5GXM
AT Form Factor
Main Board
User's Manual

Copyright

Manual version: 1.0
Published in 1998

Warning and disclaimer

This manual is designed to provide information about the Pentium® system board. Every effort has been made to make this manual as accurate as possible, but no warranty or fitness is implied. All the information is provided on an 'as is' basis. The author and his corresponding publishing company shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this manual or from the use of the system board that accompanies it.

Information contained in this manual is subject to change without notice. The manufacturer of the main board will not be held responsible for technical or editorial omissions made herein, nor for the incidental or consequential damages resulting from its furnishing, performance, functionality or use. Subsequent changes to this manual will be incorporated into the next edition. We welcome any suggestion regarding this manual or our computer products.

Trademarks

- Intel and Pentium are registered trademarks of Intel Corporation.
- IBM is a registered trademark of International Business Machines Corporation.
- Microsoft is a registered trademark of Microsoft Corporation.
- PCI is a registered trademark of PCI Special Interest Groups.
- AWARD is a registered trademark of Award Software Inc.

All other trademarks are the property of their respective owners.

Table of contents

■ **Chapter 1 Introduction ……...……...…1**

1-1 5GXM Main Board Overview…..……..**1**

1-2 Specifications……..…**2**

1-3 Cyrix Cx5530 & MediaGXm Overview…….**4**

1-4 System Block Diagram……**5**

1-5 Notice of Hardware Installation……..**6**

1-6 Notice of CD Driver Installation…….**7**

■ **Chapter 2 Installation…….……8**

2-1 Layout Reference……**8**

2-2 Quick reference to CPU Speed Setup…….**9**

2-3 Jumper Settings……**10**

2-3-1 JP1:Flash ROM Voltage Selector……10

2-3-2 JP5: CMOS Status Selector……11

2-3-3 JP6: CPU Ratio Selector……12

2-4 Connectors……**13**

2-4-1 Front Panel Connectors……13

2-4-2 Back Panel Connectors……15

COM 1/COM2…….**15**

LPT1…….**16**

USB1…….…**17**

AT Keyboard ….……**17**

PS/2 Mouse.……..**18**

2-4-3 ATX Power Supply Connector……19

2-4-4 AT Power Supply Connector……...…20

2-4-5 IR1 Connector……..21

2-4-6 FAN1 Connector……..22

2-4-7 FDC1: Floppy Interface……..23

2-4-8 IDE 1 and IDE2……24

2-4-9 J1: CD-IN……...…25

2-4-10 J2: Multi-media Connector……25

2-4-11 Wake Up On LAN……27

2-4-12 Game Port……...28

2-5 DIMM Memory Installation…….……...…**29**

■ **Chapter 3 BIOS Setup..……...…….. ……30**
3-1 Award BIOS CMOS Setup……**30**
3-2 Standard CMOS Setup……**31**
3-3 BIOS Features Setup……**33**
3-4 Chipset Features Setup……...**37**
3-5 Power Management Setup……....**38**
3-6 PNP/PCI Configuration Setup……**40**
3-7 Integrated Peripherals……**42**
3-8 Supervisor/ser Password……. ……**46**
3-9 IDE HDD Auto Detection……**49**
3-10 Load Setup Defaults……..**52**
3-11 Save and Exit Setup…….. …….. ……**53**
3-12 Quit Without Saving…….. ……...**54**

■ **Chapter 4 Appendix…….……55**
4-1 Memory Map…….…...…**55**
4-2 I/O Map……..…...**56**
4-3 Time & DMA Channels Map……**57**
4-4 Interrupt Map…….. ……. ….…..**58**
4-5 RTC & CMOS RAM Map……**59**
4-6 Award BIOS Hard Disk Type……...**60**
4-7 ISA I/O Address Map……. ……....**62**

■ **Chapter 5 Q & A……..……64**
5-1 Error Messages During Power On Self Test ……..……..**64**
5-2 Web-site Service…….……..**66**

Chapter 1 Introduction

1-1 5GXM Main Board Overview

5GXM is designed with graphics and audio functions on board. Based on system chipset "Cyrix Cx5530™" and MMX-enhanced MediaGx™ processor, 5GXM integrated those functions into a main board. Cyrix MMX-enhanced MediaGX™ processor is an advanced 32-bit x86 compatible processor offering high performance, fully accelerated 2D graphics, a 64-bit synchronous DRAM controller and a PCI bus controller, all onto the processor.

5GXM implements high performance I/O Controller utilizes with fully Plug and Play device which supports 2.88 MB Floppy, Dual 16550 Compatible (with 16 bytes FIFO, up to 460K baud rate) Serial Port, ECP (Enhanced Capabilities Port), EPP (Enhanced Parallel Port) parallel port, Infrared IrDA (HPSIR), and Amplitude Shift Keyed IR. (ASKIR) port.

5GXM supports 2*PCI & 2*ISA for highest performance I/O add-on adapter cards. The system board supports two PCI bus-mastering slots (PCI 2.1 compliant) and allows synchronous CPU and PCI bus clock frequency.

5GXM is also strengthened with Power Management Wake up Event such as **"WOL (Wake up on LAN)," and "Modem ring on,"** which are the new inventions to enable PCs to be turned on over the network or modem. These are also key benefits in PC operation, asset management, new system setup and power conservation.

In conclusion, **5GXM** is a combination of the highest in performance, flexibilility, efficiency, and ease of use that meets a variety of price/performance levels. The **5GXM** is an ideal platform for the increasing requirements of today's and future's desktop application.

1-2 Specifications

- **PCB board size:** 22 cm x 21 cm

- **PCB layer:** 4 layers

- **ZIF Socket 7**
  Only support Cyrix® MediaGx™ series.

- Cyrix® MediaGX™ series : 32-Bit x86 Processor (233 - 300 MHz)
  - 320-pin Staggered Pin Grid Array (SPGA)
  - Speeds offered up to 300 MHz
  - MMX™ technology
  - FPU(Floating Point Unit)
  - 16 KB L1 cache

Since 5GXM is especially designed based on Cyrix® MedaiGX™ CPU and Cx5530™ chipset, only Cyrix® MedaiGX™ processors are supported by 5GXM.

- **Chipset :** Cyrix® Cx5530™

- **Memory DIMMs**
  - 2 of 168-pin unbuffered DIMMs
  - Memory control/interface directly from CPU
  - 64-bit wide memory bus
  - SDRAM bus frequency: 66 MHz or 100 MHz

- **Expansion Slot :** 2x ISA slots, 2x PCI slots

- **Video functions**
  - 2D Graphics Accelerator
  - Display Controller
  - MPEG-1
  - TV-OUT (optional)

- **BIOS**
  licenced Award® full **PnP** (Plug & Play) BIOS, flash ROM BIOS

- **I/O function**
  - 2 x PCI IDE devices
  - 1 x FDC, 2 x serial ports(16550 fast COM.)
  - 1x parallel port device /EPP/ECP
  - 2x USB connector
  - IrDA (infrared) connector

- **AT form factor:** AT/ATX power supply optional

- **Green function:** Complied with APM (Advanced Power Management)

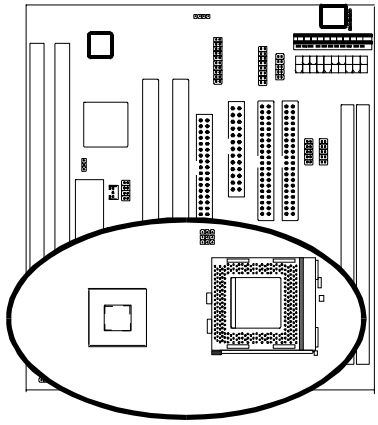
- **Electrical--- Typical power supply**
  Below is reference for system power supply.

Voltage	Tolerance	Current	Power Supply
+5V	±5%	22 Amperes	AT or ATX
+3.3V	±5%	3 Amperes	ATX only
+12V	± 10%	800 mA	AT or ATX
-5V	±5%	150 mA	AT or ATX
-12V	±5%	100 mA	AT or ATX

WOL (Wake up on LAN) function requirement:
Power supply should offer at least 750mA to the signal "5V trickle voltage" to support.

- **Special features**
  - Wake up on LAN
  - Modem ring on
  - Windows 95 power off

1-3 Cyrix Cx5530™ & MediaGX™



System Chipset:
Cyrix CX5530(TM) Features

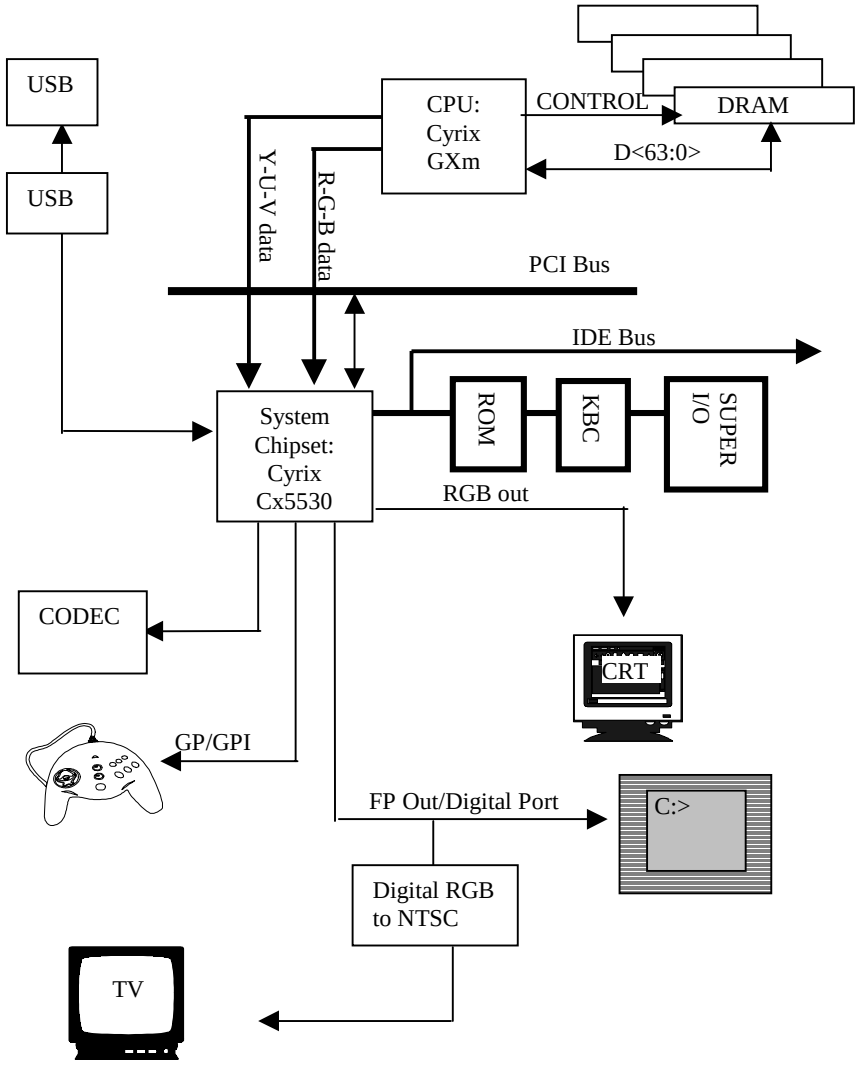
.PC98 Compliant
.PCI to ISA Bridge
.POWER Management
.Audio Support
.Ultra DMA33
.2 *USB
.MPEG-1
.AC97 ver.2.0 Audio
.352BGA

