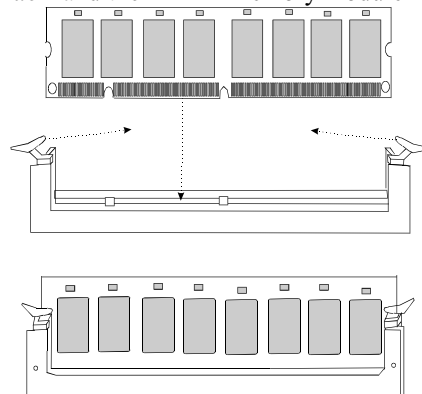
Cyrix MediaGX Windows 95 Drivers

1) Run Windows 95 using its included generic VGA driver (640 x 480 resolution). Refer to your Windows 95 documentation if you need assistance. This is most important if you have installed other high-resolution drivers previous to installing M5CNX MediaGX Windows 95 Drivers.

2) Insert "M5CNX MediaGX Windows 95 Driver Disk" into floppy drive A:.

3) Execute the Setup.exe which located in the root directory of Driver Disk.

4) If you are prompted that insert the disk labeled 'XpressAUDIO ™ Driver Disk' please select the location where you install the drivers (For example: C:\PROGRA~1\CYRIXC~1).

5) If you are prompted that insert the disk labeled 'Cyrix XpressGRAPHICS ™ Windows 95 Display Driver ' please select the location where you install the drivers (For example: C:\PROGRA~1\CYRIXC~1).

6) Then please complete the rest of installation procedure according to the hints provided by setup program.

Cyrix MediaGX Windows NT Drivers

Installing M5CNX Windows NT 3.51 drivers

1)Login Windows NT using its included generic VGA driver (640*480 resolution). Refer to your Windows NT documentation if you need assistance. This is most important if you have installed other high-resolution drivers previous to installing M5CNX drivers.

2)Open the Display control panel. Click the button for "Change Display Type."

3)In the new window, under Adapter Type, click the button for "Change."

4)Insert "M5CNX Windows NT Driver Installation DISK (VIDEO) disk" into floppy drive A:.

5)In the new window, under Select Device, click the button for "Other."   A window appears asking for the path to the M5CNX drivers. Enter an appropriate path and click the button for "OK."

   For example: A:\NT351

6)Select "M5CNX NT 3.51 Driver" option. Click the button for "Install." If Windows NT asks you to disable the currently installed driver, click the button for "Yes." A new window appears asking for the path to the M5CNX drivers. Click the button for "Continue." It will take a few moments to copy the files to your hard disk.

7)M5CNX Windows NT display drivers are now installed on your computer. Use the Display control panel to change and test M5CNX settings at a later time.

Installing M5CNX Windows NT 4.0 drivers

1)Login Windows NT 4.0 using its included generic VGA driver (640*480 resolution). Refer to your Windows NT documentation if you need assistance. This is most important if you have installed other high-resolution drivers previous to installing M5CNX drivers.

2)Click the Start button and select Settings\Control Panel . Then open the Display control panel.   Change to Settings panel under the Display Properties control panel and Click the button for   "Display Type..."

3)In the Display Type window, click the button for "Change."

4)Insert "M5CNX Windows NT Driver Installation DISK (VIDEO) disk" into floppy drive A:.

5)In the Change Display window, click the button for "Have Disk..."   A window appears asking for the path to the M5CNX Windows NT 4.0 drivers.   Enter an appropriate path and click the button for "OK"

For example: A:\NT40

After the above procedure completed, you can see a "M5CNX Graphics Adapter" option appears in the Change Display window and please click the button for "OK".

6)In the "Third-party Drivers." dialog box, please click the button for "Yes".

7) M5CNX Windows NT 4.0 display drivers are now installed on your computer. After rebooting your system, use the Display control panel to change and test   M5CNX Accelerator settings.

