Chapter 1

INTRODUCTION

The MICRO-ATX CX2 mainboard is a high-performance personal computer mainboard. This mainboard supports Cyrix®GXm processor with MMX™ technology. The mainboard also supports three 32-bit PCI (Peripheral Component Interconnect) Local Bus standard slots.

The Cyrix®Cx5520™ Core Logic is a companion device to the family of MediaGX™ Integrated Processors. The Cx5520 and MediaGX processors together provide a system-level solution suitable for desktops.

The Cx5520™ is a PCI-to-ISA bridge (South Bridge) that provides complete AT/ISA functionality. The device also contains state-of-the-art power management. Hardware support for the Cyrix®Virtual System Architecture™ (VSA™) is provided enabling Microsoft®PC97 compliant audio. Two bus mastering IDE controllers are included for support of up to four ATA-compliant devices. An optional two-port Universal Serial Bus (USB) provides high speed, Plug & Play expansion for a variety of new consumer peripheral devices such as digital cameras.

All of the clocks required in the system are integrated into this device, eliminating the need for an external clock chip.

1.1 Mainboard Features

CPU
● Socket supports Cyrix®GXm processor with MMX™ technology only.

Chipset
● Cyrix®CX5520 chipset (onboard VGA/Audio).

Onboard VGA
● Cyrix®Xpress GRAPHICs™.

Onboard Audio
● Cyrix®Xpress Audio™ 16-bit sound.

Main Memory
● Supports two memory banks using two 168-pin DIMM sockets (for unbuffered DIMM).
● Up to 512 Mbytes main memory.
● Supports SDRAM(Synchronous DRAM).

Slots
● Three 32-bit PCI Bus slots (two 32-bit bus master PCI slots + one slave slot)
● Two 16-bit ISA Bus slots.

On-Board IDE
● Supports Bus Master.
● Supports up to 4 IDE drives.

On-Board Peripherals
● On-Board Peripherals include:
  - 1 floppy port supports 2 FDD
  - 2 serial ports (COMA + COMB)
  - 1 parallel port supports ECP or EPP mode
  - USB Ports (optional)
  - VGA Port

Dimension
- MICRO- ATX: 24.4cm(L) x 17.6cm(W) x 4 layers PCB

Mounting
- 7 mounting holes.

Other Features
- Poly Fuse used by keyboard and USB devices
- Power ON/OFF switch connector on board
- Ring Wake-Up
- Alarm Wake-Up

1.2 Mainboard Layout
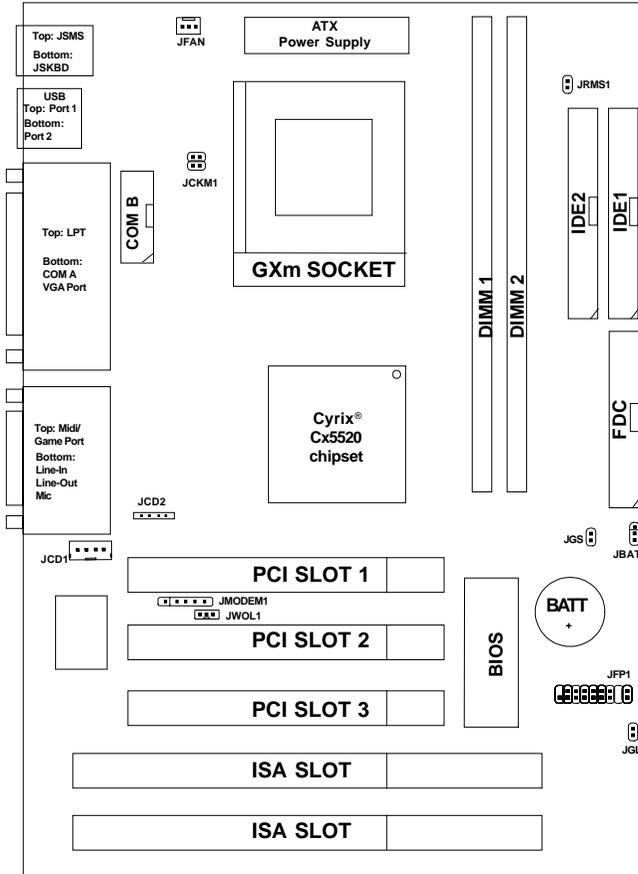
MS-5176

Chapter 2

HARDWARE INSTALLATION

2.1   Central Processing Unit: CPU

The **MICRO-ATX CX2** mainboard operates only with **Cyrix®
MediaGX™** processors**.** The mainboard provides a Socket for easy CPU
installation, a jumper switch (JCKM1) to set the proper speed for the
processor. The processor should always have a cooling fan attached to
prevent overheating.

2.1-1 CPU Installation Procedures

1. Pull the lever sideways away
   from the socket. Then, raise
   the lever up to a 90-degree
   angle.

**Sliding
Plate**

Open Lever

Pin 1

2. Locate Pin 1 in the socket
   and look for the white dot or
   cut edge in the CPU. Match
   Pin 1 with the white dot/cut
   edge. Then, insert the CPU.
   It should insert easily.

CPU

**White dot/
Cut edge**

3. Press the lever down to
   complete the installation.

**Close
Lever**

CPU
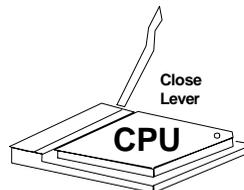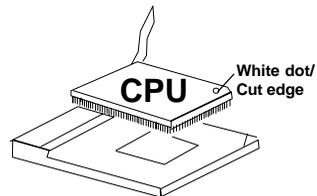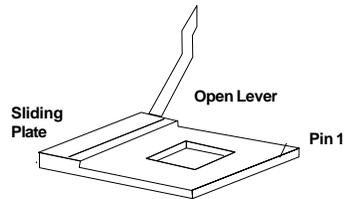
2.1-2 CPU Core Speed Derivation Procedure

1. The jumper JCKM1 is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

If	<u>CPU Clock</u>	=	33MHz
	<u>Core/Bus ratio</u>	=	6
then	<u>CPU core speed</u>	=	<u>Host Clock</u> x <u>Core/Bus ratio</u>
		=	33MHz x 6
		=	200MHz

CPU	JCKM1
4	
6	
7	
8	

2. The jumper JPC2 is used for PCI Bus Clock.

PCI	JPC2
30MHz	
33MHz	

2.1-3 CPU Speed Setting: JCKM1 & JPC2

To set the proper speed and voltage of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU specifications*).
Then refer to **Table 2.1 (Cyrix® GXm Processor)** for proper setting.
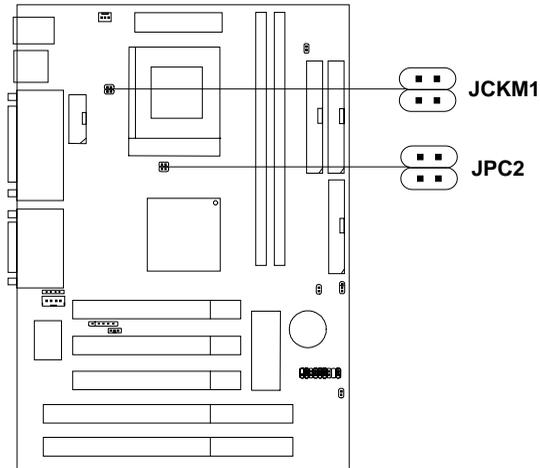
Table 2.1 Cyrix® GXm Processor