CPU: Cyrix(TM) MediaGX(TM)

All on a chip
with MMX (TM) technology
1. 64-bit x 86 compatible processor
2. fully accelerated 2D graphics
w/pixel processing and rendering functions
3. 64-bit synchronous DRAM controller
4. PCI bus controller
5. 16 KByte write-back L1 cache

Since 5GXM is especially designed based on Cyrix® MedaiGX™ processor, only 5GXM only supports Cyrix® MedaiGX™ processpr. Using other CPUs instead of MediaGX™0 series, CPU will be seriously burned due to incompatibility

1-4 System Block Diagram



1-5 Notice of Hardware Installation

Before hardware installation, make sure you have checked the following things.

A. Check the package
If any of these items is missing or damaged, contact the dealer from whom you purchase. Leave this main board in its original package until you are ready to install it. In the package, there are:

- 5GXM main board
- manual
- cables (w/ a 20-pin multi-media module)
- driver & utility / CD
- Cyrix™ GXM CPU

Since 5GXM is especially designed based on Cyrix® MedaiGX™ processor, only 5GXM only supports Cyrix® MedaiGX™ processor . Using other CPUs instead of MedaiGX™ series, CPU will be seriously burned due to incompatibility

B. Make sure power is off.

C. Avoid ESD (Electrical Static Discharge).
While working with **5GXM**, wear a grounded wristband or ankle strap to avoid ESD (Electrical Static Discharge).

1-6 Notice of CD Driver Installation

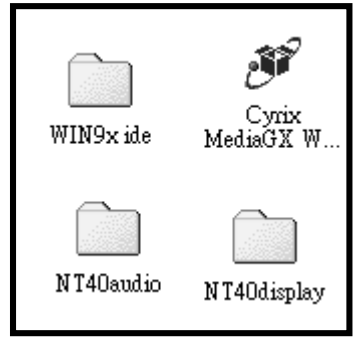
The CD contains drivers for Windows 95, Windows 98, and Windows NT for 5GXM.

Step1: Enter CD "5GXM directory" and see the below screen.

Step 2: Run the icon of Cyrix MediaGX W…

Step 3: Install drivers for operation system
*****Windows 95/98 environment:**
If the operation system is Windows 95 or Windows 98 environment, enter WIN9x ide" directory and follow the instructions of the file **"95_98 README"** to install drivers.

*****Windows NT environment**
If the operation system is Windows NT environment, please install "NT40audio" and "NT40display."

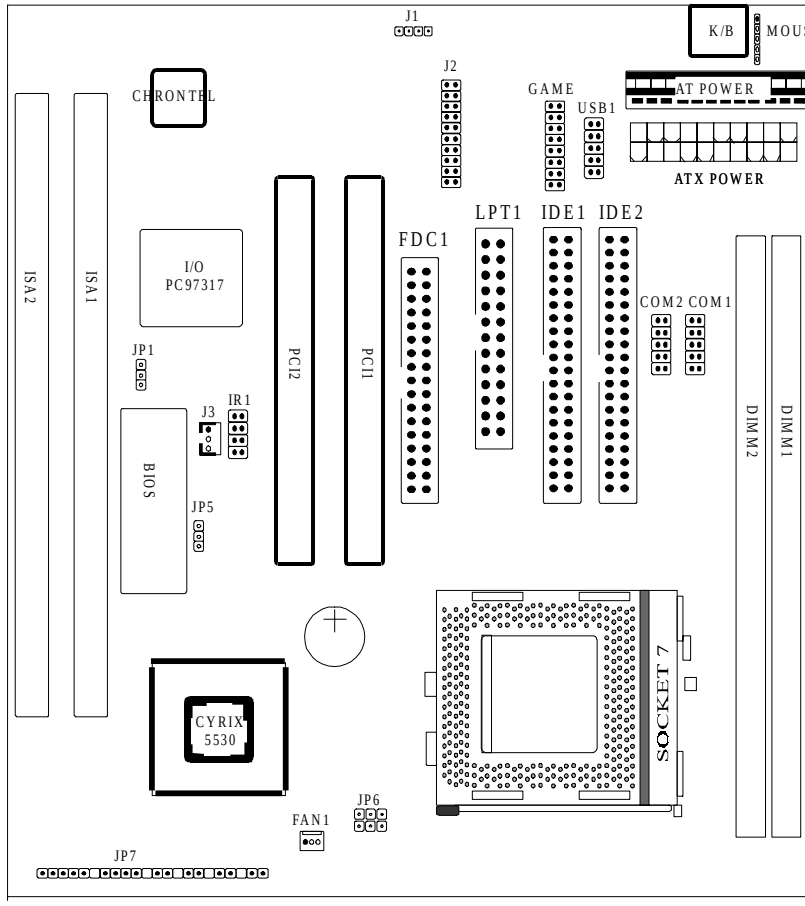


CD driver is always updated with the latest version, so the actual CD content may have some difference with the above picture.

In the CD 5GXM directory, it provides drivers for Windows 98, Windows 95, and Windows NT

Chapter 2 Installation

2-1 Layout Reference



5GXM supports Cyrix™ MedaiGX™ CPUs up to 300 MHz.

2-2 Quick Reference to CPU Speed Setup

Based on Cyrix™ MedIAGX™ processor and Cx5530 chipset, 5GXM only supports Cyrix™ MedaiGX™ CPU up to 300 MHz. Using other CPUs instead of Cyrix™ MedaiGX™ series, the CPUs will be seriously burned.

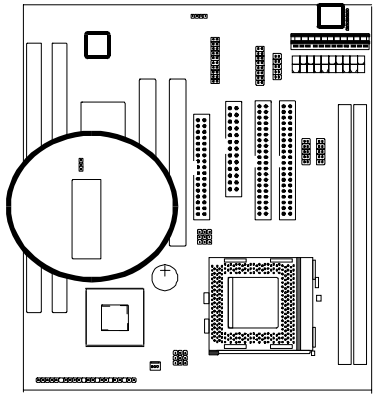
CPU	**CPU Ratio**	**CPU Frequency**	**JP6**		
			1-2	**3-4**	**5-6**
GX 233 MHz	7X	33.3 MHz	ON	OFF	OFF
GX 266 MHz	8X	33.3 MHz	OFF	OFF	OFF
GX 300 MHz	9X	33.3 MHz	ON	OFF	ON

Since 5GXM is especially designed based on Cyrix® MedaiGX™ CPU, 5GXM only supports Cyrix® MedaiGX™ CPU. Using other CPUs instead of MedaiGX™, CPU will be seriously burned due to incompatibility

2-3 Jumper Settings

2-3-1 JP1: Flash ROM Voltage Selector

JP1 is a 3-pin connector to select 5V or 12V flash ROM. Select "1-2" for 5V or "2-3" for 12V.

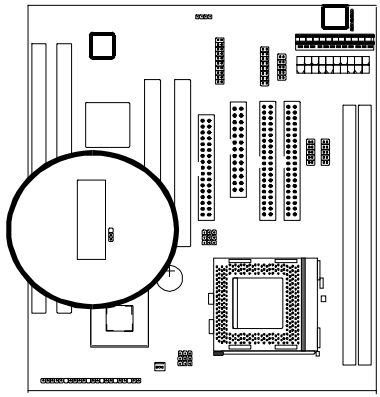


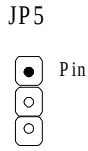
JP1: Flash ROM Voltage Selector

JP1	Flash ROM Voltage
1-2	5V
2-3	12V

2-3-2 JP5: CMOS Status

JP5 is a 3-pin connector. Clear CMOS if system password is forgotten. Below is details to show how to clear CMOS.





JP5	CMOS Status
1-2	Normal
2-3	Clear CMOS

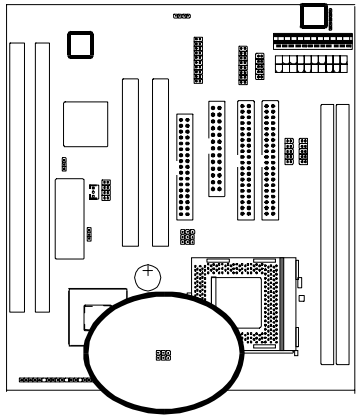
Procedure to clear CMOS:

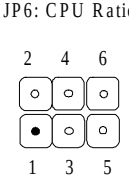
Step 1: Shut down the system and disconnect the power supply from AC power.
Step 2: If the system uses ATX power, pull out the ATX cable from ATX connector.
Step 3: Short the CMOS jumper by putting jumper cap on Pin 2-3 for a few seconds.
Step 4: Return to pin 1-2 for normal setup.
Setp 5: Link power cable to the connector & connect AC power to power supply.
Step 6: Turn on system power.

if you'd like to set password, press "Del" Key during system bootup to enter CMOS setup and establish a new password.

2-3-3 JP6: CPU Ratio Selector

JP6 is a 6-pin jumper to select CPU ratios.