Back I/O panel
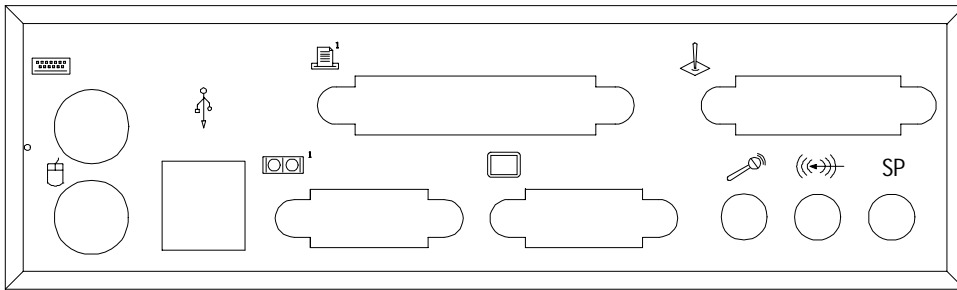
AWARD BIOS Setup

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, and 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

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

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

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

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

Control Keys

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

Main Menu

Once you enter AWARD BIOS CMOS Setup Utility, the Main Menu(**Figure 1**) will appear on the screen. The Main Menu allows you to select an item and press <**Enter**> to accept or enter its sub-menu.

■ **Figure 1. Main Menu**

```
                    ROM PCI/ISA BIOS (xxxxxxxx)
                        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	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 a standard compatible BIOS.

BIOS Features Setup

This setup page includes all the items for the BIOS special enhanced features.

Chipset Features Setup

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

Power Management Setup

This setup page includes all the items for power management features.

PnP / PCI Configuration

This category specifies the value (in units of PCI bus clocks) of the latency timer for this PCI bus master and the IRQ level for PCI device.

Load Setup Defaults

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

Integrated Peripherals

This setup page includes all the items for Integrated Peripherals features.

Supervisor Password / User Password Setting

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

IDE HDD Auto Detection

Automatically configure hard disk parameters.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup Menu

The items in the Standard CMOS Setup Menu are divided into categories. Each category includes no, 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.

■ **Figure 2. Standard CMOS Setup Menu**

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

```
Date (mm:dd:yy) : Mon  Mar   3 1997
Time (hh:mm:ss) : 11 : 37 : 30
```

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDS	SECTOR	MODE
Primary Master :	Auto	0	0	0	0	0	0	Auto
Primary Slave :	Auto	0	0	0	0	0	0	Auto
Secondary Master :	Auto	0	0	0	0	0	0	Auto
Secondary Slave :	Auto	0	0	0	0	0	0	Auto

```
Drive A    :1.44MB, 3.5 in.
Drive B    :None
                                   Base Memory      :        0K
                                   Extended Memory  :        0K
                                   Other Memory     :      512K
Video      :EGA/VGA                Total Memory     :      512K
Halt On    :All, But Keyboard
```

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

Date

The Date format is **<day><month><date><year>**.

Day	The day, from Sun to Sat, is determined by the BIOS and is display-only
Date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec
year	The year, from 1994 through 2079

Time

The time format is **<hour><minute><second>**. The time is calculated based on the 24-hour military-time clock. For example, 2 p.m. is 14:00:00.

Hard Disks Type

The categories identify the types of hard disk that have been installed in the computer. There are 46 predefined types and a user definable type. Type 1 to Type 45 are predefined. Type "User" is user-definable. Type "Auto" is automatically defines by BIOS.

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

If you select type "User", related information is asked to be entered to the following items. Enter the information directly from the keyboard and press **<Enter>**. This information should be provided in the documentation from your hard disk vendor or the system manufacturer. Most new drives will also have the parameters given on the label on top of the drive.

CYLN	number of cylinders
HEAD	number of heads
WPCOM	write precom pensation
SEC	number of sectors
LBA MODE	type of LBA mode
BLK MODE	type of Block mode
PIO MODE	type of PIO
32BIT MODE	type of 32-Bit transfer mode

If a hard disk has not been installed select NOT Installed and press **<Enter>**.

Driver A Type/Drive B Type

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

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

Video

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

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

Halt On

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

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

Memory

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

Base Memory

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

Extended Memory

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

Other Memory

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

BIOS Features Setup

!! WARNING !! *The information about BIOS defaults on manual* **(Figure 3.4.5.6.8)** *is just for reference, please refer to the BIOS installed on board, for update information.*

■ **Figure 3. BIOS Features Setup Menu**

```
                    ROM PCI/ISA BIOS (xxxxxxxx)
                       BIOS FEATURES SETUP
                      AWARD SOFTWARE, INC.