CPU Type	CPU Speed	
	JCKM1	JPC2
200 MHz		
233 MHz		
266 MHz		

2.1-4 Fan Power Connector: JFAN

This connector support system cooling fan with +12V. It supports three pin head connector.   When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND.
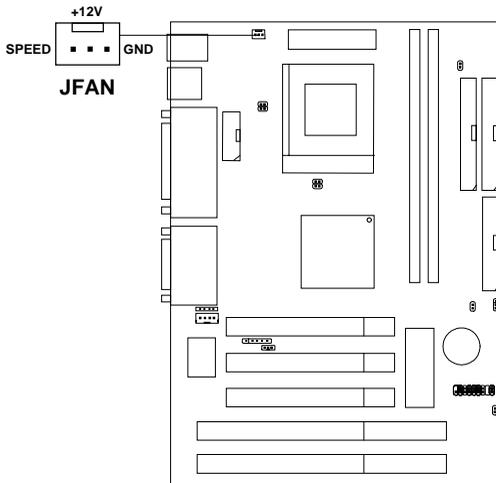
Note: Always consult vendor for proper CPU cooling fan.

2.2 Memory Installation

2.2-1 Memory Bank Configuration

The mainboard provides two 168-pin DIMM(Double In-Line Memory) sockets. It supports two memory banks for a maximum of 1 Gbytes memory. You can use DIMM from 8MB, 16MB, 32MB, 64MB, 128MB to 256MB.
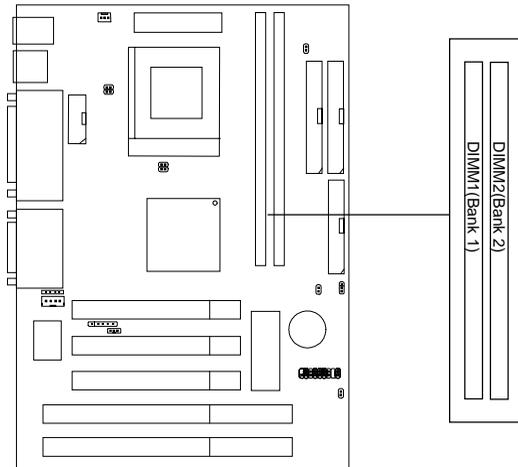
2.2-2 Memory Installation Procedures:

A. How to install DIMM Module

Single Sided DIMM
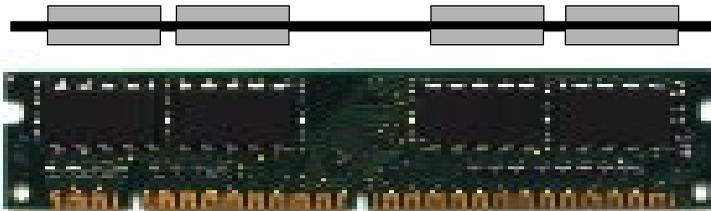
Double Sided DIMM

1. The DIMM slot has two keys marked "VOLT and DRAM" , so the DIMM memory module can only fit in one direction.

2. Insert the DIMM memory module vertically into the DIMM slot. Then, push it in.

DRAM   VOLT
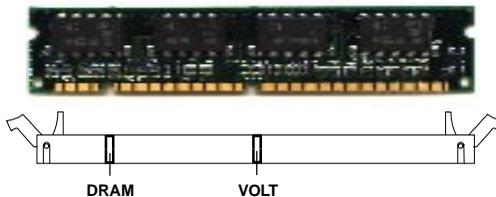
3. The plastic clip at the side of the DIMM slot will automatically close..

2.2-3 Memory Population Rules

1. This mainboard supports Table Free memory, so memory can be installed in DIMM1 or DIMM 2 in any order.

2. Use only 3.3v unbuffered SDRAM DIMM.

3. The DRAM addressing and the size supported by the mainboard is shown next page.

Table 2.2-1 SDRAM Memory Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	16MBx2	32MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
64M	2Mx32	ASYM	11	8	16MBx2	32MBx4
	4Mx16	ASYM	12	8	32MBx4	64MBx8
	8Mx8	ASYM	12	9	64MBx8	128MBx16

2.3 Case Connector: JFP1

The Power Switch, Reset Switch, Power LED, Speaker and HDD LED are all connected to the JFP1 connector block.

JFP1
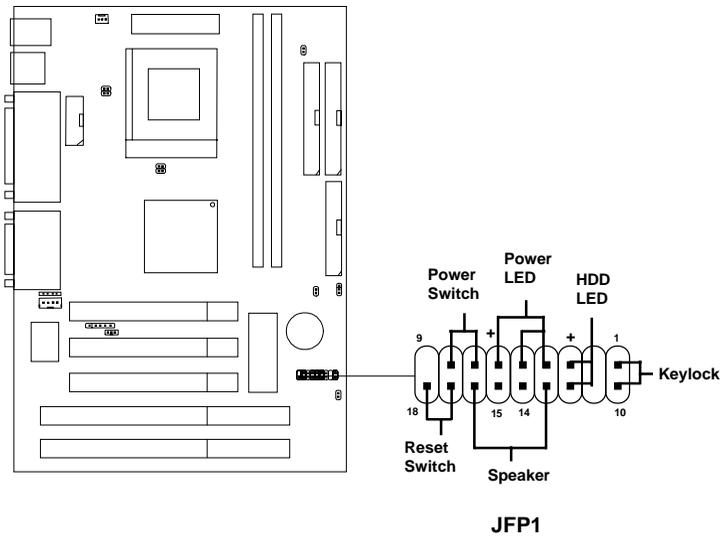
2.3-1 Power Switch
Connect to a 2-pin push button switch. This switch had the same feature with JRMS1.

2.3-2 Reset Switch
Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

2.3-3 Keylock
Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

2.3-4 Power LED
The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin.

2.3-5 Speaker
Speaker from the system case is connected to this pin.
If on-board speaker is available:
Short pin 14-15:   On-board speaker Enabled.
Open pin 14-15:   On-board speaker Disabled.

