Chapter 1

INTRODUCTION

■ Specifications

- ZIF socket for Intel Pentium CPU
- Intel 82430 VX PCIset
- Two 168-pin DIMM sockets (unbuffered, 3.3V), configurable up to 128MB
- 256KB / 512KB cache memory
- Award ROM BIOS
- Expansion slots:
  - three PCI slots
  - two ISA slots
  - one PCI/ISA slot
- I/O support
  - one parallel port with ECP/EPP
  - two serial ports with 16550
  - one or two USB port

- two PCI-IDE connectors for four IDE devices
- one FDD connector

■ Features

- Fully compatible with IBM PC/AT
- PCI-bus architecture
- EDO DRAM and SDRAM support
- Write-back cache technology
- Advanced power-saving modes:
  - Doze mode
  - Standby mode
  - Suspend mode

Chapter 2

SYSTEM COMPONENTS

This section describes the major components of the mother-
board.

Motherboard revision number: R01

■ CPU

The CPU is a 64-bit microprocessor chip that forms the basis of the high-performance system with 16KB internal cache memory on chip.

CPU Installation

NOTE:
Static electricity can destroy electronic devices. Whenever you handle any option outside of its protective packaging, first discharge any static electricity from your body by touching a protective grounding device or unpainted metal on the rear panel of the system unit.

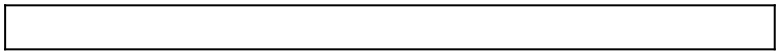
To install CPU in a ZIF socket:

1. Find the ZIF socket on the motherboard. (See p.2-1.)

2. Lift the ZIF socket arm up to the vertical position.

3. Align the CPU so its Pin 1 corner (beveled corner) is at the Pin 1 corner of the ZIF socket. Then insert the CPU's pins into the corresponding holes in the socket.

NOTE:
You are suggested to install a cooling fan to cool the CPU.



4. Press the arm downwards to the horizontal position. You will feel some resistance while doing so. This is normal as the pressure starts to secure the CPU in place.

5. Set the jumpers (JP1, JP2, JP5~JP7) according to the CPU type and speed. (See P.3-3.)

■ Chipset

The 82430 VX PCIset consists of the VX System Controller (TVX), the two VX Data Paths (TDX), and the PCI ISA IDE Accelerator (PIIX3).

- PCI 2.1 compliant
- Integrated DRAM controller

– 64-bit path to memory
  – 4MB to 128MB main memory
  – EDO/Fast Page mode DRAM support
  – Support for Symmetrical DRAMs
  – supports SDRAM
  – 5 QWord deep buffer for 3-1-1-1 posted writes, and
    DWord and burst merging

- Supports mixed memory technologies (EDO/FP/SDRAM)
- Supports 3V or 5V DRAMs

- Integrated second level cache controller

– Direct mapped organization
  – Supports 256K and 512K cache memory
  – Cache hit read/write cycle timings at 3-1-1-1 with
    burst RAM
  – Back-to-back read/write cycles at 3-1-1-1-1-1-1-1
  – Supports write-back

- Fully synchronous 25/30/33MHz PCI bus interface

– Five PCI bus masters (including PIIX3)
  – Converts back-to-back sequential PCI memory writes to PCI burst writes
  – CPU-to-PCI memory writes posting with 5 DWord
    deep buffers
  – PCI-to-DRAM read prefetching (5 QWord)
  – PCI-to-DRAM posting (18 DWord)
  – Multi-transaction timer to support multiple short PCI
    transactions

- Supports the Universal Serial Bus (PIIX3 USB)

- 208-pin QFP system controller (TVX), two 100-pin QFP data paths (TDX)

■ ROM BIOS

The BIOS holds the fundamental functions and acts as a communication channel between the motherboard and the rest of the system. You can configure the motherboard through the SETUP program. Details regarding the ROM BIOS are thoroughly discussed in Chapter 5.

■ System Memory

There are two 168-pin DIMM sockets. Each can support 1MB, 2MB, 4MB and 8MB DIMM modules. Refer to Chapter 4 for DRAM configuration and installation.

■ Cache Memory

The effectiveness of the cache is determined predominantly by the size and organization of the cache. The motherboard supports 256KB or 512KB on-board cache memory. It uses the write-back cache algorithm to minimize access time to the main memory, which improves overall system performance.