 Virus Warning              : Disabled   Video    BIOS Shadow      : Enabled
 CPU Internal Cache         : Enabled    C8000-CBFFF Shadow        : Disabled
 Quick Power On Self Test   : Enabled    CC000-CFFFF Shadow        : Disabled
 Boot Sequence              : A,C,SCSI   D0000-D3FFF Shadow        : Disabled
 Swap Floppy Drive          : Disabled   D4000-D7FFF Shadow        : Disabled
 Boot Up Floppy Seek        : Enabled    D8000-DBFFF Shadow        : Disabled
 Boot Up NumLock Status     : On         DC000-DFFFF Shadow        : Disabled
 Gate A20 Option            : Fast
 Memory Parity Check        : Enabled
 Typematic Rate Setting     : Disabled
 Typematic Rate (Chars/Sec) : 6
 Typematic Delay (Msec)     : 250
 Security Option            : Setup
 OS Select For DRAM > 64MB  : Non-OS2    ESC : Quit        ↑↓ → ←: Select Item
 Report No FDD For WIN 95   : No         F1   : Help         PU/PD/+/- : Modify
                                         F5   : Old Values   <Shift> F2 : Color
                                         F7   : Load Setup Defaults
```

Virus Warning

This category flashes on the screen.   During and after the system boot 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.

Disabled (default)
No warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Enabled
Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

CPU Internal Cache

Enabled (default)	Enable cache
Disabled	Disable cache

Quick Power On Self Test

This option enables the level 2 external cache memory.

Enabled	Enable quick POST
Disabled (default)	Normal POST

Boot Sequence

This option determines which drive the computer searches the OS for boot-up.   The settings are "A, C, SCSI", "C, A, SCSI", "C, CDROM, A", "CDROM, C, A", "D, A, SCSI", "E, A, SCSI", "F, A, SCSI", "SCSI, A, C", "SCSI, C, A" or "C only", etc.   **The default is "A, C, SCSI".**

Swap Floppy Drive

Switches the floppy disk drive between being designated as A and B. **Default is Disabled.**

Boot Up Floppy Seek

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

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

Boot Up NumLock Status

On (default)	Keypad is number keys.
Off	Keypad are arrow keys.

Gate A20 Option

Fast (default)	The system chipset provide support for gate A20.
Normal	Keyboards provide support for gate A20.

Memory Parity Check

This item allows you to select between three methods of memory error checking.

Enabled
Disabled   (default)

Typematic Rate Setting

This determines the typematic rate.

Enabled	Enable typematic rate and typematic delay programming.
Disabled (default)	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items and the default is 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)

Choose the length of delay from the time you press a key and the character repeating.   (units are mil-sec)

Security Option

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

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

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

OS Selection for DRAM > 64MB

Allows OS/2 to be used with > 64MB of DRAM.   Settings are Non-OS/2 (default) and OS/2.   Set to OS/2 if using more than 64MB and running OS/2.
DEFAULT is Non-OS2.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM for faster execution.

Enabled   Optional ROM is enabled.
Disabled (default)   Optional ROM is disabled.

C8000 - CFFFF Shadow / E8000 - EFFFF Shadow

Determines whether the optional ROM will be copied to RAM for faster execution.

Enabled   Optional ROM is shadowed.
Disabled (default)   Optional ROM is not shadowed.

Note : For C8000 - DFFFF option - ROM on PCI BIOS, BIOS will automatically enable the shadow RAM.   User does not have to select the item.

Chipset Features Setup

The Chipset Features Setup option is used to change the values of the chipset registers.   These registers control most of the system options in the computer.

■ **Figure 4. Chipset Feature Setup Menu**