2.3-6 HDD LED
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

2.4   Floppy Disk Connector: FDC

The mainboard also provides a standard floppy disk connector, FDC that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.
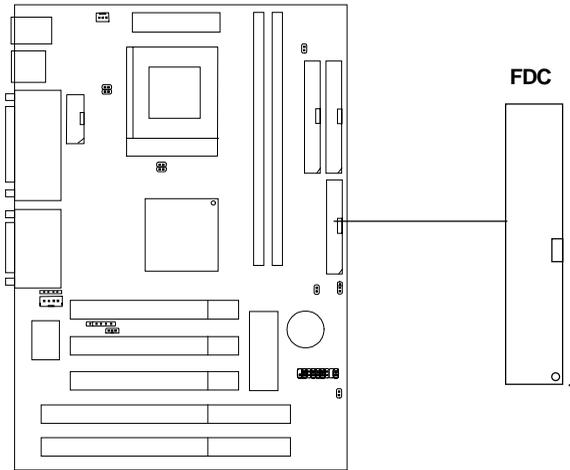
2.5 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides two HDD connectors IDE1 (Primary) and IDE2 (Secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy and other devices to IDE1 and IDE2.
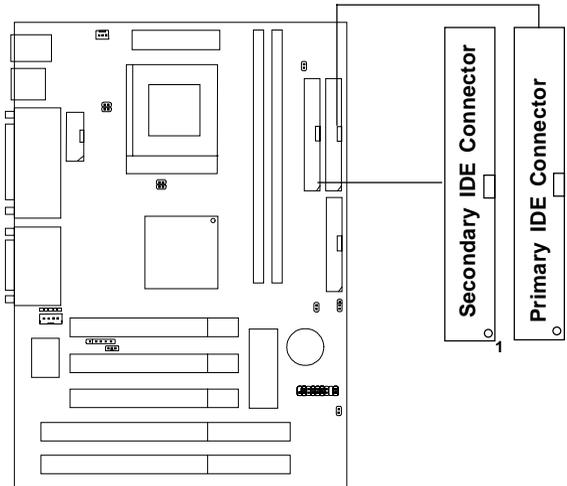
IDE1 (Primary IDE Connector)

> The first hard disk should always be connected to IDE1. IDE1 can connect a Master and a Slave drive.

IDE2 (Secondary IDE Connector)

> IDE2 can connect a Master and a Slave drive.

2.6 ATX 20-pin Power Connector: JWR1

This type of connector already supports the remote ON/OFF function. However, you need to connect the **Remote Power On/OFF switch (JRMS1)**.

**ATX
Power Connector**
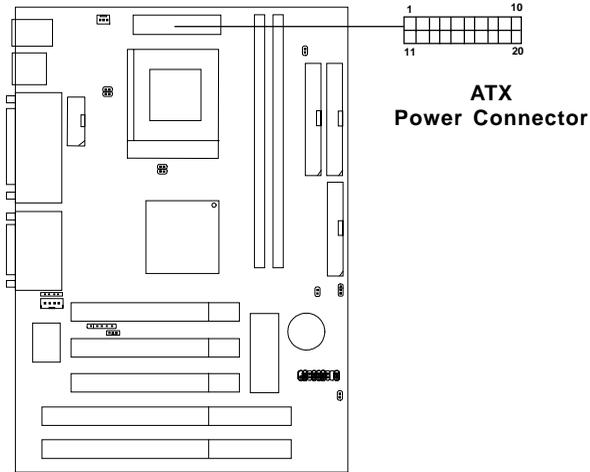
PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

⚠ **WARNING!** **Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.**

2.7 Remote Power On/Off Switch: JRMS1

Connect to a 2-pin push button switch to JRMS1. Every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON. During ON stage: push once and the system goes to sleep mode; push it more than 4 seconds will change its status from ON to OFF.

JRMS1
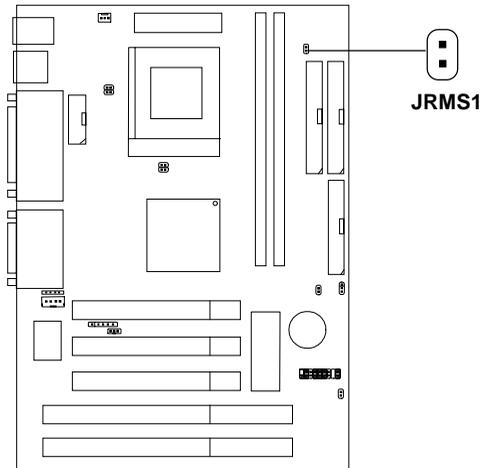
2.8 Power Saving Switch Connector: JGS/
Power Saving LED Connector: JGL

Attach a power saving switch to JGS. When the switch is pressed, the
system immediately goes into suspend mode. Press any key and the system
wakes up. JGL can be connected with LED to monitor the JGS. This will lit
while the system is in suspend mode.

JGS

JGL
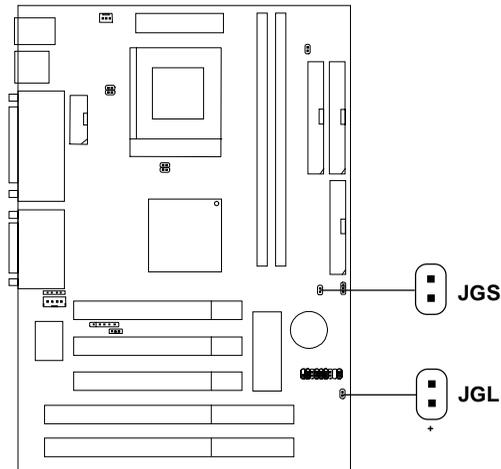
Note: To make JGS function, you must go to the BIOS power management
and enable it there.

2.9 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS
RAM.   you must short 2-3 pins of JBAT1 to keep the CMOS data.
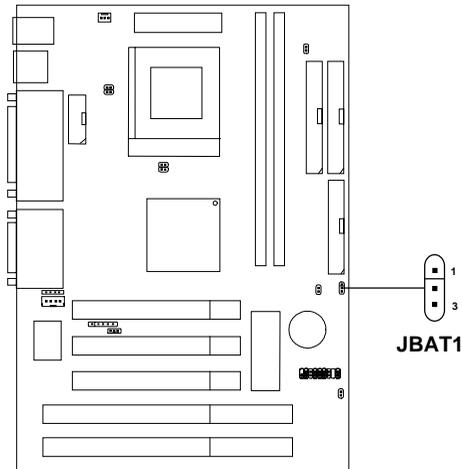
JBAT1
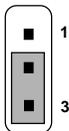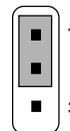
Keep Data   **Clear Data**

Note: You can clear CMOS by shorting 1-2 pin, while the system is off.
Then, return to 2-3 pin position. To be able to clear the CMOS,
you need to unplug the system since there's always a 3V standby
power onboard.

2.10 Serial Port Connectors: COM A & COM B

The mainboard has one serial port COMA and one serial connector COMB. These two ports are 16550A high speed communication ports that send/ receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.