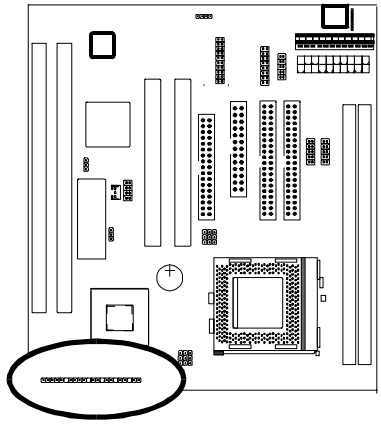
JP6: CPU Ratio Selector			CPU Ratio
1-2	3-4	5-6	
ON	ON	ON	4X
OFF	OFF	ON	5X
OFF	ON	OFF	6X
ON	OFF	OFF	7X
OFF	OFF	OFF	8X
ON	OFF	ON	9X
OFF	ON	ON	10X

2-4 Connectors

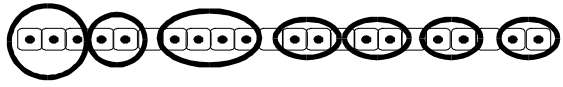
There are many connectors on this main board. Refer to the following pages for details.

2-4-1 Front Panel Connectors

Front panel has connectors as "POWER-LED," "KEY LOCK," "SPEAKER," "RESET," "HD-LED," "TBLED," "ATX-SW." Refer to details as below.



Front Panel



PW-LED SPEAKER HDLED ATXSW

K-LOCK RESET TBLED

POWER LED is a 3-pin connector. It is used to connect to the LED on the case front panel. The LED shows the status of the power.

KEYLOCK is a 2-pin connector. It is used to connect the key lock on the case front panel (if there is). Keyboard may be disconnected with the system through this function.

Pin	**Operation**
Open	Normal
Close	Short the connector to be disconnected with the system

SPEAKER connector is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the main board for sound purpose.

RESET is a 2 -pin keyed Berg strip, connected to the push button reset switch on the case's front panel. Shorting both pin 1& pin 2 can reset the system, which is similar to the power off and then on again.

Pin	**Operation**
Open	Normal
Close	Hardware reset

Marked "HDLED," Hard Disk activity LED connector is a 2-pin keyed Berg strip. It is used to connect to front panel Hard Disk LED.

TBLED with a 2-pin Berg strip on case front panel indicates the current speed status of system. It is used to connect to the Turbo Led on the front panel of the case (if there is).

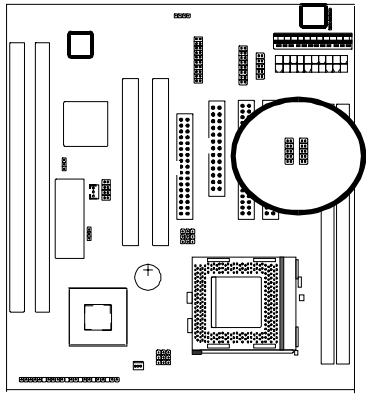
ATX SW is ATX Soft-PWR with 2 pins.

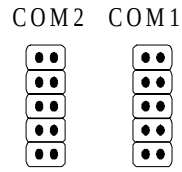
2-4-2 Back Panel Connectors

There are COM1/ COM2, LPT1, USB1 and AT keyboard, PS/2 mouse on case back panel. Please refer to more details as below.

COM1/COM2

The onboard serial port 1 and port 2 are the 9-pin D-subminature male connector **COM1 and COM2.** COM1 and COM2 can be disabled in BIOS setup. Please refer to Chapter 3 "Integrated Peripherals" for more information.

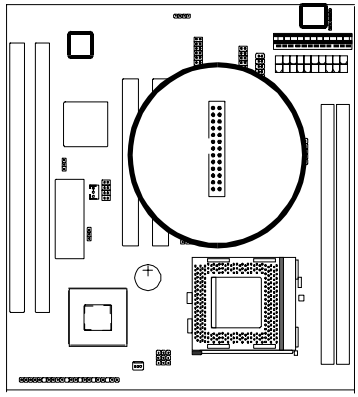


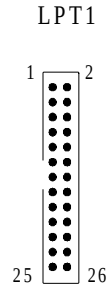


Pin	Signal	Pin	Signal
Pin 1	Carrier detect (CD)	Pin 5	Signal ground
Pin 2	Receive data (RXD)	Pin 6	Data set ready
Pin 3	Transmit data (TXD)	Pin 7	Request to send (RTS)
Pin 4	Data therminal ready (DTR)	Pin 8	Clear to send (CTS)
Pin 9	Ring indicator	Pin 10	None

LPT1

The onboard parallel port is a 25-pin female connector, marked as **"LPT."**

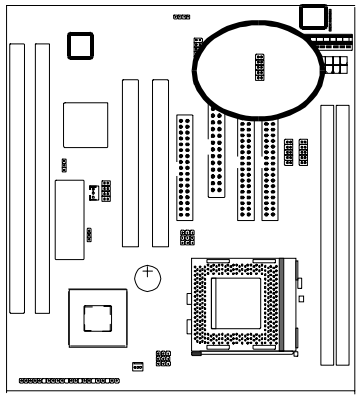


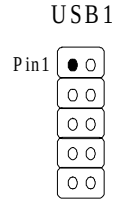


Pin	Signal	Pin	Signal
Pin 1	Strobe	Pin 14	Auto feed
Pin 2	Data bit 0	Pin 15	Error
Pin 3	Data bit 1	Pin 16	Init
Pin 4	Data bit 2	Pin 17	SLCT in
Pin 5	Data bit 3	Pin 18	Ground
Pin 6	Data bit 4	Pin 19	Ground
Pin 7	Data bit 5	Pin 20	Ground
Pin 8	Data bit 6	Pin 21	Ground
Pin 9	Data bit 7	Pin 22	Ground
Pin 10	ACK	Pin 23	Ground
Pin 11	Busy	Pin 24	Ground
Pin 12	PE	Pin 25	Ground
Pin 13	SLCT	Pin 26	None

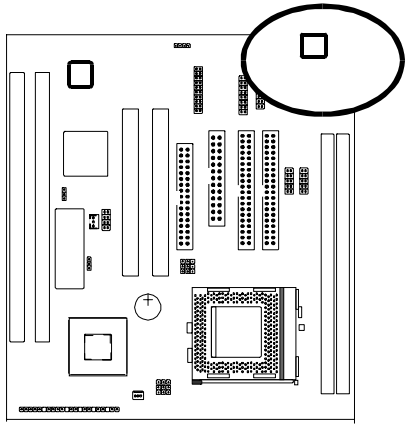
USB1 (Universal Serial Bus)

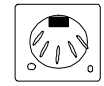
Universal Serial Bus connector, marked **"USB1,"** is used to connect USB devices. There are 2 USB connectors on this main board.





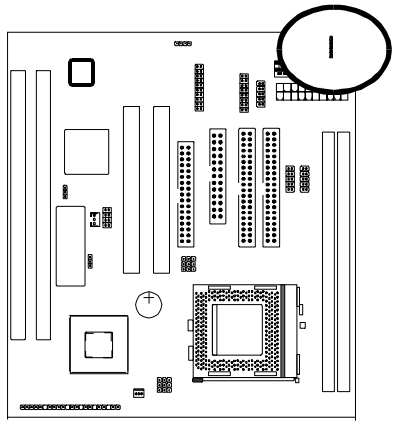
AT Keyboard





PS/2 Mouse

PS/2 Mouse is a 5-pin connector to connect to mouse connector.

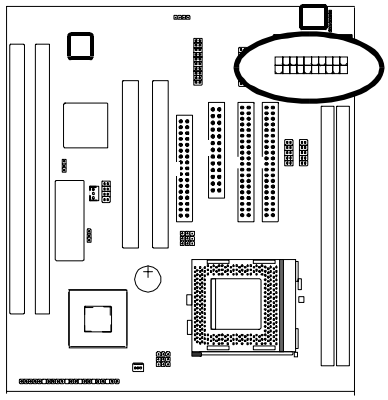


PS/2 MOUSE

1 Mouse CLK
2 Mouse data
3 None
4 GND
5 VCC

2-4-3 ATX Power Supply Connector

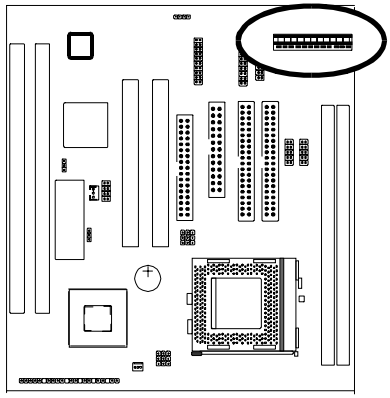
ATX power supply connector has 20 pins, which is designed for ATX case especially. The ATX power supply supports the function of the **"Soft Power On Momentary switch"** which connects on the front panel switch to the 2-pin **SOFT-PWR** on the system board**.** While the power switch on the back of ATX power is turned on, the full power will not go into the system board until the front panel switch is momentarily pressed. Push the switch again to turn off the power to the system board.



ATX POWER

Pin	Signal	Pin	Signal
Pin 1	3.3V	Pin 2	3.3V
Pin 3	3.3V	Pin 4	-12V
Pin 5	GND	Pin 6	GND
Pin 7	5V	Pin 8	SOFT-PWR ON
Pin 9	GND	Pin 10	GND
Pin 11	5V	Pin 12	GND
Pin 13	GND	Pin 14	GND
Pin 15	RAWPOWER	Pin 16	-5V
Pin 17	5V	Pin 18	5V
Pin 19	+12V	Pin 20	5V

2-4-4 AT Power Supply Connector



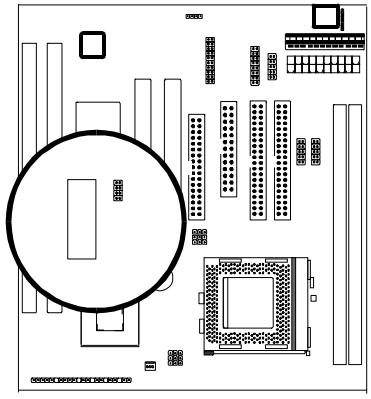
AT POWER

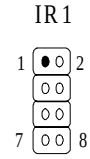
Pin	Signal	Pin	Signal
1	POWER GOOD	7	GROUND
2	+5V DC	8	GROUND
3	+12V DC	9	-5V DC
4	-12V	10	+5V DC
5	GROUND	11	+5V DC
6	GROUND	12	+5V DC

2-4-5 IR1 Connector

IR1 connector supports wireless infrared module. With this module and application software like LAPlink, or WIN95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR**, **ASKIR,** and **Fast IR**.