```
                        ROM PCI/ISA BIOS (xxxxxxxx)
                        CHIPSET FEATURES SETUP
                         AWARD SOFTWARE, INC.
┌─────────────────────────────────────────┬──────────────────────────────────┐
│ SDRAM CAS latency Time    : AUTO         │                                  │
│ SDRAM Clock Ratio Div By   : 4           │                                  │
│                                          │                                  │
│ 16-bit I/O Recovery <CLK>   : 5          │                                  │
│ 8-bit I/O Recovery <CLK>    : 5          │                                  │
│                                          │                                  │
│ USB Controller            : Disabled     │                                  │
│                                          │                                  │
│                                          │                                  │
│                                          │                                  │
│                                          │                                  │
│                                          ├──────────────────────────────────┤
│                                          │ ESC : Quit      ↑↓ → ←: Select Item│
│                                          │ F1  : Help         PU/PD/+/- : Modify│
│                                          │ F5  : Old Values    <Shift> F2 : Color│
│                                          │ F7  : Load Setup Defaults        │
└─────────────────────────────────────────┴──────────────────────────────────┘
```

SDRAM CAS latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.   Do not reset this field from the default value specified by the system designer.
2 T (default)
3 T / AUTO

16-bit I / O Recovery <CLK>

The recovery time is length of time, measured in CPU clocks, which 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 16 bit I/O.   Choices are from 1 to 16 CPU clocks.
5 (default)

8-bit I / O Recovery <CLK>

The recovery time is length of time, measured in CPU clocks, which 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 16 bit I/O.   Choices are from 1 to 16 CPU clocks.

5 (default)

USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB peripheral.

Enabled
Disabled (default)

Power Management Setup

■ **Figure 5. Power Management Setup Menu**

```
                    ROM PCI/ISA BIOS (xxxxxxxx)
                    POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────────┬──────────────────────────────────────┐
│ Power Management    : Disabled       │ IRQ1    (KeyBoard)        : ON        │
│                                      │ IRQ3    (COM   2)         : ON        │
│        **   PM Timers **             │ IRQ4    (COM   1)         : ON        │
│ Standby Mode        : Disabled       │ IRQ5    (LPT   2)         : ON        │
│ HDD Power Down      : Disabled       │ IRQ6    (Floppy Disk)     : ON        │
│ MODEM Use IRQ       : NA             │ IRQ7    (LPT   1)         : ON        │
│                                      │ IRQ9    (IRQ2 Redir)      : ON        │
│                                      │ IRQ10   (Reserved)        : ON        │
│                                      │ IRQ11   (Reserved)        : ON        │
│                                      │ IRQ12   (PS/2 Mouse)      : ON        │
│                                      │ IRQ13   (Coprocessor)     : ON        │
│                                      │ IRQ14   (Hard Disk)       : ON        │
│                                      │ IRQ15   (Reserved)        : OFF       │
│                                      │                                      │
│                                      │ ESC : Quit    ↑↓ → ←  : Select Item  │
│                                      │ F1   : Help        PU/PD/+/- : Modify │
│                                      │ F5   : Old Values   <Shift> F2 : Color│
│                                      │ F7   : Load Setup Defaults            │
└─────────────────────────────────────┴──────────────────────────────────────┘
```

Power Management

Disable (Min. Saving)	Global Power Management will be disabled..
User Define	Users can configure their own power
(Max. Saving)	management.
Min Saving	Pre-defined timer values are used such that all timers are at their MAX value.
Max Saving	Pre-defined timer values are used such that all timers are at their MIN value.

Standby Mode

This option specifies the length of a period of system inactivity while in Full power on state.   When this length of time expires, the computer enters Standby power state.
Disabled (default)
1 Min ~ 15 Min

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
Disabled (default)
1 Min ~ 15 Min

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.
NA (default)
1 , 3 , 4, 5, 7, 9, 10, 11

IRQ

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can.   When an I/O device wants to gain 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.
As above, the choices are On and Off.
When set On, activity will neither prevent the system from going into a power management mode nor awaken it.
IRQ1 <Keyboard>   ON (default)
IRQ3 <COM 2>   ON (default)
IRQ4 <COM 1>   ON (default)
IRQ5 <LPT 2>   ON (default)

IRQ6 <Floppy Disk>   **ON (default)**
IRQ7 <LPT 1>   **ON (default)**
IRQ9 <IRQ2 Redir>   **ON (default)**
IRQ10 <Reserved>   **ON (default)**
IRQ11 <Reserved>   **ON (default)**
IRQ12 <PS/2 Mouse>   **ON (default)**
IRQ13 <Coprocessor>   **ON (default)**
IRQ14 <Hard Disk>   **ON (default)**
IRQ15 <Reserved>   **OFF (default)**

PNP / PCI Configuration Setup

■ **Figure 6. PNP / PCI Configuration Setup Menu**