Serial Ports (9-pin Male)
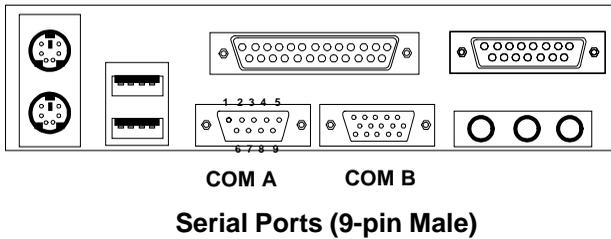
PIN DEFINITION

PIN	SIGNAL
1	**DCD**(Data Carry Detect)
2	**SIN**(Serial In or Receive Data)
3	**SOUT**(Serial Out or Transmit Data)
4	**DTR**(Data Terminal Ready)
5	**GND**
6	**DSR**(Data Set Ready)
7	**RTS**(Request To Send)
8	**CTS**(Clear To Send)
9	**RI**(Ring Indicate)

2.11   VGA DB 15 Pin Connector

The mainboard provides a DB 15-pin connector to connect to a VGA monitor.
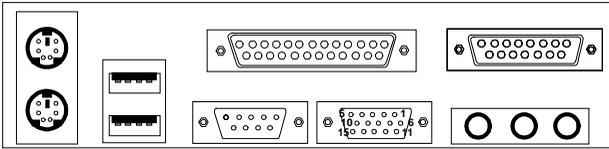
VGA

Serial Ports (9-pin Male)

Analog Video Display Connector(DB15-S)	
Pin	**Signal Description**
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

2.12 Parallel Port Connector: LPT

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP). See connector and pin definition below:

Parallel Port (25-pin Female)

LPT
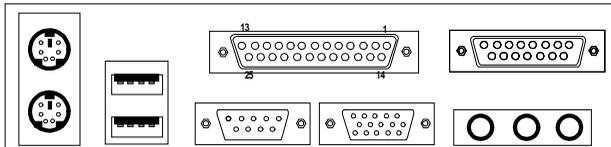
PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

2.13 Mouse Connector: JKBMS1

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:
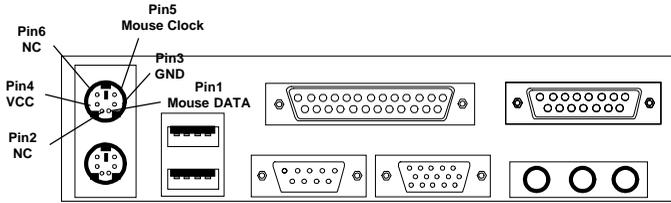
PS/2 Mouse (6-pin Female)

2.14 Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.
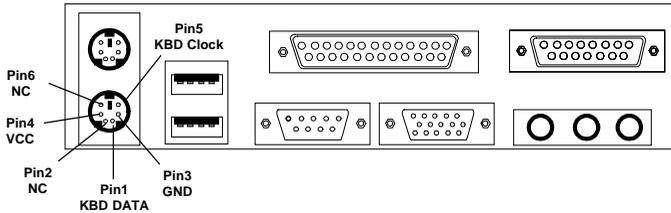
PS/2 Keyboard (6-pin Female)

2.15 Joystick/Midi Connector

You can connect joystick or game pads to this connector.

Midi/Joystick
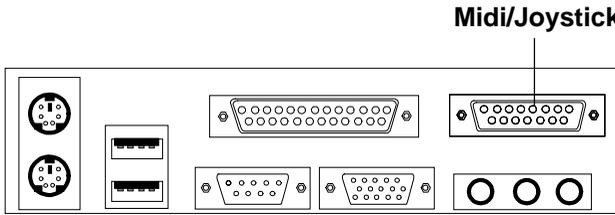
2.16 Audio Port Connectors

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphone.

Line Out   Line In   Mic
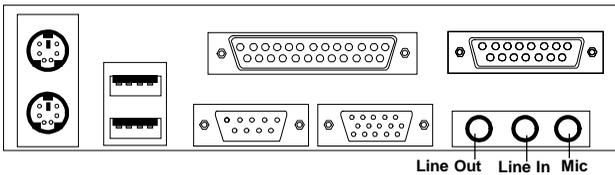
1/8" Stereo Audio Connectors

2.17   USB Connector: USB **(optional)**

The mainboard provides a **UHCI(Universal Host Controller Interface)**
Universal Serial Bus root for attaching USB devices like: keyboard,
mouse and other USB devices. You can plug the USB device directly to this
connector.

USB Port 1

USB Port 2
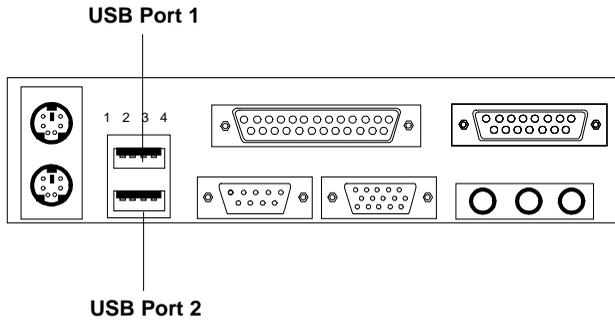
PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

2.18   Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function.
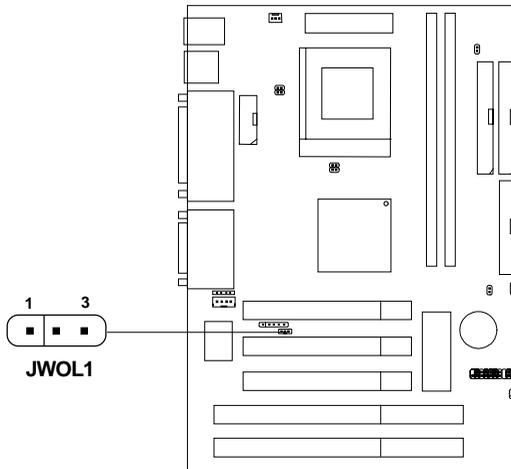
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

Note: LAN wake-up signal is active "high".

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(750 ma power supply with 5V Stand-by)

2.19 Modem Wake Up Connector: JMODEM1

The JMODEM1 connector is for used with Modem add-on card that supports the Modem Wake Up function.
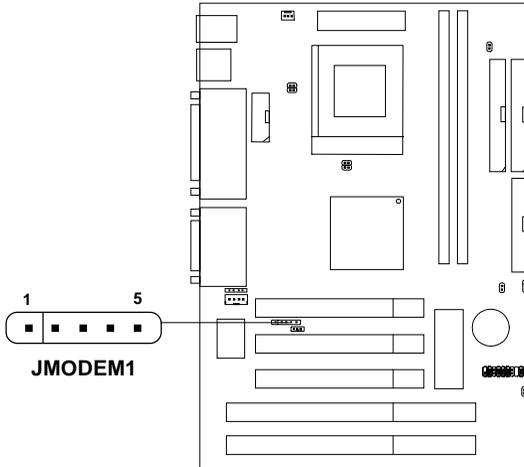
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

Note: Modem wake-up signal is active "low".