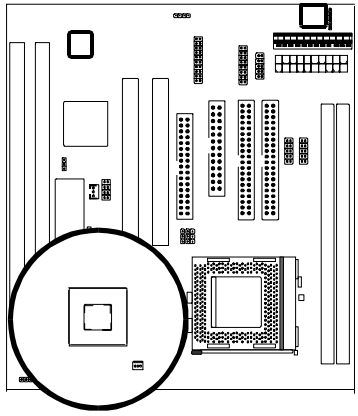
Attach Infrared module to IR connector and enable BIOS "Infrared function." Be sure to put in the right orientation during attachment.

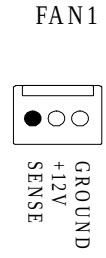




2-4-6 FAN1 Connector

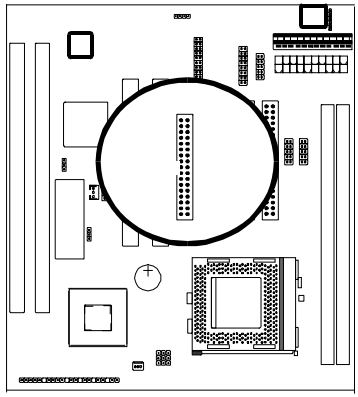
FAN1 connector has three pins.

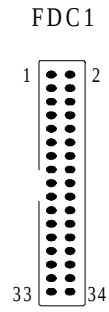




2-4-7 FDC1

FDC1 connector with 34 pins is used to attach the floppy drive cable.

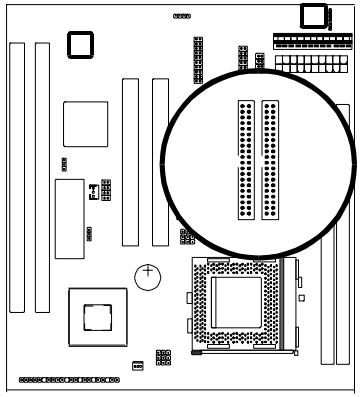


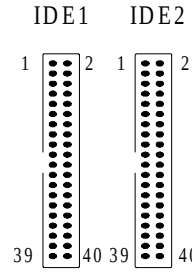


Pin	Signal	Pin	Signal
Pin 1	GND	2	Data rate selection
Pin 3	GND	4	NC
Pin 5	GND	6	NC
Pin 7	GND	8	FDC index
Pin 9	GND	10	FDD Motor A enable
Pin 11	GND	12	FDD Drive B enable
Pin 13	GND	14	FDD drive A enable
Pin 15	GND	16	FDD Motor enable
Pin 17	GND	18	FDC head direction
Pin 19	GND	20	FDC step pulse output to the drive during a SEEK operation
Pin 21	GND	22	FDC write enable serial data to the Drive
Pin 23	GND	24	FDC write enable identify
Pin 25	GND	26	Floppy disk track 0. Indicates that the head of the selected drive is on track zero.
Pin 27	GND	28	FDD write protect. Indicates that the disk of the selected drive is write-protected.
Pin 29	GND	30	Read disk data, serial data input input from the FDD
Pin 31	GND	32	Floppy disk side 1 select
Pin 33	GND	34	Floppy disk change. This is an input pin that senses whether the drive door has been opened or a diskette has been changed.

2-4-8 IDE 1 and IDE2

IDE 1/ IDE 2 both have 40 pins. There are 2 IDE connectors supported on this system board. IDE1 is primary channel, and IDE2 is secondary channel. Each channel supports 2 IDE devices, and 4 channels in total for this main board.

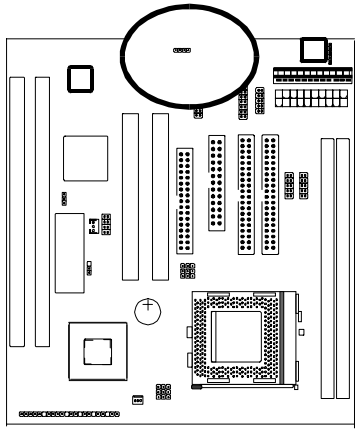




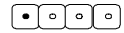
Pin	Signal	Pin	Signal
Pin 1	IDE reset	Pin 2	Ground
Pin 3	Data 7	Pin 4	Data 8
Pin 5	Data 6	Pin 6	Data 9
Pin 7	Data 5	Pin 8	Data 10
Pin 9	Data 4	Pin 10	Data 11
Pin 11	Data 3	Pin 12	Data 12
Pin 13	Data 2	Pin 14	Data 13
Pin 15	Data 1	Pin 16	Data 14
Pin 17	Data 0	Pin 18	Data 15
Pin 19	Ground	Pin 20	Key (NC)
Pin 21	PDREQ	Pin 22	Ground
Pin 23	I/O write	Pin 24	Ground
Pin 25	I/O read	Pin 26	Ground
Pin 27	NC	Pin 28	ALE
Pin 29	NC	Pin 30	Ground
Pin 31	IDE IRQ 14	Pin 32	IOSC15
Pin 33	Address A1	Pin 34	NC
Pin 35	Address A0	Pin 36	Address A2
Pin 37	IDE chip select 0	Pin 38	IDE chip select 1
Pin 39	IDE active	Pin 40	Ground

2-4-9 J1: CD-IN

J1 is a 4-pin CD-in connecttor.

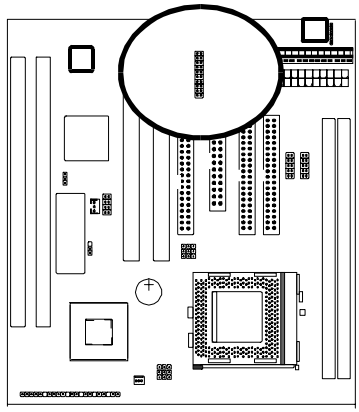


J1: CD-IN

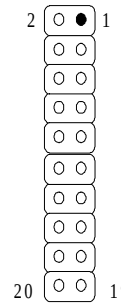


2-4-10 J2: Multi-media Connector

J2 is a 20-pin connector. It is connected to the enclosed 20-pin cable to provid multi-media functions like VGA, MIC, LINE-IN, LINE-OUT, TV-OUT and S-VIDEO functions.

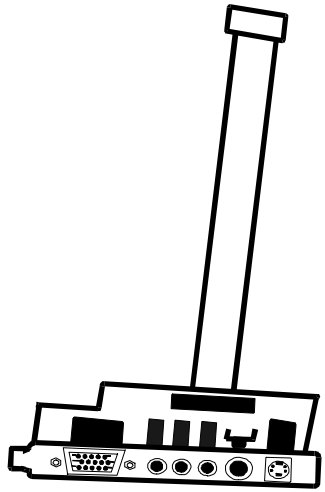


J2: Multi-media Connector



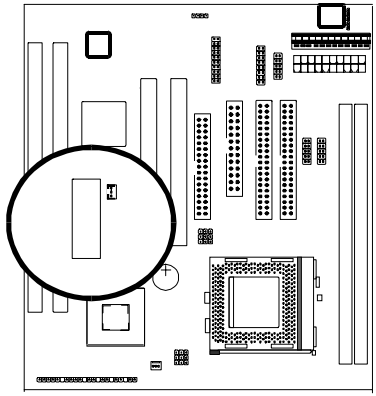
Below is 20-pin multi-media module connecting to the above 20-pin J2 connector.

FOR 20-PIN J2 connector



2-4-11 J3: Wake Up On LAN

Wake up on LAN, marked as **"J3,"** is a 3-pin connector. To support this feature, a network card is required for the system and a network management software must be installed too.



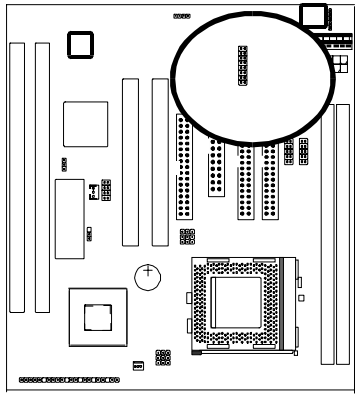
J3: Wake Up On LAN

1 5V trickle voltage
2 GND
3. PME signal

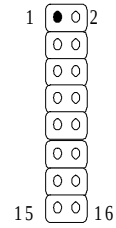
Wake up on LAN function requirement:
Power should offer at least 750mA to the signal "5V trickle voltage" to support WOL function

2-4-12 Game Port

Game port is a 16- pin connector connecting to joystick cable.

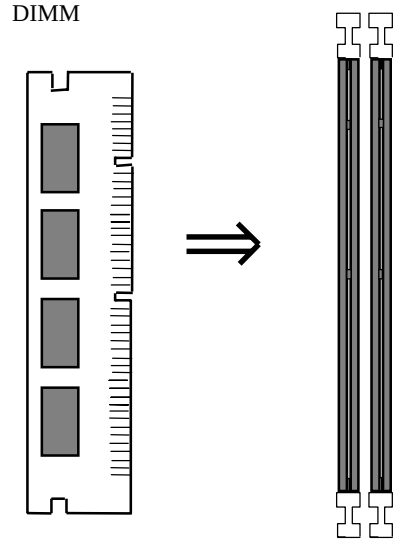


GAME PORT



2-5 DIMM Memory Installation

5GXM has 2 DIMMs on board and memory interface is directly from CPU. Only SDRAM memory is supported. Either DIMM 1, DIMM2 supports 8 MB, 16 MB, 32 MB, 64 MB, and 128MB. Maximum memory for SDRAM is up to 256 MB. Insert the module as shown. Due to different number of pins on either side of the breaks, the module will only fit in the orientation as shown.