Chapter 3

CONNECTORS AND JUMPERS

This chapter defines the connectors and jumpers on the motherboard. The figure below shows the connector and jumper positions.

■ Connector Definition

Connector	Function
J1	PIO
J2	FDD
J4	SIO1
J6	SIO2
J7	External PS/2 mouse & USB
J9	Power
J10	2nd IDE
J11	1st IDE

J15	Suspend SW
J16	IrDA
J17	Reset SW
J18	Speaker
JP8	Power LED & keylock
JP9	IDE HDD LED
J12~J14	ISA slots
CN1	AT keyboard

CN2~CN5	PCI slots
SI1, SI2	DIMM sockets

■ Jumper Definition

Jumpers are used to select options for certain features. To set a jumper to "close" means covering the jumper pins with the jumper caps, and "open" means not to cover the pins. Jumpers with more than two pins have numbers on the motherboard identifying the pins.

CPU Jumper Settings

Name	Type	Ratio	Freq.	JP1	JP2	JP6	JP5	JP3
Intel								
P54C	STD (3.3V)	2X	120	2-3	1-2	1-2	open	open
			133	1-2	1-2	1-2	open	open
		2.5X	150	2-3	1-2	1-2,3-4	open	open
			166	1-2	1-2	1-2,3-4	open	open
		3X	200	1-2	1-2	3-4	open	open
	VRE (3.52V)	2X	120	2-3	1-2	1-2	closed	open
			133	1-2	1-2	1-2	closed	open
		2.5X	150	2-3	1-2	1-2,3-4	closed	open
			166	1-2	1-2	1-2,3-4	closed	open

		3X	200	1-2	1-2	3-4	closed	open
P55C	(2.8V)	2.5X	166	1-2	1-2	1-2,3-4	open	open
		3X	200	1-2	1-2	3-4	open	open
		3.5X	233	1-2	1-2	open	open	open
AMD								
K5		2X	PR120	2-3	1-2	1-2	closed	open
			PR133	1-2	1-2	1-2	closed	open
		2.5X	PR150	2-3	1-2	1-2,3-4	closed	open
			PR166	1-2	1-2	1-2,3-4	closed	open
K6		2.5X	PR166	1-2	1-2	1-2,3-4	open	1-2
		3X	PR200	1-2	1-2	3-4	open	1-2

	3.5X	PR233	1-2	1-2	open	open	5-6
Cyrix							
6X86L	2X	P120+	2-3	2-3	1-2	open	open
		P133+	1-2	2-3	1-2	open	open
		P150+	2-3	1-2	1-2	open	open
		P166+	1-2	1-2	1-2	open	open

JP901 and JP902 are reserved for AMD K6 future products. Do not change the default settings: JP901 - open
JP902 - closed

Other Jumper Settings

JP	Definition
JP4	**RTC** 1-2 : normal 2-3 : CMOS cleared

Chapter 4

MEMORY CONFIGURATION

This chapter tells you how to configure the system DRAM. The figure below shows the system and cache memory locations:

■ System DRAM

SDRAM/EDO (3.3V) Configuration

SI1	SI2	Total
1M x 64	--	8MB
1M x 64	1M x 64	16MB
2M x 64	--	16MB
2M x 64	1M x 64	24MB
2M x 64	2M x 64	32MB
4M x 64	--	32MB
4M x 64	1M x 64	40MB

4M x 64	2M x 64	48MB
4M x 64	4M x 64	64MB
8M x 64	--	64MB
8M x 64	1M x 64	72MB
8M x 64	2M x 64	80MB
8M x 64	4M x 64	96MB
8M x 64	8M x 64	128MB

NOTE:
To avoid memory problems, you are suggested to use 60ns EDO DRAM chips throughout the system.

DIMM Installation

NOTE:
Static electricity can destroy electronic devices. Whenever you handle any option outside of its protective packaging, first discharge any static electricity from your body by touching a protective grounding device or unpainted metal on the rear panel of the system unit.

1. Locate the DIMM sockets (SI1, SI2) on the motherboard. (See the figure on p.4-1.)

2. Align the DIMM module with the socket and firmly insert the DIMM into the socket. Then, push the plastic clips to snap it into place.