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(750 ma power supply with 5V Stand-by)

2.20   CD Line-In: JCD1/JCD2

The mainboard provides two different kinds of CD Line-in connectors to let you connect two different kinds of cable provided by the CD-ROM.
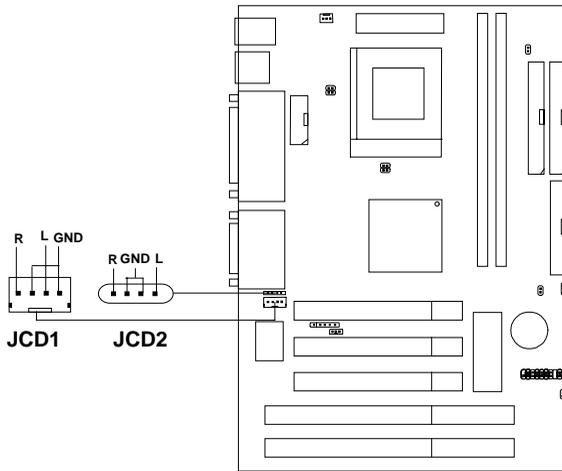
Chapter 3

AWARD® BIOS SETUP

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

3.1 Entering Setup

Power on the computer and press <Del> or <Ctrl><Alt><Esc> keys immediately to allow you to enter Setup.

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> keys. 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

3.2 Getting Help

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

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

3.3 The 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 from twelve 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  (2A433M4B)
                        CMOS  SETUP  UTILITY
                      AWARD  SOFTWARE,  INC.
 ┌─────────────────────────────────────────────────────────────┐
 │                                                               │
 │  STANDARD  CMOS  SETUP      INTEGRATED  PERIPHERALS           │
 │                                                               │
 │  BIOS  FEATURES  SETUP      SUPERVISOR  PASSWORD              │
 │                                                               │
 │  CHIPSET  FEATURES  SETUP   USER  PASSWORD                    │
 │                                                               │
 │  POWER  MANAGEMENT  SETUP   IDE  HDD  AUTO  DETECTION         │
 │                                                               │
 │  PNP/PCI  CONFIGURATION     HDD  LOW  LEVEL  FORMAT           │
 │                                                               │
 │  LOAD  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 a standard compatible BIOS.

BIOS Features Setup
This setup page includes all the items of Award® special enhanced features.

Chipset Features Setup

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

Power Management Setup

This category determines the power consumption for system after setting the specified items. Default value is Disable.

PCI Configuration Setup

This category specifies the IRQ level for PCI and ISA devices.

Supervisor Password/User Password

Change, set or disable password. This function allows the user access to the system and setup or just setup.

Load BIOS/Setup Defaults

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

Integrated Peripherals

This category specifies the I/O used by your system.

IDE HDD Auto Detection

Automatically configure hard disk parameters.

HDD Low Level Format

Hard disk low level format utility.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3.4 Standard CMOS Setup

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

```
                 ROM  PCI/ISA  BIOS  (2A433M4B)
                     STANDARD  CMOS  SETUP
                     AWARD  SOFTWARE,  INC.

  Date(mm:dd:yy):  Fri,  Feb  28,1998
  Time(hh:mm:ss):  00:00:00

    HARD DISKS       TYPE  SIZE  CYLS HEADS  PRECOMP LANDZONE   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  :  1.44M,3.5in.   Base  Memory:              640K
  Drive  B  :  None            Extended  Base  Memory:15360K
                                 Other  Memory:            384K
  Video     :  EGA/VGA
  Halt  On  :  All, but Keyboard Total  Memory:            16384K


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

Date

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

Day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>.

PrimaryMaster/PrimarySlave
SecondaryMaster/Secondary Slave

These categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user definable types for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable.

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

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

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
"None".

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

3.5 BIOS Features Setup

```
           ROM PCI/ISA BIOS (2A433M4B)
               BIOS FEATURES SETUP
             AWARD SOFTWARE, INC.
```

```
┌──────────────────────────────────┬──────────────────────────────────┐
│ Virus Warning        : Disabled  │ Video BIOS Shadow      :Enabled  │
│ CPU Internal Cache   : Enabled   │ C8000-CBFFF Shadow     :Disabled │
│                                  │ 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-Dhhhh Shadow     :Disabled │
│ Boot up NumLock status : On      │                                  │
│ Boot Up System Speed : High      │                                  │
│ Gate A20 Option      : Fast      │                                  │
│ Memory Parity Check  : Enabled   │                                  │
│ Typematic Rate Setting : Disabled│                                  │
│ Typematic Rate(chars/sec): 6     │                                  │
│ Typematic Delay (msec) : 250     │                                  │
│ Security Option      : Setup     │                                  │
│ PCI/VGA palette snoop : Disabled │                                  │
│ OS select for DRAM>64MB : Non-OS2├──────────────────────────────────┤
│ Report No FDD For WIN 95 : No    │                                  │
│                                  │ Esc : Quit    ↑↓→←: Select item │
│                                  │ F1 : Help PU/PD/+/- : modify     │
│                                  │ F5 : Old Value(Shift) F2 : Color │
│                                  │ F6 : Load BIOS Defaults          │
│                                  │ F7 : Load Setup Defaults         │
└──────────────────────────────────┴──────────────────────────────────┘
```

Virus Warning

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. For the meantime, 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.

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.

Note: *This function is available only for DOS and other OS that do not trap INT13.*

CPU Internal Cache

The default value is Enabled. If your CPU is without Internal Cache then this item "CPU Internal Cache" will not be shown.

Enabled (default)   Enable cache
Disabled   Disable cache

Note: The internal cache is built in the processor.

Quick Power On Self Test

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

Enabled   Enable quick POST
Disabled (default)   Normal POST

Boot Sequence

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). The settings are A,C,SCSI/ LS/ZIP,C/C,A,SCSI/C,CD-ROM,A/CD-ROM,C,A/D,A,SCSI/E,A,SCSI/ F,A,SCSI/SCSI,A,C/SCSI,C,A/C only. Default value is A,C,SCSI.

Swap Floppy Drive

Switches the floppy disk drives 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 trakcs while 720K, 1.2M and 1.44M are all 80 tracks.

Enabled   BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.

Disabled   BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive intalled is 360K.

Boot Up NumLock Status

The default value is On.

On (default)   Keypad is numeric keys.

Off   Keypad is arrow keys.

Boot Up System Speed

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

High (default) Set the speed to high.

Low   Set the speed to low.

Gate A20 Option

Normal   The A20 signal is controlled by keyboard controller or chipset hardware.

Fast(default) The A20 signal is controlled by port 92 or chipset specific method.

Memory Parity Check

Normal   The A20 signal is controlled by keyboard controller or
                  chipset hardware.

Fast(default) The A20 signal is controlled by port 92 or chipset
                  specific method.

Typematic Rate Setting

This determines the typematic rate.

Enabled   Enable typematic rate and typematic delay program-
                  ming.

Disabled   Disable typematic rate and typematic delay program-
(default)   ming. The system BIOS will use default value of this 2
                  items and the default is controlled by keyboard.

Typematic Rate (Chars/Sec)

6 (default)   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.

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.

PCI VGA Palette Snooping

Choose Disabled or Enabled. Some graphic controllers which are not VGA compatible, take the output from a VGA controller and map it to their display as a way to provide the boot information and the VGA compatibility.

However, the color information coming from the VGA controller is drawn from the palette table inside the VGA controller to generate the proper colors, and the graphic controller needs to know what is in the palette of the VGA controller. To do this, the non-VGA graphic controller watches for the Write access to the VGA palette and registers the snoop data. In PCI based systems, where the VGA controller is on the PCI bus and a non-VGA graphic controller is on an ISA bus, the Write Access to the palette will not show up on the ISA bus if the PCI VGA controller responds to the Writes.

In this case, the PCI VGA controller should not respond to the Write. It should only snoop the data and permit the access to be forwarded to the ISA bus. The non-VGA ISA graphic controller can then snoop the data on the ISA bus. Unless you have the above situation, you should disable this option.

Disabled (default)	Disables the function
Enabled	Enables the function

OS Selection for DRAM > 64MB

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

Report No FDD For WIN 95

When set to yes, BIOS will not report any IRQ for FDD when FDD is disabled in Windows® 95. This function is only used when you are testing SCT for Windows® 95 Logo.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM for faster execution. Video shadow will increase the video performance.

Enabled (default)	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CFFFF Shadow/E8000 - EFFFF Shadow

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

Enabled	Optional shadow is enabled
Disabled (default)	Optional shadow is disabled

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

3.6 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.

Choose the "CHIPSET FEATURES SETUP" from the Main Menu and the following screen will appear.