```
                    ROM PCI/ISA BIOS (xxxxxxxx)
                    PNP / PCI FUNCTION SETUP
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────────┬──────────────────────────────────┐
│ Resources Controlled By   : Manual   │ PCI IRQ Actived By        : Level │
│ Reset Configuration Data  : Disabled │                                  │
│                                      │                                  │
│ IRQ-3    assigned to  : PCI / ISA PnP│                                  │
│ IRQ-4    assigned to  : PCI / ISA PnP│                                  │
│ IRQ-5    assigned to  : PCI / ISA PnP│                                  │
│ 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│ F7   : Load Setup Defaults        │
└─────────────────────────────────────┴──────────────────────────────────┘
```

Resources Controlled By "Auto" or "Manual"

By Choosing "Auto" the system BIOS will detect the system resource and automatically assign the relative IRQ and DMA channel for each peripheral.

By Choosing "Manual"(default), the user will need to assign IRQ & DMA for add-on cards.   Be sure that there are no IRQ/DMA and I/O ports conflict.

Resources Configuration Data

The system BIOS supports the PnP feature so the system needs to record which resource is assigned and protect resources from conflict.   Every peripheral device has a node which is called ESCD.   This node records which resources are assigned to it.   The system needs to record and update ESCD to the memory locations.   These locations (4K) are reserved at the system BIOS.

If Disabled (default) is chosen the system's ESCD will update only when the new configuration varies from the last one.

If Enabled is chosen the system will be forced to update ESCDs if the system configuration has changed and then auto set this option to the "Disabled" mode.

IRQ-3	assigned to : PCI / ISA PnP
IRQ-4	assigned to : PCI / ISA PnP
IRQ-5	assigned to : PCI / ISA PnP
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
DMA-5	assigned to : PCI / ISA PnP
DMA-6	assigned to : PCI / ISA PnP
DMA-7	assigned to : PCI / ISA PnP

The above settings will be shown on the screen only if "Manual" is chosen

for the Resources Controlled By function.

Legacy is the term which signifies that a resource is assigned to the ISA Bus and provides for non PnP ISA add-on cards. PCI / ISA PnP signifies that a resource is assigned to the PCI Bus or provides for ISA PnP add-on cards and peripherals.

PCI IRQ Actived By

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.
Level (default)
Edge

Load Setup Defaults

Chipset defaults indicate the values required by the system for maximum performance.

■ **Figure 7. Load Setup Defaults Screen**

ROM PCI/ISA BIOS (xxxxxxxx)
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
PCI & PCI CONFIGU	**Load SETUP Defaults (Y/N) ? N**	ETUP
LOAD SETUP DEFA		AVING

Esc : Quit   ↑ ↓ → ← : Select Item
F10 : Save & Exit Setup   (Shift) F2   : Change Color

Load SETUP Defaults except Standard CMOS SETUP

If you wish to load the SETUP Defaults, change the prompt to <**Y**> and

press <**ENTER**>.

Integrated Peripherals Setup

■ **Figure 8. Integrated Peripherals Setup Menu**