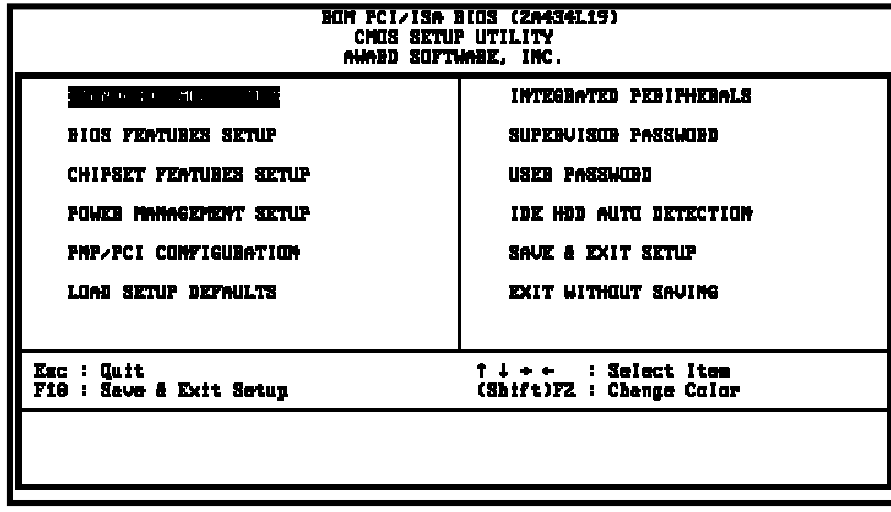


Chipset only supports SDARAM memory, and does not support EDO RAM memory.

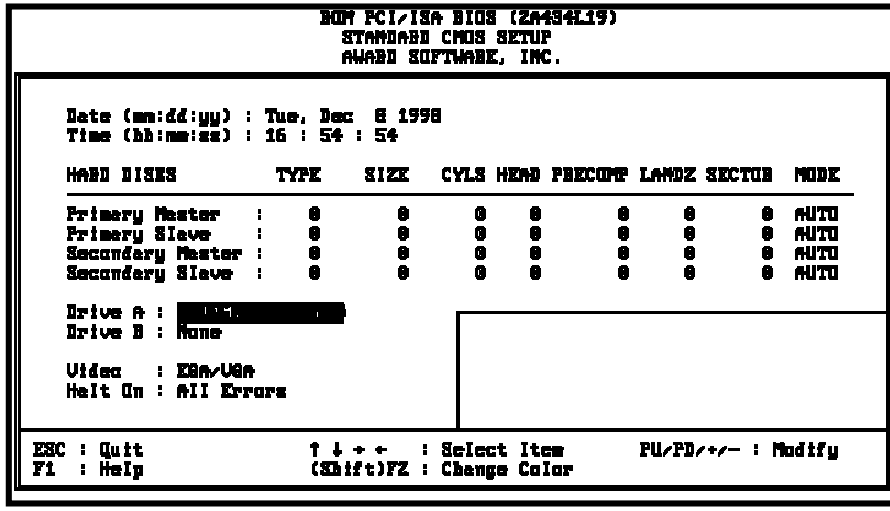
Chapter 3 BIOS Setup

3-1 Award BIOS CMOS Setup

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



3-2 Standard CMOS Setup



The **"Standard CMOS Setup"** allows user to configure system setting such as **current date** and **time, type of hard disk drive** installed in the system, **floppy drive type,** and the type of **display monitor.** Memory size is auto detected by the BIOS and displayed for your reference. When a field is highlighted (direction keys to move cursor and **<Enter>** key to select). The entries in the field will be changed by pressing **<PageDown>** or **<PageUp>** key or user can enter new data directly from the keyboard.

Hard Disk Configurations

1. TYPE : select from **"1" to "45"** to fill remaining fields with redefined values of disk drives. Select **"USER"** to fill the remaining fields. Select **"AUTO"** to detect the HDD type automatically.

2. SIZE : the hard disk size. The unit is mega byte(MB).

3. CYLS : the cylinder number of the hard disk.

4. HEAD : the read/write head number of hard disk. The range is from **"1" to "16".**

5. PRECOMP: the cylinder number at which the disk drive changes the write timing.

6. LANDZ : the cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

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

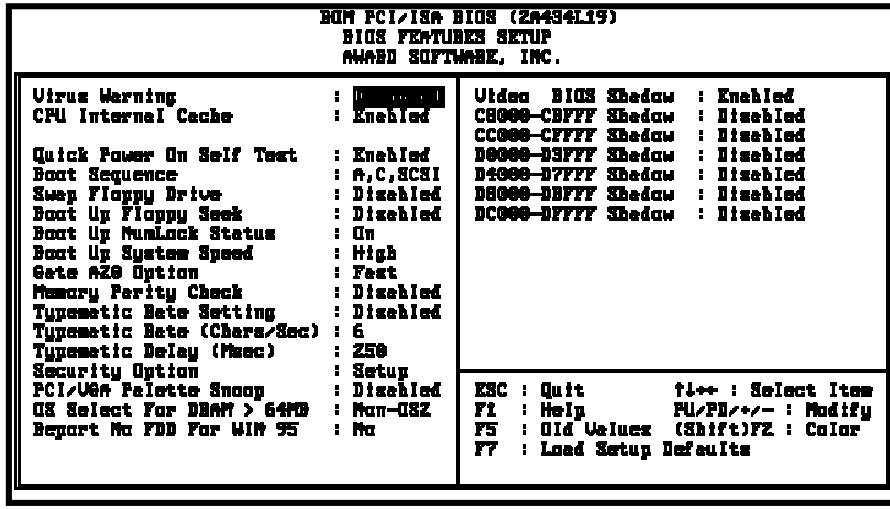
8. MODE :select **"AUTO"** to detect the mode type automatically. If your hard disk supports the **LBA** mode, select **"LBA"** or **"LARGE".** However, if your hard disk cyclinder is more than 1024 and does not support the lba function, you have to set at **"LARGE."** Select **"NORMAL"** if your hard disk supporting cylinder is below 1024.

Note 1: *if hard disk primary master/slave and secondary master/slave were set to* ***"auto,"*** *the hard disk size and model will be auto detected on display during POST.*

Note2: "halt on" *is to determine when to halt the system by the BIOS if error occurs during POST.*

3-3 BIOS Features Setup

Menu below shows all of the manufacturer's default values of this main board. Move the cursor by pressing direction keys and **<PageDown>** or **<PageUp>** key to modify the parameters, pressing **[F1]** key to display help message of the selected item. This setup program also provide 2 convenient ways to load the default parameter data from BIOS **[F6]** or CMOS **[F7]** area if shown data is corrupted. This provides the system a capability to recover from any possible error.



Anti-Virus Protection
:Enabled
:Disabled (default)

CPU Internal Cache
Enabled (default): enable L1 cache
Disabled: disable L1 cache

Quick Power On Self Test
This category speeds up power on self test.
Enabled : BIOS will shorten or skip some check items.
Disabled: normal speed

Boot sequence
This category determines which drive the system searches first. Take **"A,C,SCSI"** for example. System will search in turn for floppy disk drive; second is hard disk drive, and finally SCSI drive. Default value is **"A,C,SCSI.".** Options are as below:
A,C,SCSI; C,A,SCCI; C,CDROM,A; CDROM,C,A; D,A,SCSI; E,A,SCSI; F,A,SCSI; SCSI,A,C; SCSI,C,A; C Only; LS/ZIP,C.

Swap Floppy Drive
Enabled: floppy A&B will be swapped.
Disabled(default): floppy A&B will be not swapped.

Boot Up Floppy Seek
BIOS will determine if the floppy disk drive is 40 or 80 tracks. 360k type is 40 tracks while 720K/ 1.2M and 1.44M are all 80 tracks. Default value is **"Disabled."**

Boot Up Numlock Status
:On(default)
:Off

Gate A20 Option
:Normal (default)
:Fast

Memory Parity Check
This item allows memory parity check function.
: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 this 2 items and the default is controlled by keyboard.

Typematic Rate(Chars/Sec)
6: 6 Characters Per Second(default)
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)
This is the interval between the first and second character displayed.
250 : 250 msec (default)
500 : 500 msec
750 : 750 msec
1000 :1000 msec

Security Option
:Setup (default)--- security protection in CMOS setup menu
Setting password in BIOS CMOS **"Supervisor Password" or User Password,**" the user needs to key in password if entering BIOS CMOS setup.
:System---security protection in system boot-up & BIOS setup
This function secures the system under system boot-up and BIOS setup.

PCI/VGA Palette Snoop

Enabled: it allows you to install an enhanced graphics adapter card.

Disabled (default): If your graphics adapter card does not support the pallette snoop function, please set at **Disabled** to avoid system malfunction.

OS Select For DRAM> 64MB

This option is especially set for OS2 operating system. Set **"OS2"** for RAM memory over 64MB and set **"Non-OS2"** for other operating systems like Windows® 95/98 or Windows NT.

:Non-OS2 (default)

:OS2

Video BIOS Shadow

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

Enabled : Video Shadow is enabled (default)

Disabled: Video Shadow is disabled

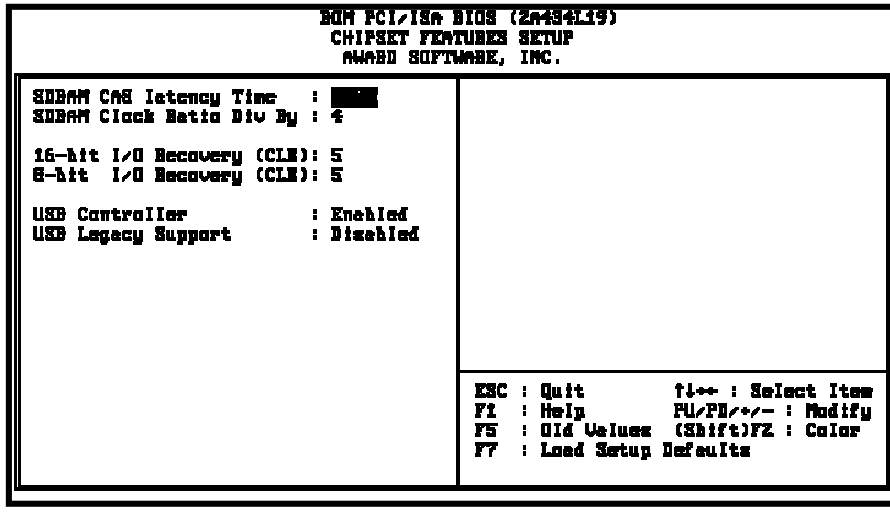
C8000-CBFFF Shadow, CC000-CFFF Shadow, D0000-D3FFF Shadow: D4000-D7FFF Shadow, D8000-DBFFF Shadow, DC000-DFFF Shadow

These are categories determining whether optional ROM will be copied to RAM by 16KB or 32KB per unit and the size depends on chipset.