```
              ROM  PCI/ISA  BIOS(2A433M4B)
                 CMOS  SETUP  UTILITY
               CHIPSET  FEATURES  SETUP

 ┌──────────────────────────────────┬──────────────────────────────┐
 │ 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 Keyboard Support     :Disable│                              │
 │                                  │                              │
 │ Build in CPU Audio       :SB16   │                              │
 │ Audio I/O Base Address   :220H   │                              │
 │ MPU-401 I/O Base Address :330H   │                              │
 │ Audio IRQ Select         :IRQ5   │                              │
 │ Audio Low DMA Select     :DMA1   │                              │
 │ Audio High DMA Select    :DMA5   │                              │
 │ Joystick Status          :Enable │                              │
 │                                  ├──────────────────────────────┤
 │                                  │ Esc : Quit   ↑↓→←: Select item│
 │ Video Memory Size        :2.5M   │ F1 : Help PU/PD/+/- : modify │
 │                                  │ F5 : Old Value(Shift) F2 : Color│
 │                                  │ F6 : Load BIOS Defaults       │
 │                                  │ F7 : Load Setup Defaults      │
 └──────────────────────────────────┴──────────────────────────────┘
```

Note: Change these settings only if you are familiar with the chipset.

SDRAM CAS Latency Time
        This item allows you to select the SDRAM latency time. The settings are Auto, 2T, and 3T. The default setting is 3T.

SDRAM Clock Ratio Div by
        This item allows you to select the SDRAM clock ratio Div by 3 or 4.

16-bit I/O Recovery (CLK)/8-bit I/O Recovery (CLK)
        Choose the recovery time for 8-bit and 16-bit I/O cycles respectively. The default settings are 5.

Build in CPU Audio
        This item allows you to select the Audio device. The settings are SB16 and Disable. The default is SB16.

Audio I/O Base Address
        You can select the Audio I/O Base Address port in this item. The settings are 220H, 240H, 260H, and 280H. The default is 220H.

MPU-401 I/O Base Address
        This item allow you to select the MPU-401 I/O Base Address. The settings are 300H, 330H, and Disabled. The default is 330H.

Audio IRQ Select
        The settings are IRQ5, IRQ7, IRQ10, and Disabled. The default is IRQ5.

Audio Low DMA Select
        The settings are DMA0, DMA1, DMA3, DMA5, and Disabled. The default is DMA1.

Audio High DMA Select
The settings are DMA5, DMA6, DMA7, and Disabled. The default is DMA5.

Joystick Status
This item allow you to Enable or Disable joystick status. The default is Enabled.

Video Memory Size
This item allow you to select the VGA shared memory size. The settings are 1.5MB and 2.5MB.

3.7 Power Management Setup

The Power Management Setup will appear on your screen like this:

```
          ROM  PCI/ISA  BIOS  (2A433M4B)
             POWER  MANAGEMENT  SETUP
               AWARD  SOFTWARE,  INC.

 ┌────────────────────────────────────────────────────────────────┐
 │ Power Management    :Disable   IRQ1  (keyboard)      : ON        │
 │                                IRQ3  (COM 2)         : ON        │
 │ **** PM Timers****             IRQ4  (COM 1)         : ON        │
 │ Standby Mode        :Disable   IRQ5  (LPT 2)         : OFF       │
 │ HDD Power Down      :Disable   IRQ6  (Floppy Disk)   : OFF       │
 │ Modem Use IRQ       :NA        IRQ7  (LPT 1)         : OFF       │
 │                                IRQ9  (IRQ2 Redir)    : OFF       │
 │                                IRQ10 (Reserved)      : OFF       │
 │                                IRQ11 (Reserved)      : OFF       │
 │                                IRQ12 (PS/2 Mouse)    : OFF       │
 │                                IRQ13 (Coprocessor)   : OFF       │
 │                                IRQ14 (Hard Disk)     : OFF       │
 │                                IRQ15 (Reserved)      : OFF       │
 │                                                                  │
 │                                                                  │
 │                                Esc : Quit   ↑↓→←: Select item    │
 │                                F1 : Help PU/PD/+/- : modify      │
 │                                F5 : Old Value(Shift) F2 : Color  │
 │                                F6 : Load BIOS Defaults           │
 │                                F7 : Load Setup Defaults          │
 └────────────────────────────────────────────────────────────────┘
```

Power Management

This category determines the power consumption for system after selecting below items. Default value is Disable. The following pages tell you the options of each item & describe the meanings of each options.

Power Management

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

Standby Mode

Disable   System will never enter STANDBY mode.

1 Min/2 Min/   Defines the continuous idle time before the
3 Min/4 Min/   system enters STANDBY mode.
5 Min/10 Min/   If any item defined in the options of "Power
15 Min/20 Min/   Down and Resume events" is enabled & active,
30 Min/40 Min/   STANDBY timer will be reloaded. When the
50 Min/1 Hr/   system has entered Standby mode , any of the
2 Hr/3 Hr/   items that are enabled in "Wake Up Events of
4 Hr   Doze and Standby" will trigger the system to
                           wake up.

HDD Power Down

Disable   HDD's motor will not shut off.

1 Min/2 Min/   Defines the continuous HDD idle time before
3 Min/4 Min/   the HDD enters the power saving mode (motor
5 Min/10 Min/   off). BIOS will turn off the HDD's motor when
15 Min/20 Min/   time is out.
30 Min/40 Min/
50 Min/1 Hr/2 Hr/
3 Hr/4 Hr

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (If any) on your system. Activity of the selected IRQ always awakens the system. The settings are NA, 3, 4, 5, 7, 9, 10, or 11.

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. The Choices are On and OFF.
When set to ON, activity will neither prevent the system from going into a power management mode nor awaken it.

IRQ1 (keyboard)
IRQ3 (COM 2)
IRQ4 (COM 1)
IRQ5 (LPT 2)
IRQ6 (Floppy Disk)
IRQ7 (LPT 1)
IRQ9 (IRQ2 Redir)
IRQ10 (Reserved)
IRQ11 (Reserved)
IRQ12 (PS/2 Mouse)
IRQ13 (Coprocessor)
IRQ14 (Hard Disk)
IRQ15 (Reserved)

3.8 PNP/PCI Configuration Setup

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item & describe the meanings of each options.