```
                    ROM PCI/ISA BIOS (xxxxxxxx)
                    INTEGRATED PERIPHERALS
                    AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────────────┐
│ IDE HDD Block Mode        : Enabled  Parallel Port Mode       : SPP       │
│                                      ECP Mode Use DMA         : 3         │
│ Primary IDE Channel       : Enabled                                       │
│   Read Prefetch           : Disabled Build in CPU Audio       : SB 16     │
│   Write Buffering         : Disabled Audio I/O Base Address   : 220H      │
│   Master Drive PIO Mode   : Auto     Audio IRQ Select         : IRQ 5     │
│   Slave Drive PIO Mode    : Auto     Audio Low DMA Select     : DMA 1     │
│                                      Audio High DMA Select    : DMA 5     │
│ Secondary IDE Channel     : Enabled  Joystick Status          : Enabled   │
│   Read Prefetch           : Disabled Video Memory Size        : 2.5M      │
│   Write Buffering         : Disabled                                      │
│   Master Drive PIO Mode   : Auto                                          │
│   Slave Drive PIO Mode    : Auto                                          │
│                                                                           │
│ Onboard FDC Controller    : Enabled  ESC : Quit      ↑↓ → ←: Select Item  │
│ Onboard Serial Port 1     : 3F8/IRQ4 F1   : Help       PU/PD/+/- : Modify │
│ Onboard Serial Port 2     : 2F8/IRQ3 F5   : Old Values  <Shift> F2 : Color│
│ UR2 Mode                  : Standard F7   : Load Setup Defaults           │
│ Onboard Parallel Port     : 378/IRQ7                                      │
└─────────────────────────────────────────────────────────────────────────┘
```

IDE HDD Block Mode

This item allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).   Select Enabled only if your hard drives support block mode.
Enabled (default)
Disabled

IDE Primary / Secondary Master / Slave PIO

Auto / Mode0 / Mode1-4 The Four IDE PIO (Programmed Input / Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports.
Modes 0 through 4 provide successively increased performance.   In Auto mode, the system automatically determines the best mode for each device.

Onboard FDC Controller

Enabled / Disabled The system has an on-board Super I/O chip with a FDD controller that supports 2 FDDs for 360K / 720K / 1.2M / 1.44M / 2.8M.   Choose "Enabled" to use the on-board FDD controller for accessing the FDD.   Otherwise choose "Disabled" to use the off-board FDD controller.

Onboard Serial Port 1

Disabled / (3F8 / IRQ4) / (2F8 / IRQ3) / (3E8 / IRQ4) / (2E8 / IRQ3)

Onboard Serial Port 2

Disabled / (3F8 / IRQ4) / (2F8 / IRQ3) / (3E8 / IRQ4) / (2E8 / IRQ3)

The system has an On-board Super I/O chipset with 2 serial ports.
The On-board serial ports can be selected as:

Disabled
3F8 / IRQ4   COM1 uses IRQ4

2F8 / IRQ3	COM2 uses IRQ3
3F8 / IRQ4	COM3 uses IRQ4
2F8 / IRQ3	COM4 uses IRQ3

UR2 Mode

This item allows you to determine which Infra Red (IR) function of onboard I/O chip.

Standard (default)

IrDA 1.0 / ASK IR / MIR 0.57M / MIR 1.15M / FIR

Onboard Parallel Port

Disabled/ **(3BC/IRQ7)/** **(278 /IRQ5)/** **(378 /IRQ7)**	There is a built-in parallel port on the on-board Super I/O chipset that provides standard, ECP, and EPP features. It has the following options:

Disable
(3BC/IRQ7)Line Printer port 0
(278 / IRQ5)Line Printer port 2
(378 / IRQ7)Line Printer port 1

Onboard Parallel Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP."   To operate the onboard parallel port in the ECP and SPP modes simultaneously, choose "ECP/SPP." By choosing "ECP" the onboard parallel port will operate in ECP mode only.   Choosing "ECP/EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.   The ECP mode has to use a DMA channel so choose the onboard parallel port with the ECP feature.   After selecting it the following message will appear: "ECP Mode Use DMA". At this time the user can choose between DMA channels 3 or 1.   The onboard parallel port is EPP Spec. compliant so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "Parallel port EPP Type." At this time either

EPP 1.7 spec. or EPP 1.9 spec. can
be chosen.

Build in CPU Audio

The functions of a full featured **SB16** compatible audio card.
SB 16 (default)
SB Pro
Disabled

Audio I / O Base Address

Traps I / O accesses for sound card compatibility.
220H (default)
240H / 260H / 280H

Audio IRQ Select

Generates IRQs for emulating legacy data transfers via the Demand Mode
DMA mechanism.   Support is provided for software generated IRQs on
IRQ **2, 5(default), 7, 10, Disabled**.

Audio Low / High DMA Select

Supports I / O trapping for low (**DMA 1, DMA 3, Disabled**) and / or
high (**DMA 5, DMA 6, DMA 7, Disabled**) DMA accesses.

Supervisor / User Password Setting

■ **Figure 9. Supervisor Password Setting**