:Enabled

:Disabled(default)

3-4 Chipset Features Setup

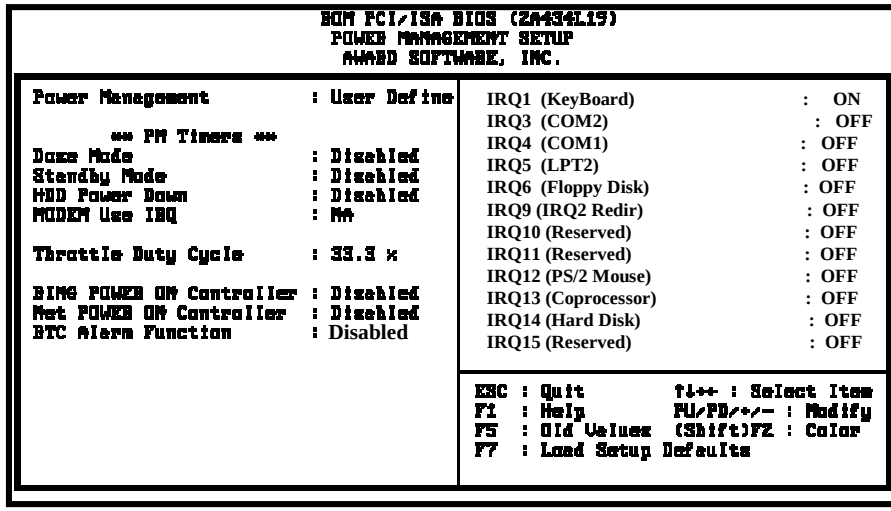


SDRAM CAS Cycle Length: control the DRAM page missing and row miss leadoff timing.
:2 T
:3 T(default)

USB Controller
:Enabled (default)
Enabling this function adds the function of **"USB Legacy Support."**
:Disabled

USB Legacy Support
:Disabled (default)
:Enabled--- enable USB keyboard or USB mouse

3-5 Power Management Setup



Power Management
:User Define(default)--users can configure their own power management
:Min Saving
:Max Saving
:Disabled

*** PM Timers ***

HDD Power Down
:Disabled (default)
:1/2/3/4/5/6/8/10/2/15/16/20/30/40/60 min.

Doze Mode
:Disabled (default)
:1/2/4/8/10/12/16 SEC

Net POWER ON Controller (Wake up on LAN function)
:Enabled
:Disable (default)

To support functions such as "Wake up on LAN," "Keyboard Wake up," or "PS/2 Mouse Wake up," we suggest that Pin 17 signal 5VSB on ATX Power supply should be able to offer at least 750 mA driving ability.

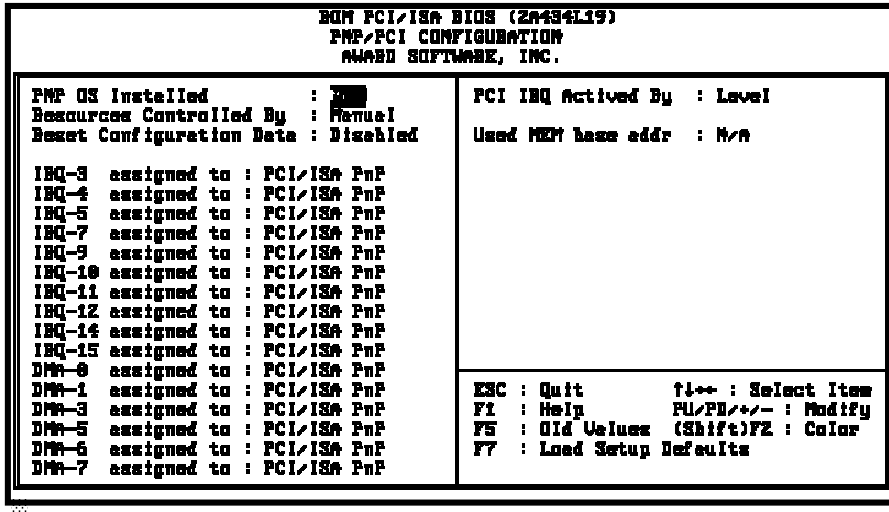
RING POWER ON CONTROLLER
:Disabled(default)
:Enabled: modem ring on function--- system can be turned on through modem.

Note: this function only works when the system is turned off from Windows mode, and Doze mode will not function.

RTC Alarm function: auto power on at the appointed time.
Enabled: key in the time of the day. System will turn on then.
Disable (default) **:** disble this function.

Note: this function only works when the system is turned off in Windows mode, and doze mode will not function.

3-6 PNP / PCI Configuration Setup



PNP OS Installed
:No(default)
OS will not recognize PnP devices.
:Yes
OS will arrange the setup of PnP devices.

Resources Controlled By
:Manual(default)
The table will show the below items: **"Reset Configuration Data, IRQ-3 assigned to, DMA-0 assigned to."** The user can adjust the shown items as required.
:Auto
The table will not show the above items, and the system will automatically assign the above setup.

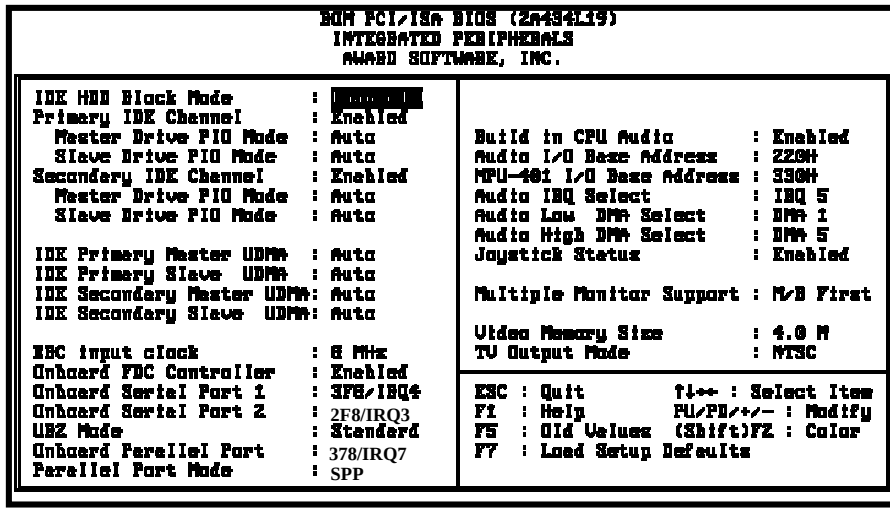
Reset Configuration Data
:Disabled(default)
:Enabled--- to reset **"Extended System Configuration Data(ESCD)** when you exit setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot up.

IRQ-3 Assigned To---- IRQ-15 Assigned To
: PCI/ISA PnP(default)
: Legacy ISA

DMA-0 Assigned To--- DMA-7 Assigned To
: PCI/ISA PnP(default)
: Legancy ISA

PCI IRQ Actived By
There are 2 modes in activating PCI IRQ.
:Edge
:Level (default)

3-7 Integrated Peripherals



IDE HDD Block Mode
: Enabled (default)
: Disabled

Primary IDE Channel
: Enabled (default)--- it allows to adjust the items **"Master Drive PIO Mode, and Slave Drive PIO Mode."**
: Disabled

Secondary IDE Channel
:Enabled (default)--- it allows to adjust the items **"Master Drive PIO Mode, and Slave Drive PIO Mode."**
: Disabled

Onboard FDC Controller
: Enabled (default)
: Disabled

Onboard Serial Port 1
: 3F8/IRQ4 (default)
: 2F8/IRQ3
: 3E8/IRQ4
: 2E8/IRQ3
: Auto
: Disabled

Onboard Serial Port 2
: 3F8/IRQ4
: 2F8/IRQ3 (default)
: 3E8/IRQ4
: 2E8/IRQ3
: Auto
: Disabled

UR2 Mode
: Standard (default)
: Sharp IR
: IrDA SIR

Onboard Parallel Port
: 378/IRQ7 (default)
: 3BC/IRQ7
: 278H/IRQ5
: Disabled

Parallel Port Mode

SPP (Default)	
EPP	
ECP	Choosing this item, there is another line shown: **ECP Mode Use DMA: 3**(default) **/ 1**
ECP+EPP	Choosing this item, another line is shown: **ECP Mode Use DMA: 3**(default) **/ 1**

Build in CPU Audio

This function is to enable the built-in CPU audio function.

: Enable (default)

: Disable

Audio I/O Base Address

:220H (default)

:240H

:260H

:280H

MPU-401 I/O Base Address

:330H (deafult)

:Disable

Audio IRQ Select

This function is to select the IRQ.

: IRQ 5 (deafult)

: IRQ 3

: IRQ 10

: Disable

Audio Low DMA Select

: DMA 0

: DMA 1 (default)

: Disable

Audio High DMA Select
: DMA 5 (default)
: DMA 6
: DMA 7
: Disable

Joystick Status
This function allows the use of joystick.
: Enabled (default)
: Disabled

Multiple Monitor Support
The system will decide which VGA function is detected first.
: M/B first (default)
: PCI first
: No onboard

Video Memory Size
This will decide the Video Memory size sharing from the system memory.
: 4.0 M (default)
: 1.5 M
: 2.5 M

TV output Mode
: NTSC (default)
: PAL

3-8 Supervisor/User Password

The **"Supervisor/User Password setting"** utility sets the security protection. There are two kinds of password functions in the setup menu : one is "**Supervisor Password**," and the other is **"User Password."** Their difference is**:**

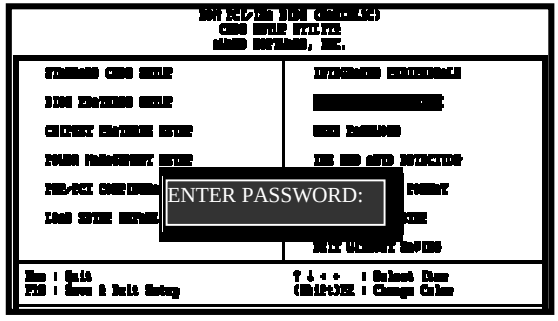
Supervisor Password**: this function allows you the right to change the options of setup menu.**

User Password**: this function only allows you to enter the setup menu but not to change the options of the setup menu except "**USER PASSWORD," "SAVE & EXIT SETUP," **and** "EXIT WITHOUT SAVING."