```
             ROM  PCI/ISA BIOS (2A433M4B)
             PNP/PCI  CONFIGURATION  SETUP
                AWARD  SOFTWARE,  INC.

┌─────────────────────────────────┬────────────────────────────────┐
│ PnP OS Installed      :No        │ PCI IRQ Actived By    : Level   │
│ Resources Controlled By :Manual  │                                │
│ Reset Configuration Data :Disabled│ Used MEM Base Addr    : N/A    │
│                                  │                                │
│ IRQ-3 assigned to     :Legacy ISA│                                │
│ IRQ-4 assigned to     :Legacy ISA│                                │
│ IRQ-5 assigned to     :PCI/ISA PnP│                               │
│ IRQ-7 assigned to     :PCI/ISA PnP│                               │
│ IRQ-9 assigned to     :PCI/ISA PnP│                               │
│ IRQ-10assigned to     :PCI/ISA PnP│                               │
│ IRQ-11assigned to     :PCI/ISA PnP│                               │
│ IRQ-12assigned to     :PCI/ISA PnP│                               │
│ IRQ-14assigned to     :PCI/ISA PnP│                               │
│ IRQ-15assigned to     :PCI/ISA PnP├────────────────────────────────┤
│ DMA-0assigned to      :PCI/ISA PnP│                               │
│ DMA-1assigned to      :PCI/ISA PnP│ Esc : Quit    ↑↓→←: Select item│
│ DMA-3assigned to      :PCI/ISA PnP│ F1 : Help PU/PD/+/- : modify   │
│ DMA-5assigned to      :PCI/ISA PnP│ F5 : Old Value(Shift) F2 : Color│
│ DMA-6assigned to      :PCI/ISA PnP│ F6 : Load BIOS Defaults        │
│ DMA-7assigned to      :PCI/ISA PnP│ F7 : Load Setup Defaults       │
└─────────────────────────────────┴────────────────────────────────┘
```

PnP OS Installed

When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows®95. When set to NO, BIOS will initialize all the PnP cards. So, for non-PnP operating system (DOS®, Netware™), this option must set to NO.

Resources Controlled By

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 is no conflict for IRQ/DMA and I/O ports.

Note: When choosing "Auto" you must be sure that all of the system add-on cards are PnP type.

Reset 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 the system's ESCD. Then, this option will be auto-set to Disable.

IRQ-3   assigned to : Legacy ISA
IRQ-4   assigned to : Legacy ISA
IRQ-5   assigned to : PCI/ISA PnP
IRQ-7   assigned to : Legacy ISA
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 card. 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. The settings are Level or Edge.

3.9 Load BIOS/Setup Defaults

This Main Menu item loads the default system values. If the CMOS is corrupted the defaults are loaded automatically. Choose this item and the following message appears:

" Load Setup Defaults (Y / N) ? N "

To use the Setup defaults, change the prompt to "Y" and press < Enter >

Note: The Setup defaults can be customized to increase performance. However the BIOS defaults can always be used as a back up if there is some problem with the mainboard operation.

3.10 Integrated Peripherals

```
                 ROM  PCI/ISA  BIOS  (2A433M4B)
                    INTEGRATED  PERIPHERALS
                    AWARD  SOFTWARE,  INC.

 ┌──────────────────────────────────┬──────────────────────────────────┐
 │ IDE HDD Block Mode      :Enabled  │                                  │
 │                                   │                                  │
 │ Primary IDE Channel     :Enabled  │                                  │
 │  Read Prefetch          :Disabled │                                  │
 │  Write Buffering        :Disabled │                                  │
 │  Master Drive PIO Mode  : Auto    │ Onboard Parallel Mode    :378/IRQ7│
 │  Slave Drive PIO Mode   : Auto    │ Parallel Port Mode       :SPP     │
 │                                   │                                  │
 │ Secondary IDE Channel   :Enabled  │ PHONERING Wake Up        :Disabled│
 │  Read Prefetch          :Disabled │ RTC Power On Controller  :Disabled│
 │  Write Buffering        :Disabled │                                  │
 │  Master Drive PIO Mode  : Auto    │                                  │
 │  Slave Drive PIO Mode   : Auto    │                                  │
 │                                   │                                  │
 │ KBC Input Clock         :8MHz     ├──────────────────────────────────┤
 │ 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 Value(Shift) F2 : Color │
 │ Onboard IR Controller   :Disabled │ F6 : Load BIOS Defaults          │
 │                                   │ F7 : Load Setup Defaults         │
 └──────────────────────────────────┴──────────────────────────────────┘
```

IDE HDD Block Mode
    Enabled/Disabled   Enabled allows the Block mode access for the IDE HDD.

Primary IDE Channel/Secondary IDE Channel
Enabled/Disabled

The system provides for an Onboard IDE Controller that supports Dual Channel IDE (Primary and Secondary). A maximum of 4 IDE devices can be supported.

Read Prefetch

This item allow you to Enable or Disable the Read Prefetch function. The default setting is Disable.

Write Buffering

This item allows you to Enable or Disable Write Buffering function. The default setting is Disable.

IDE Primary Master Drive PIO Mode/
IDE Primary Slave Drive PIO Mode/
IDE Secondary Master Drive PIO Mode/
IDE Secondary Slave Drive PIO Mode
Auto/Mode 0/Mode 1~4

For these 4 IDE options, choose "Auto" to have the system BIOS auto-detect the IDE HDD operation mode for PIO access.

Note: Some IDE HDD cannot operate at the responding HDD's mode. When the user has selected "Auto" and the system BIOS has accepted the HDD response mode, the user may degrade the HDD's operation mode. Ex: If the HDD reported it can operate in mode 4, it is not operating porperly. The user will have to manually change the operation mode to mode 3.

Choosing Mode 1~4 will have the system ignore the HDD's reported operation mode and use the selected mode instead.

Note: According to ATA specs. Mode 4 transfer rate is > Mode 3>Mode 2> Mode 1>Mode 0. If the user's HDD can operate at Mode 3 the user can also select a slower Mode (i.e. Mode 0-2) but not a faster Mode (ie Mode-4).

KBC Input Clock

This item allow you to select the keyboard input clock. The settings are 6MHz, 8MHz, 12MHz, and 16MHz. The default setting is 8MHz.

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   COM 1 uses IRQ4
> 2F8/IRQ3   COM 2 uses IRQ3
> 3E8/IRQ4   COM 3 uses IRQ4
> 2E8/IRQ3   COM 4 uses IRQ4

Note: Because the ISA Bus Interrupt accepts low to high edge trigger, the interrupt request line cannot be shared by multiple sources. If an off-board ISA add-on card with a serial port is installed, the user may have to disable the on-board serial port because it will conflict with IRQ request line for the off-board serial port.

Onboard IR Controller

Enabled/Disabled   The system has an on-board Super I/O chip with an IR controller. Choose "Enabled" to use the on-board IR controller for accessing the IR devices. Otherwise choose "Disabled" to use the off-board IR controller.

IR Mode

This function is for choosing which IR mode to use. The settings are ASKIR and IrDA.

Onboard Parallel Port

Disabled   There is a built-in parallel port on the
(3BCH/IRQ7)/   on-board Super I/O chipset that pro-
(278H/IRQ5)/   vides Standard, ECP, and EPP features.
(378H/IRQ5)   It has the following options

      Disable
      3BCH/IRQ7   Line Printer port 0
      278H/IRQ5   Line Printer port 2
      378H/IRQ5   Line Printer port 1

Onboard Parallel Mode

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

SPP/EPP/ECP   To operate the onboard parallel port as StandardParallel Port only, choose "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 the 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: "EPP Mode Select." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

PHONERING Wake Up

This item allows you to Enable or Disable ring-in power on feature.

RTC Power On Controller

This function is for setting date and time for your computer to boot up.

3.11 Supervisor/User Password Setting

This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

   "Enter Password:"

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters. For no password just press <Enter>.

3. After you enter the password, the following message appears prompting you to confirm the password:

   "Confirm Password:"

4. Enter exactly the same password you just typed in to confirm the password and press <Enter>.

5. Move the cursor to Save & Exit Setup to save the password.

6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.

7. Move the cursor to Save & Exit Setup to save the option you did. Otherwise, the old password will still be there when you turn on your machine next time.

3.12 IDE HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

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.