■ Memory Mapping

■ Memory Address

Hex Address	Device
00000000 - 0009FFFF	basic memory
000A0000 - 000BFFFF	video memory
000C0000 - 000C7FFF	VGA BIOS
000C8000 - 000DFFFF	reserved for ROM on I/O adapters
000E0000 - 000FFFFF	system ROM BIOS or shadow RAM

■ I/O Mapping

Hex Address	Device
0000 - 001F	DMA controller 1

0020 - 003F	interrupt controller 1 and chipset programmable register
0040 - 005F	timer
0060 - 006F	keyboard controller
0070 - 007F	real time clock, NMI mask
0080 - 009F	DMA page register
00A0 - 00BF	interrupt controller 2
00C0 - 00DF	DMA controller 2
00F0	clear numeric coprocessor busy

00F1	reset numeric coprocessor
00F8 - 00FF	numeric coprocessor
0100 - 3FF	adapter I/O

Chapter 5

AWARD BIOS SETUP

■ Introduction

The SETUP program allows you to enter the system configuration information. This information is needed by the system to identify the type of devices installed and to set up special features. Typical configuration information includes the date and time, the type of disk drives, and the amount of memory.

The configuration information is stored in a special kind of memory called CMOS (Complementary Metal Oxide Semiconductor) RAM. CMOS RAM data are backed up by a RTC backup battery.

The configuration information has been set up in the factory for optimal performance. You only need to run SETUP when:

- you see an error message on the screen requesting you to run SETUP
- you make certain changes for special features

- you update the configuration information after adding or removing hardware
- you correct the system date and time

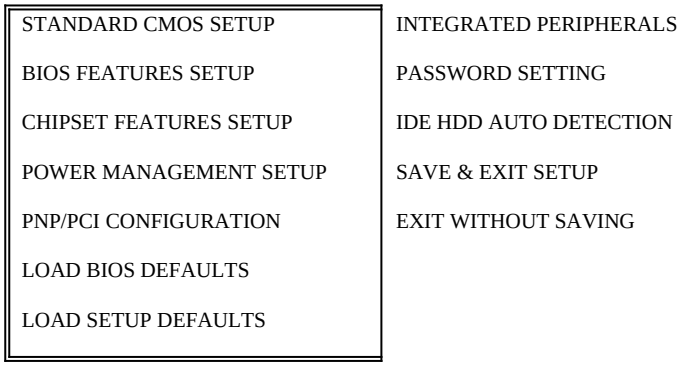
Running SETUP and Moving Around

NOTE:
The SETUP program may have been updated after this manual was published. Your actual SETUP screens may vary slightly from those shown in this chapter.

There are two ways to access the SETUP program:

- Turn on the system and press **Delete** immediately.
- Turn on the system and press **Delete** when you see the message that briefly appears at the bottom of the screen telling you how to enter SETUP.

The figure below shows the first SETUP menu (main menu). The main menu provides nine setup functions and two exit choices.

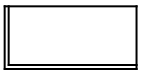


SETUP Main Menu

In this main menu, use arrow keys to move among the items and press **Enter** to accept or enter the sub-menu. In a sub-menu, use arrow keys to move among the items and press **+/–/PgUp/PgDn** to select a value.

A brief description of keyboard usage is listed below:

Key	Function
Esc	1. Quit without saving. 2. Exit to the main menu.
↑, ↓, →, ←	Moves the cursor to a desired item.
+, -, PgUp PgDn	Cycle through the pre-defined values for the selected item. Pressing the plus key or **PgUp** brings up the next value; pressing the minus key or **PgDn** does the contrary.
F1	Displays the help screen for the selected item.
F2, Shift-F2	Changes the colors on the screen.
F5	Restore the previous values from CMOS for the option setup menus*.
F6	Loads the BIOS default values for the option setup menus*.
F7	Loads the SETUP default values for the option setup menus*.



* Option setup menus refer to BIOS FEATURES SETUP, CHIPSET FEATURES SETUP, POWER MANAGEMENT SETUP, PNP/PCI CONFIGURATION, and INTEGRATED PERIPHERALS menus.

■ STANDARD CMOS SETUP

When you select *STANDARD CMOS SETUP* from the main menu, the submenu as shown below appears that contains all the items in a standard BIOS (Basic Input/Output System).

Date (mm:dd:yy) : Thu, Oct 17 1996
Time (hh:mm:ss) : 10 : 36 : 12

HARD DISKS	: TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	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 : 1.44 M, 3.5 in.
Drive B : None
Floppy 3 Mode Support : Disabled
Video : EGA / VGA
Halt On : All Errors

STANDARD CMOS SETUP Menu

The followings describe all the items in this menu.