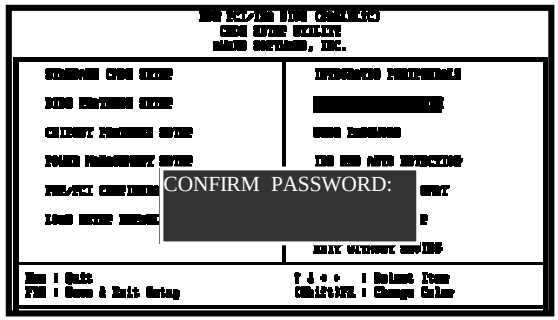
1. How to set "Supervisor Password" & "User Password"

The setup of **"Supervisor Password"** and **"User Password"** have the same steps.

Step 1: **Enter Password**
Press **<Enter>** after appointing the password.



Step 2: **Confirm Password**
Typing the password again and pressing <**Enter**> .



Note: If you forget password, please clear CMOS.
(refer to jumper JP5 CMOS status)

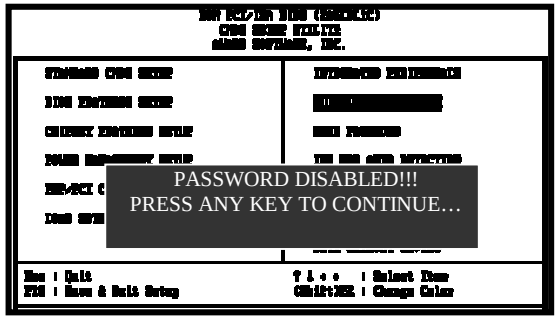
Step 3: Set **"Security Option"** in **"BIOS Features Setup"**

After setting password, enter **"Security Option"** in **"BIOS Features Setup."** There are 2 options **"Setup"** & **"System."** "**Setup"** secures CMOS setup. **"System"** secures PC sytem and password is required during system boot- up and CMOS setup..

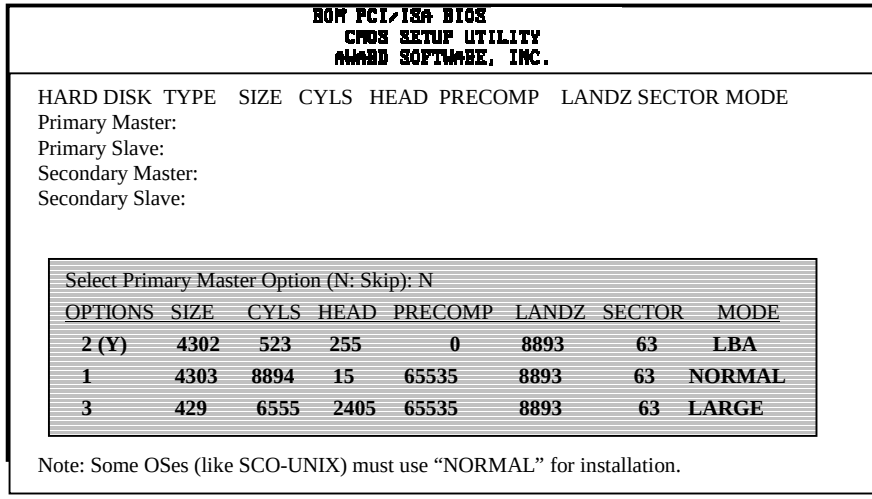
2. How to Disable "Supervisor Password" & "User Password"

Step 1: **Go to CMOS Setup Menu** (need to key in password first)

Setp 2: **Enter "Supervisor Password" or "User Password"**
After enter, it shows "Enter Password." Press the **<Enter>** key instead of entering a new password when **"ENTER PASSWORD"** appears. It will inform **"PASSWORD DISABLED PRESS ANY KEY TO CONTINUNE."** Pess any key as instructed to disable password.



3-9 IDE HDD Auto Detection



The **"IDE HDD AUTO DETECTION"** utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically or you can set hard disk type to auto in the standard CMOS setup. You don't need the **"IDE HDD Aauto Detection"** utility. The BIOS will auto-detect the hard disk size and model on display during post.

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

1. Normal mode
Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for normal mode are **1024, 16 & 63.**

No. Cylinder	(1024)
X No. Head	(16)
X No. Sector	(63)
X No. Per Sector	(512)
	528 MB

If user set this HDD to normal mode, the maximum accessible HDD size will be 528 MB even though its physical size may be greater than that!

2. LBA (Logical Block Addressing) Mode
A new HDD accessing method to overcome the 528 MB bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the ide controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 GB which is obtained by the following formula:

No. Cylinder	(1024)
X No. Head	(255)
X No. Sector	(63)
X No. Bytes Per Sector	(512)
	8.4 GB

3. Large Mode

Extended HDD access mode supported by Award® software. Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award® BIOS provides another alternative to support these kinds of large mode:

Cyls.	Head	Sector	Mode
1120	16	59	NORMAL
560	32	59	LARGE

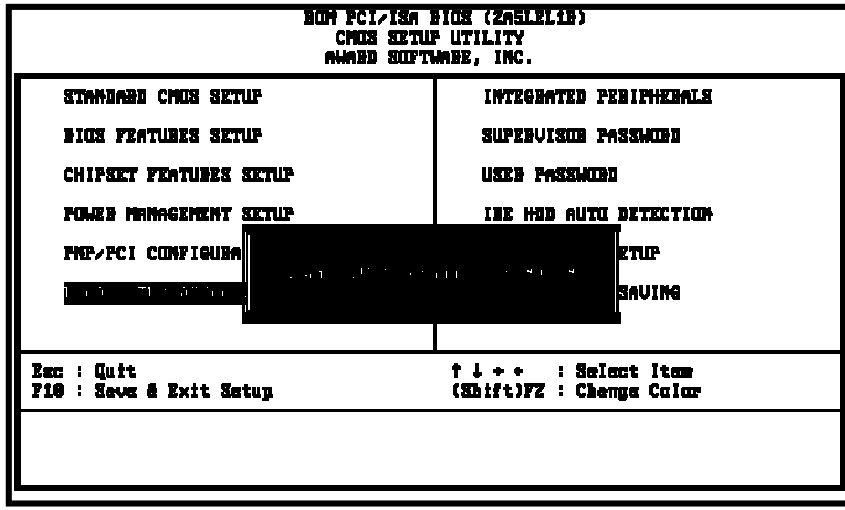
BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside int 12h in order to access the right HDD address the right HDD address!

4. Maximum HDD Size:

	No. Cylinder	(1024)
X	No. Head	(32)
X	No. Sector	(63)
X	No. Bytes Per Sector	(512)
		1 GB

To support LBA or large mode of HDDs, there must be some softwares involved. All these softwares are located in the Award® HDD service routine (int 13h). It may be failed to access a HDD with LBA (large) mode selected if you are running under an perating system which replaces the whole int 13h. Unix operating systems do not support either LBA or large and must utility the standard mode. Unix can support drives larger than 528MB.

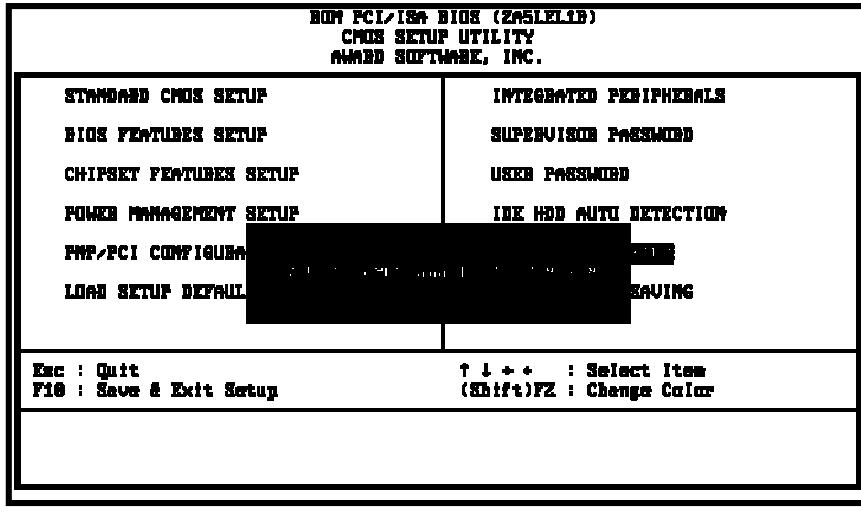
3-10 Load Setup Defaults



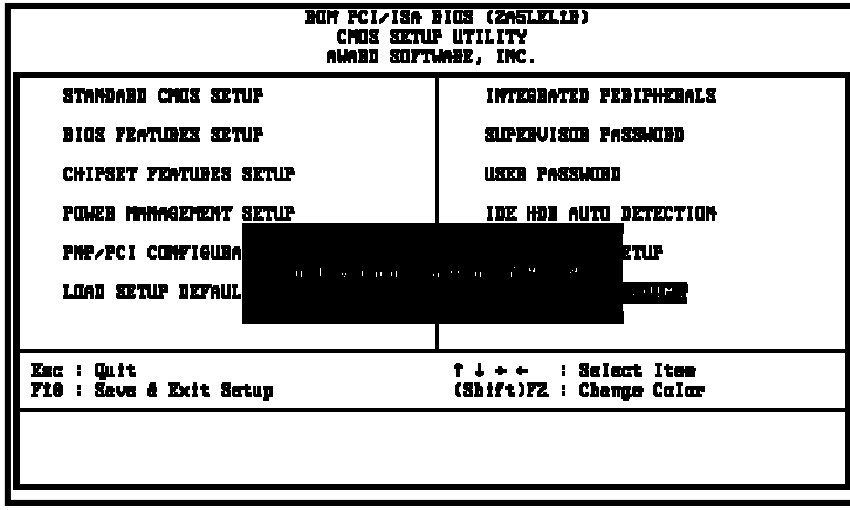
"**Load Setup Defaults**" loads optimized settings which are stored in the BIOS ROM. The auto-configured settings only affect "**BIOS Features Setup"** and **"Chipset Features Setup"** screens. There is no effect on the standard CMOS setup. To use this feature, highlight it on the main screen and press the **<Enter>** key. A line will appear on screen asking if you want to load the setup default values. Press the **<Y>** key and then press the **<Enter>** key . The setup defaults will then load. Press **<N>** if you don't want to

3-11 Save & Exit Setup

The **"Save & Exit Setup"** option will bring you back to boot up procedure with all the changes, you have made which are recorded in the CMOS RAM.