```
                        ROM PCI/ISA BIOS (xxxxxxxx)
                            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	SAVE & EXIT SETUP
LOAD SETUP DEFA **Enter Password :** AVING	

```
Esc : Quit                        ↑ ↓  →  ←  : Select Item
F10 : Save & Exit Setup           (Shift) F2      : Change Color
```

Change / SCT / Disable Password

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

ENTER PASSWORD

Type the password, up to eight characters, and press <**Enter**>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <**Enter**>. You may also press <**ESC**> to abort the selection and not enter a password. To disable password, just press <**Enter**> when you are prompted to enter password. A message will confirm that you wish to disable the password. Once the password is 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 every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Feature Setup Menu, you will be prompted only when you try to enter Setup.

IDE HDD Auto Detection

Automatically configure hard disk parameters. The parameters shown below are only an example.

■ **Figure 10. Auto Configuration with Optimal Settings Screen**

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

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LAND	SECTOR	MODE
Primary Master	:User	343	665	16	65535	664	63	NORMAL

Select Primary Slave Option (N=Skip)   N

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

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

ESC : Skip

When you enter this utility, the screen asks you to select a specific hard disk for Primary Master.   If you accept a hard disk detected by the BIOS, you can enter **"Y"** to confirm and then press <**Enter**> to check next hard disk.   This function allows you to check four hard disks and you may press the <**Esc**> after the <**Enter**> to skip this function and go back to the Main Menu.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

■ **Figure 11. Save & Exit Setup Screen**

ROM PCI/ISA BIOS (xxxxxxxx)
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 CONFIGU	SAVE to CMOS and Exit (Y/N)?N
LOAD SETUP DEFA	AVING

Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color

Save Data to CMOS & Exit SETUP

Pressing **<N>** and **<ENTER>** will return you to the Main Menu.

Pressing **<Y>** and **<ENTER>** will save the system parameters and continue with the booting process.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

■ **Figure 12. Save Settings and Exit Screen**

```
                        ROM PCI/ISA BIOS (xxxxxxxx)
                          CMOS SETUP UTILITY
                         AWARD SOFTWARE, INC.
```

STANDARD COMS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP / PCI CONFIGU **Quit Without Saving (Y/N)?N** UP	
LOAD SETUP DEFA VING	

```
Esc : Quit                                    ↑ ↓ → ←  : Select Item
F10 : Save & Exit Setup                      (Shift) F2    : Change Color
```

```
                    Abandon all Datas & Exit SETUP
```

```

```
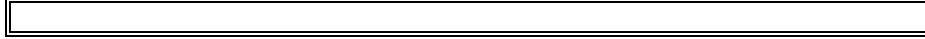
Pressing **\<N\>** and **\<ENTER\>** will return you to the Main Menu.

Pressing **\<Y\>** and **\<ENTER\>** will continue with booting process without saving any system parameters.

Application Software

– Please use the "BIOS Utility" diskette to setup Flash Memory.
– The diskette contains the intelligent installation utility **AWDFLASH.EXE**, displayed below.

■ **Figure 13. Flash Memory Writer**

```
┌─────────────────────────────────────────────────────────────┐
│                   FLASH MEMORY WRITER Vxx                     │
│         Copyright    (C) 1992-1994 Award Software, Inc.,      │
├─────────────────────────────────────────────────────────────┤
│   For xx-xxxxxxxxxxxxxxxxxx                  DATE: xx/xx/xxxx  │
│   Flash   Type -                                              │
│                                                               │
│ File Name to Program:  ┌──────────────────┐                   │
│                        └──────────────────┘                   │
│                                                               │
│                                                               │
│                                                               │
├─────────────────────────────────────────────────────────────┤
│ Error Message :                 Do You Want To Save Bios (Y/N)?│
└─────────────────────────────────────────────────────────────┘
```