Date / Time

The date and time might be incorrect when you start up your system for the first time. Enter the correct value for each field. Note that the time is based on a 24-hour format.

Primary/Secondary Master/Slave

This item sets the hard disk type.

CAUTION:
The hard disk will not work properly if you enter incorrect information. For a hard disk type not matched or listed, you can select "User" to manually define your own type.

The available options are:

Options	**Descriptions**
None	Select this option if no hard disk is installed.
1 to 45	Select one of the 45 pre-defined types which matches your hard disk.
User	Select this option to manually enter the parameters such as number of cylinders, number of heads, landing zone, write precompensation, number of sectors/track, and access mode.

Auto Select this option if your hard disk supports the "auto-detect" function. If you select "*Auto"*, you must also use the *IDE HDD Auto Detect* function. (See "IDE HDD AUTO DETECT" in this chapter.)

NOTE:
If you change the controller of the hard disk interface, note that for an ESDI interface, select type "1"; for a SCSI or CD-ROM interface, select "None".

Drive A/ B

This item sets the floppy disk drive type. The available options are *None, 360K 5.25 in, 1.2M 5.25 in, 720K 3.5 in, 1.44M 3.5 in,* and *2.88M 3.5 in*.

Floppy 3 Mode Support

This item sets the "3 Mode" floppy disk drive. The available options are *Disabled*, *Drive A, Drive B,* and *Both*.

Video

This item sets the type of video in your system. The available options are *EGA/VGA, CGA 40, CGA 80,* and *MONO.*

Halt On

This item sets if the system will stop when an error is detected during power up.

The available options are:

Options	**Descriptions**
All Errors	The system will stop and you will be prompted whenever the POST detects a non-fatal error.
No Errors	The system will not stop for any error that

may be detected.

All, But Keyboard The system will not stop for a keyboard error; it will stop for all other errors

All, But Diskette The system will not stop for a floppy disk drive error; it will stop for all other errors.

All, But Disk/key The system will not stop for a keyboard or floppy disk drive error; it will stop for all other errors.

■ BIOS FEATURES SETUP

When you select *BIOS FEATURES SETUP* from the main menu, the submenu as shown below appears that contains items for special enhanced features.

Virus Warning	: Disabled
CPU Internal Cache	: Disabled
External Cache	: Disabled
Quick Power On Self Test	: Disabled
Boot Sequence	: A, C
Swap Floppy Drive	: Disabled
Boot Up Floppy Seek	: Disabled
Boot Up NumLock Status	: Off
Typematic Rate Setting	: Disabled
Typematic Rate (Chars/Sec)	: 6
Typematic Delay (msec)	: 250
Security Option	: Setup
OS Select For DRAM > 64MB	: Non-OS2

BIOS FEATURES SETUP Menu

The followings describe all the items in this menu.

Virus Warning

If this item is set to *Enabled*, during and after the system boots up, any attempt to write to the hard disk's boot sector or partition table will halt the system and the following error message will appear. In the mean time, you can run

an anti-virus program to locate the problem.

!WARNING!
Disk boot sector is to be modified
*Type **Y** to accept write or **N** to abort write*

The available options are *Enabled* and *Disabled*.

NOTE:
This function is available only for DOS or other operating systems that do not trap INT13.

CPU Internal Cache

This item allows you to use the internal cache on the CPU. The available options are *Enabled* and *Disabled*.

External Cache

This item allows you to use the external cache. The available options are *Enabled* and *Disabled*.

Quick Power On Self Test

When set to *Enabled*, this item speeds up Power On Self Test (POST) by shortening or skipping some check items. The available options are *Enabled* and *Disabled*.

Boot Sequence

This item sets the sequence of booting. The available options are:

Options	**Descriptions**
C, A	The system will try to boot from drive C (hard disk) first whenever turned on. If the hard disk is not bootable, the system will then try to

boot
from drive A.

A, C The system will try to boot from drive A first
whenever turned on. If a diskette with operating
system does not exist, the system will then try
to boot from drive C (hard disk).

C, CDROM, A The system will try to boot from the drive C
whenever turned on; If a drive C with operating
system does not exist, the system will then try
to boot from the CD-ROM. If CD-ROM is not
bootable, the system will then try to boot from
drive A.