3-12 Quit Without Saving



The **"Quit Without Saving"** option will bring you back to normal boot up procedure without saving any data into CMOS RAM. All of the old data in the CMOS will not be destroyed.

Chapter 4 Appendix

4-1 Memory Map

Address range	Size	Description
00000-7FFFF	512K	Conventional memory
80000-9FBFF	127K	Extended conventional memory
9FC00-9FFFF	1K	Extended BIOS data area if PS/2 mouse is installed
A0000-C7FFF	160K	Available for hi DOS memory
C8000-DFFFF	96K	Available for hi DOS memory and adapter ROMs
E0000-EEFFF	60K	Available for UMB
EF000-EFFFF	4K	Video service routine for monochrome & CGA adapter
F0000-F7FFF	32K	BIOS CMOS setup utility
F8000-FCFFF	20K	BIOS runtime service routine (2)
FD000-FDFFF	4K	Plug and play escd data area
FE000-FFFFF	8K	BIOS runtime service routine (1)

4-2 I/O Map

000-01F	DMA controller (master)
020-021	Interrupt controller (master)
022-023	Chipset control registers. I/o posts
040-05F	Timer control registers
060-06F	Keyboard interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	Interrupt controller (slave)
0C0-0DF	DMA controller (slave)
0F0-0FF	Math coprocessor
1F0-1FB	Hard disk controller
278-27F	Parallel port 2
2B0-2DF	Graphics adapter controller
2F8-2FF	Serial port 2
360-36F	Network ports
378-37F	Parallel port 1
3B0-3BF	Monochrome & parallel port adapter
3C0-3CF	EGA adapter
3D0-CDF	CGA adapter
3F0-3F7	Floppy disk controller
3F8-3FF	Serial port-1

4-3 Time & DMA Channels Map

Time map:

Timer channel 0 system timer interrupt
Timer channel 1 DRAM refresh request
Timer channel 2 speaker tone generator

Dma channels:

DMA channel 0 available
DMA channel 1 onboard ecp (option)
DMA channel 2 floppy disk (smc chip)
DMA channel 3 onboard ECP (default)
DMA channel 4 cascade for dma controller 1
DMA channel 5 available
DMA channel 6 available
DMA channel 7 available

4-4 Interrupt Map

NIMI: non-maskable interrupt

IRQ(H/W):
0 system timer interrupt from timer 0
1 keyboard output buffer full
2 cascade for IRQ 8-15
3 serial port2
4 serial port1
5 parallel port 2
6 floppy disk (smc chip)
7 parallel port 1
8 RTC clock
9 available
10 available
11 available
12 PS/2 mouse
13 math coprocessor
14 onboard hard disk (ide1) channel
15 onboard hard disk (ide2) channel

4-5 RTC & CMOS RAM Map

RTC & CMOS :
00 seconds
01 second alarm
02 minutes
03 minutes alarm
04 hours
05 hours alarm
06 day of week
07 day of month
08 month
09 year
0a status register a
0b status register b
0c status register c
0d status register d
0e diagnostic status byte
0f shutdown byte
10 floppy disk drive type byte
12 hard disk type byte
13 reserve
14 equipment type
15 base memory low byte
16 base memory high byte
17 extension memory low byte
18 extension memory high byte
19-2d
2e-2f
30 Reserved for extension memory low byte
31 reserved for extension memory high byte
32 date century byte
33 information flag
34-3f reserve
40-7f reserved for chipset setting data

4-6 Award BIOS Hard Disk Type

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	21MB
3	615	6	300	615	17	32MB
4	940	8	512	940	17	65MB
5	940	6	512	940	17	49MB
6	615	4	65535	615	17	21MB
7	462	8	256	511	17	32MB
8	733	5	65535	733	17	31MB
9	900	15	65535	901	17	117MB
10	820	3	65535	820	17	21MB
11	855	5	65535	855	17	37MB
12	855	7	65535	855	17	52MB
13	306	8	128	319	17	21MB
14	733	7	65535	733	17	44MB
16	612	4	0	663	17	21MB
17	977	5	300	977	17	42MB
18	977	7	65535	977	17	59MB
19	1024	7	512	1023	17	62MB
20	733	5	300	732	17	31MB
21	733	7	300	732	17	44MB
22	733	5	300	733	17	31MB
23	306	4	0	336	17	10MB
24	977	5	0	925	17	42MB
25	1024	9	65535	925	17	80MB
26	1224	7	65535	754	17	74MB
27	1224	11	65535	754	17	117MB
28	1224	15	65535	699	17	159MB
29	1024	8	65535	823	17	71MB
30	1024	11	65535	1023	17	98MB

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
31	918	11	65535	1023	17	87MB
32	925	9	65535	926	17	72MB
33	1024	10	65535	1023	17	89MB
34	1024	12	65535	1023	17	106MB
35	1024	13	65535	1023	17	115MB
36	1024	14	65535	1023	17	124MB
37	1024	2	65535	1023	17	17MB
38	1024	16	65535	1023	17	142MB
39	918	15	65535	1023	17	119MB
40	820	6	65535	820	17	42MB
41	1024	5	65535	1023	17	44MB
42	1024	8	65535	1023	17	68MB
43	809	6	65535	852	17	42MB
44	809	9	65535	852	17	64MB
45	776	8	65535	775	17	104MB
46	AUTO	0	0	0	0	
47	USER'S	TYPE				

4-7 ISA I/O Address Map

I/O Address (HEX)	**I/O device**
000 - 01F	DMA Controller 1, 8237A-5
020 - 03F	Interrupt Controller 1, 8259A
040 - 05F	System Timer, 8254-2
060 - 06F	8742 Keyboard Controller
070 - 07F	real-time Clock/CMOS and NMI Mask
080 - 09F	DMA Page Register, 74LS612
0A0 - 0BF	Interrupt Controller 2, 8259A
0C0 - 0DF	DMA Controller 2, 8237A-5
0F0 - 0FF	i486 Math Coprocessor
1F0 - 1F8	Fixed Disk Drive Adapter
200 - 207	Game I/O
20C - 20D	Reserved
21F	Reserved
278 - 27F	Parallel Printer Port 2
2B0 - 2DF	Alternate Enhanced Graphic Adapter
2E1	GPIB Adapter 0
2E2 - 2E3	Data Acquisition Adapter 0
2F8 - 2FF	Serial Port 2 (RS-232-C)
300 - 31F	Prototype Card
360 - 363	PC Network (Low Address)
364 - 367	Reserved
368 - 36B	PC Network (High Address)
36C - 36F	Reserved
378 - 37F	Parallel Printer Port 1
380 - 38F	SDLC, Bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BF	Monochrome Display and Printer Adapter

I/O Address (HEX)	**I/O device**
3C0 - 3CF	Enhanced Graphics Adapter
3D0 - 3DF	Color/Graphics Monitor Adapter
3F0 - 3F7	Diskette Drive Controller
3F8 - 3FF	Serial Port 1 (RS-232-C)
6E2 - 6E3	Data Acquisition Adapter 1
790 - 793	Cluster Adapter 1
AE2 - AE3	Data Acquisition Adapter 2
B90 - B93	Cluster Adapter 2
EE2 - EE3	Data Acquisition Adapter 3
1390 - 1393	Cluster Adapter 3
22E1	GPIB Adapter 1
2390 - 2393	Cluster Adapter 4
42E1	GPIB Adapter 2
62E1	GPIB Adapter 3
82E1	GPIB Adapter 4
A2E1	GPIB Adapter 5
C2E1	GPIB Adapter 6
E2E1	GPIB Adapter 7

Chapter 5 Q & A

5-1 Errors Messages During Power On Self Test

During **power on self test (post)**, BIOS will automatically detect the system devices. Below is the questions that users may always meet. The user may press **"Esc"** key to skip the full memory test.

1. ***Beep sound***
   On power on, the system make beep sound to offer different messages. If the system is configured correctly, it prompts a short beep to show correct the devices configuration is done correctly. When VGA card and DIMM modules are not plugged well, the system makes longer and constant beep sounds.

2. ***BIOS ROM checksum error***
   It indicates the checksum of the BIOS code is not right and system will always halt on power on screen. Contact the dealer to exchange a new BIOS.

3. ***CMOS battery fails***
   It indicates the CMOS battery does not work. Contact the dealer to exchange a new BIOS.

4. ***CMOS checksum error***
   It indicates the CMOS checksum is incorrect. Load the default values in BIOS to solve this problem. This error may result from a weak BIOS, so exchange a new BIOS if necessary.

5. ***Hard disk initialize***
   Please wait a moment…
   Some hard drives require more time to initialize.

6. Hard disk install failure

The system can not find or initialize the hard drive controller or the drive. Check if the controller is set correctly. If no hard disk is installed, **"Hard drive selection"** must be set to **"none."**

7. Keyboard error or no keyboard present

This means the system can not initialize the keyboard. Check if the keyboard is plugged well and be sure no keys are pressed during POST.

8. Keyboard is lock out- Unlock the key

Normally when this message comes out, check if there is anything mis-placed on the keyboard. Be sure nothing touches the keys.

9. Memory test fails

There will be more information to specify the type and location of the memory error.

10. Primary master hard disk fail

The BIOS find an error in the primary master hard disk drive.

11. Primary slave hard disk fail

The BIOS finds an error in the primary slave hard disk drive.

12. Secondary master hard disk fail

The BIOS finds an error in the secondary slave master hard disk drive.

13. Secondary slave hard disk fail

The BIOS finds an error in the secondary slave IDE hard disk drive.

5-2 Web-site Service

If you have any questions this manual may not help, like updated BIOS, or any information you need regarding our products, please visit our web-site at

- http://www.lucky-star.com.tw

Website to bundle updated "XStore Pro" IDE driver
Updated drivers will be constantly provided at High Point's website. Luck Star website is also linked to High Point.

- http://highpoint-tech.com