```
              ROM  PCI/ISA  BIOS  (2A433M4B)
                    CMOS  SETUP  UTILITY
                  AWARD  SOFTWARE,  INC.

  HARD DISKS       TYPE  SIZE  CYLS HEADS  PRECOMP  LANDZONE   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


          Select Primary Master   Option (N=Skip) : N

      OPTIONS   SIZE    CYLS   HEAD   PRECOMP  LANDZ SECTOR MODE

         2      2112    1023    64       0      4094   63    LBA
         1      2113    4095    16     65535    4094   63    NORMAL
         3      2113    2047    32     65535    4094   63    LARGE



                        [ESC: Skip]
```

Chapter 4

DRIVER SETUP

1.   Overview

The Cyrix®GXm™ and Cx5520™ on-chip VGA offers highly integrated 2D Graphic/Video accelerator. Its 2D performance produce compelling interactive multimedia. It is also designed for high-quality MPEG/video playback to users.

1.1 System Requirements
This section describes system requirements for the VGA Driver installation and Usage.

Computer	200MHz Cyrix®GXm™ processor or above
Monitor	VGA Support, minimum 640x480 resolution
Operating system	DOS®5.0 or higher, Windows®95, Windows®NT 3.51 or 4.0
CD-ROM	Double Speed or Higher
Chipset	Cyrix®Cx5520™
VGA BIOS	Version 1.0 or Higher

2. Cyrix® MediaGX™ VGA/Audio/Joystick Driver Setup & Usage Procedures

Insert the MS-5176 CD into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver, Sound driver, and Joystick driver. Also included are Norton® Antivirus and Softcooler . Just click the button for automatic installation for the driver.

2.1 Windows® 95

2.1-1 Display Driver Installation Procedure:
Step 1: Insert the MS-5176 Cd-Title into the CD-ROM drive.
Step 2: Click "Device Drivers" item.
Step 3: Select **OK** to continue the setup.
Step 4: Setup Procedure will auto install Display, Audio, and Joystick Drivers.
Step 5: A setup successful dialog will appear when setup is complete. You can restart the system now.

2.1-2 Changing resolution, color depth, and refresh rate:
Step 1: Click **Start** menu and select **Control Panel** from **Settings** group.
Step 2: Select **Display** icon.
Step 3: Select **Settings**.
Step 4: Select Color Palette to change between 16 color, 256 color, or Hi color.
Step 5: Select desktop resolution from 640x480, 800x600, 1024x768 to 1280x1024.
Step 6: Select Refresh rate list box to change the screen refresh rate.
Step 7: Click OK or Apply.

2.1-3 Windows®95 Utility Installation:

Step 1: Insert the MS-5176 Cd-Title Disk into the CD-ROM drive.

Step 2: Select Norton®Anti-Virus or SoftCooler item.

Step 3: Setup procedure will automatically install the utility.

Step 4: A setup successful dialog will appear when setup is complete, user can choose to restart the system now or later.

2.2 Windows® NT 4.0

2.2-1 Display Driver Installation Procedure:
Step 1:   Click **Start** menu and select **Control Panel** from **Settings** group.
Step 2:   Select **Display** icon.
Step 3:   Select **Settings** on the Display Properties.
Step 4:   Select **Display Type**.
Step 5:   Select **Change** from the **Adapter Type** Area.
Step 6:   Select **Have Disk** of Change Display.
Step 7:   Insert the **MS-5176 CD-Title Disk** into CD-ROM Drive.
Step 8:   When the Install from Disk dialog box appears, look for your CD-ROM drive :\ **Cyrix MediaGX\NT4.0**.
Step 9:   When the **Change Display** dialog box appears, click **OK**.
Step 10: When the Third-party Drivers dialog box appears, click **Yes.**
A message will appear stating that the drivers were succesfully installed. Click OK. You must now restart your system.

2.2-2 Changing resolution, color depth, and refresh rate:
Step 1:   Click **Start** menu and select **Control Panel** from **Settings** group.
Step 2:   Select **Display** icon.
Step 3:   Select **Settings**.
Step 4:   Select Color Palette to change between 16 color, 256 color, 32768 colors, and 65536 colors.
Step 5:   To select desktop resolution size, go to the Desktop area and use the slide bar to change resolution from 640x480, 800x600, 1024x768, to 1280x1024.
Step 6:   Select **Test** to test the resolution. If the display test screen is good, then select Yes when the Testing Mode dialog box appears. If the display test screen is bad, then select No. Windows®NT will give you an error message.
Step 7:   Click OK. If you selected Yes, Windows®NT 4.0 will change the mode without restarting.