CDROM, C, A The system will try to boot from the CD-ROM
whenever turned on; If a CD-ROM with
operating system does not exist, the system will
then try to boot from drive C. If drive C is not
bootable, the system will then try to boot from
drive A.

NOTE:
This function is available only for IDE type disks. For SCSI type disks, the sequence is always "A, C".

Swap Floppy Drive

This feature allows you to exchange the drive names of the two floppy disk drives, if installed. Make sure that *Drive A* and *Drive B* item in the S*TANDARD CMOS SETUP* menu are updated accordingly. The available options are *Enabled* and *Disabled*.

Boot Up Floppy Seek

This item sets if the system will verify the floppy disk drive type during POST.

The available options are *Enabled* and *Disabled*. Select *Disabled* to bypass the floppy disk drive check and thus speed up POST.

Boot Up NumLock Status

This item sets if the Num Lock key will be automatically activated after system startup. The available options are *On* and *Off*.

Typematic Rate Setting

This item is the master control of the following two items: *Typematic Rate* and *Typematic Delay*.

The available options are *Enabled* and *Disabled*. When set to *Disabled*, the values of the following two items will be determined by the keyboard.

Typematic Rate (Chars/Sec)

This item controls the rate at which a character is repeated (in characters/second) whenever a key is held down. The available options are *6, 8, 10, 12, 15, 20, 24*, and *30*.

Typematic Delay (msec)

This item controls the delay time (in msec) when a key is pressed and held down. The available options are *250, 500, 750,* and *1000*.

Security Option

This feature allows the password to prevent unauthorized use of the system and the SETUP program. The available options are:

Options	**Descriptions**
System will be	The system will not boot and access to SETUP denied if the correct password is not entered at the

prompt.

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

NOTE:
This item is effective only when a password is set. (See "PASSWORD SETTING" in this chapter.)

OS Select For DRAM > 64MB

If your system memory size is larger than 64MB, you have to define the communication type between BIOS and your operating system.

The available options are *OS/2* and *Non-OS2*.

■ CHIPSET FEATURES SETUP

When you select *CHIPSET FEATURES SETUP* from the main menu, the submenu as shown below appears that contains items for chipset-specific features.

IDE HDD Block Mode	: Enabled
IDE Primary Master PIO	: Auto
IDE Primary Slave PIO	: Auto
IDE Secondary Master PIO	: Auto
IDE Secondary Slave PIO	: Auto
Onboard Primary PCI IDE	: Enabled
Onboard Secondary PCI IDE	: Enabled
Cyrix Branch Target Buffer	: Enabled
8 Bit I/O Recovery Time	: 1
16 Bit I/O Recovery Time	: 1
SDRAM (CAS Lat / RAS-to-CAS)	: 3/3
DRAM Timing	: 60 ns

CHIPSET FEATURES SETUP Menu

NOTE:
CHIPSET FEATURES Setup is for technicians or advanced users only. You are not advised to change the

default settings.

■ POWER MANAGEMENT SETUP

When you select *POWER MANAGEMENT SETUP* from the main menu, the submenu as shown below appears that contains items for Power Management features.

Power Management		: User Defined
PM Control By APM		: No
Video Off Method		: Blank Screen
MODEM Use IRQ	: NA	
Doze Mode		: Disabled
Standby Mode		: Disabled
Suspend Mode		: Disabled
HDD Power Down	: Disabled	

POWER MANAGEMENT SETUP Menu

The Power Management feature helps conserve power by putting the system into low power modes when the system is inactive for a period of time, called "time-out." The system will wake up whenever an activity is detected (e.g. pressing a key).
Power Management works in a 3-stage manner following this order:

1. **Doze** mode
2. **Standby** mode
3. **Suspend** mode

The time-out period set for these three modes are sequential in effect. That is after the Doze mode time-out is reached, the Power Management starts the time-

out for Standby mode, and after Standby mode the time-out for Suspend mode.

The followings describe all the items in this menu.

Power Management

This item is the master control of the Power Management features. The available options are:

Options	**Descriptions**
Disabled	The Power Management feature does not take effect.
User Defined	All the settings can be defined for the Power Management to work in the way as specified by the user.
Min Saving	Some items are pre-defined for the Power Management to assumedly save minimum power. The pre-defined settings are: Doze Mode: 1 Hour Standby Mode: 1 Hour Suspend mode: 1 Hour HDD Power Down: 15 Min
Max Saving	Some items are pre-defined for the Power Management to assumedly save maximum power. The pre-defined settings are: Doze Mode: 1 Min Standby Mode: 1 Min Suspend Mode: 1 Min HDD Power Down: 1 Min

PM Control By APM

If the APM (Advanced Power Management) driver is installed, this item allows you to enable or disable control from APM. The available options are:

Options	**Descriptions**
No	The system BIOS will ignore APM.
Yes	The system BIOS will wait for APM's prompt before it enters any power saving mode.

Video Off Method

This item defines the screen-off status.

The available options are:

Options	**Descriptions**
Blank Screen	The screen will be blank.
V/H SYNC + Blank	The screen will be blank and the V-SYNC and H-SYNC signals will be turned off.
DPMS	This function is enabled for video systems supporting DPM.

MODEM Use IRQ

This item defines the modem IRQ channel. The available options are *3, 4, 5, 7, 9, 10, 11,* and *NA.*

Doze Mode

Setting this item allows your system to enter Doze mode when no "major device activities" have occurred during the set time-out period. (Major devices refer to the keyboard, mouse, FDD, hard disk and SIO/PIO.) Any major activity will bring the system out of Doze mode.

The available options are *Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min* and *1 Hour*.

Standby Mode

Setting this item allows your system to enter Standby mode when no "major device activities" have occurred during the set time-out period. (Major devices refer to the keyboard, mouse, FDD, hard disk and SIO/PIO.) Any major activity will bring the system out of Standby mode.

The available options are *Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min* and *1 Hour*.

Suspend Mode

Setting this item allows your system to enter Suspend mode when no "major device activities" have occurred during the set time-out period. (Major devices refer to the keyboard, mouse, FDD, hard disk and SIO/PIO.) Any major activity will bring the system out of Suspend mode.

The available options are *Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min* and *1 Hour*.

HDD Power Down

Setting this item causes the hard disk to enter power saving mode (motor off) if it is not in use during the set time-out period.

The available options are *Disabled,* and *1 Min* to *15 Min.*

■ PNP/PCI CONFIGURATION

When you select *PNP/PCI CONFIGURATION* from the main menu, the submenu as shown below appears that contains items for configuring "Plug & Play" and the PCI devices.

The *Plug & Play* function automatically sets the IRQ channel, the memory address and the I/O address for your system.

PCI IRQ Actived By	: Level
PCI IDE 2nd Channel	: Enabled
PCI IDE IRQ Map To	: PCI-AUTO
Primary IDE INT#	: A
Secondary IDE INT#	: B
PNP OS Installed	: No
Reset Configuration Data	: Disabled
Resources Controllered By	: Auto

PNP/PCI CONFIGURATION Menu

NOTE:
PNP/PCI Setup is for technicians or advanced users only. You are not advised to change the default settings.

■ INTEGRATED PERIPHERALS

When you select *INTEGRATED PERIPHERALS* from the main menu, the submenu as shown below appears that contains items for configuring the on-board I/O devices.

USB Controller	: Disabled
Onboard FDC Controller	: Disabled
Onboard Serial Port 1	: Disabled
Onboard Serial Port 2	: Disabled
Onboard Parallel Port	: Disabled

INTEGRATED PERIPHERALS Menu

USB Controller

This item allows you to enable or disable the Universal Serial Bus (USB) controller. The available options are *Enabled* and *Disabled*.

If you select *Enabled*, the **USB Keyboard Support** sub-item will appear on the screen. The available options of this sub-item are *Enabled* and *Disabled*.

Onboard FDC Controller

This item allows you to enable or disable the on-board floppy disk drive controller.

The available options are *Enabled* and *Disabled*. If you want to use a separate floppy disk drive controller board, select *Disabled*.

Onboard Serial Port 1/2

This item defines the on-board serial port and sets its address. The available options are *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3*, *Auto*, and *Disabled*.

If you select *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3* or *Auto* for Onboard Serial Port 2 item, the **Infra Red (IR) Function** item will appear on the screen. This item sets the IR port standard depending on the device connected. The available options are *ASKIR, HPSIR*, and *Disabled*.

If you select *ASKIR* or *HPSIR* for Infra Red (IR) Function item, the sub-item **IR Transfer Mode** will appear. The available options of this sub-item are *Half (*receiving or sending only*)* and *Full (*simultaneous receiving and sending.*)*

Onboard Parallel Port

This item sets the address and interrupt channel for the on-board parallel port. The available options are 378/*IRQ7, 278/IRQ5, Disabled* and 3BC/IRQ7.

If you select *378/IRQ7, 278/IRQ* or *3BC/IRQ7*, the **Parallel Port Mode** item will appear on the screen. This item sets the on-board parallel port mode. Your system supports SPP (Standard Parallel Port), EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) standards which turn the standard parallel port into a high

speed bi-directional peripheral port. You can select the mode if the device connected to your parallel port supports it. The available options are *SPP*, *EPP*, *ECP*, and *ECP+EPP*.

If you select *ECP* or *ECP+EPP* for the Parallel Port Mode item, the **ECP Mode Use DMA** sub-item will appear on the screen. The available options of this sub-item are *1* and *3*.

■ LOAD BIOS DEFAULTS

The BIOS default values have been set to provide the minimum performance for the system.

If you select *LOAD BIOS DEFAULTS* from the main menu, BIOS default values will be loaded to the *BIOS FEATURES SETUP*, *CHIPSET FEATURES SETUP*, *POWER MANAGEMENT SETUP*, *PNP/PCI CONFIGURATION* and *INTEGRATED PERIPHERALS* menus.

■ LOAD SETUP DEFAULTS

The SETUP default values have been set to assumedly provide maximum performance for the system.

If you select *LOAD SETUP DEFAULTS* from the main menu, BIOS default values will be loaded to the *BIOS FEATURES SETUP*, *CHIPSET FEATURES SETUP*, *POWER MANAGEMENT SETUP*, *PNP/PCI CONFIGURATION* and *INTEGRATED PERIPHERALS* menus.

■ PASSWORD SETTING

The *PASSWORD SETTING* option works in conjunction with *Security Option* in the *BIOS FEATURES SETUP* menu to prevent unauthorized access to the system and SETUP program (See "Security Option" in this chapter.)

To enter or change the password, select the option from the main menu and follow the on-screen prompts. To disable the password, simply press **Enter** without typing any characters.

■ IDE HDD AUTO DETECT

If your IDE hard disk supports the "auto-detect" function, the IDE HDD Auto Detect feature can automatically detect the parameters of the hard disk, including size, cylinders, number of heads, sectors per track, write precompensation, and the access mode.

NOTE:
By selecting the Primary/Secondary Master/Slave items from the STANDARD CMOS SETUP option, you can set the hard disk type manually.

The SETUP program will display all possible modes supported by the hard disk including Normal, LBA (Logical Block Addressing), and Large modes. See below for explanations.

1. Normal mode

This is the generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, heads, and sectors for Normal mode are 1024, 16, and 63. If Normal mode is selected, the maximum accessible hard disk size will be 528MB even though its physical size may be greater. See the formula below:

	no. of cylinders	(1024)
x	no. of head	(16)
x	no. of sectors	(63)
x	bytes per sector	(512)
		528MB

2. LBA mode

This is a new access mode for overcoming the 528MB bottleneck. The number of cylinders, heads, and sectors shown may not be the number physically contained in the hard disk.

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

The maximum size supported by LBA mode is 8.4GB (Gigabytes). See the formula below:

	no. of cylinders	(1024)
x	no. of head	(255)
x	no. of sectors	(63)
x	bytes per sector	(512)
		8.4GB

3. Large mode

This is an extended access mode supported by the SETUP program for some IDE hard disks that contain more than 1024 cylinder without LBA support. Also for users who do not want LBA, the Large mode provides an alternative.

Example of Large mode:

Cylinders	Heads	Sector	Sector
1120	16	59	Normal

560	32	59	Large

BIOS tricks the operating system 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 13h in order to access the right hard disk address.

The maximum size supported by Large mode is 1GB. See the formula below:

	no. of cylinders	(1024)
x	no. of head	(32)
x	no. of sectors	(63)
x	bytes per sector	(512)
		1GB

NOTE:
To support LBA or Large mode of hard disks, the hard disk service routine uses INT 13h . If you are running under an operating system which replaces INT 13h, the system may fail to access a hard disk with LBA/Large mode selected.

■ EXITING SETUP

To exit the SETUP program, you can choose *SAVE & EXIT SETUP* or *EXIT WITHOUT SAVING* from the main menu.