Chapter 1

Introduction

This chapter introduces the specifications and the features of the motherboard.

Features

- **Intel Pentium II (or compatible) microprocessor**
- **AGP Interface**
  The host CPU interface, AGP interface, 64-bit DRAM bus, and PCI interface are integrated into the system.
- **Plug and Play support**
  For automatic resource assignment, your system is PnP version 1.01a compliant.
- **Audio subsystem**
  The audio subsystem allows you to easily record, play, and edit music and voice.
- **Video subsystem**
  The video subsystem allows you to easily play video CD, clip files and 3D games.
- **USB port support**
  The Universal Serial Bus standard gives you the benefits of having one single interface for multiple interfaces when low-to-medium speed peripherals are concerned.
- **Power Management**
  Your system can reduce power consumption automatically while it is idle. It also supports the Windows 98/Windows NT 5.0 power management standard - ACPI (Advanced Configuration Power Configuration).

Specifications

CPU, Memory, and Main Components

- **Slot 1**
  For Intel Pentium II (or compatible) CPU

- **System Memory**
  Two 168-pin DIMM sockets to support 8/16/32/64/128/256MB SDRAM memory modules, configurable up to 512MB
- **Video Memory**
  On-board 8MB video memory
- **ROM BIOS**
  2Mb flash EEPROM, supporting audio, video, security, setup, and power management

Interfaces and Controllers

- **Intel 440BX/ZX chipset**
  The chipset consists of the Intel 82443BX/ZX PCI AGP Controller (PAC) and the Intel 82371EB PCI-ISA/IDE Xcelerator (PIIX4E).
- **Audio Controller**
  Crystal CS4280 PCI audio controller and CS4297 AC97 CODEC, compatible with Sound Blaster Pro and Windows Sound System
- **Video Controller**
  Matrox G200 AGP controller
- **I/O Interfaces**
  The SMC FDC37C602 supports:
  – One standard/ECP/EPP parallel port (DB25-F)
  – One RS-232C serial port (DB9-M)
  – One PS/2 keyboard connector (6-pin mini-DIN)
  – One PS/2 mouse connector (6-pin mini-DIN)
  – One VGA port (DB15-F, 3-rows)
  – One game/MIDI port (DB15-F, 2-rows)
  – Two USB ports
  – Three audio ports for Line-in/Mic-in/Earphone-out (jack)
  – Two PCI-IDE connectors for four IDE devices (jack)
  – One floppy disk drive connector (jack)
- **Expansion Slots**
  Three PCI slots and one ISA slot

Chapter 2

System Components

This chapter introduces the components of the motherboard.

Major Components

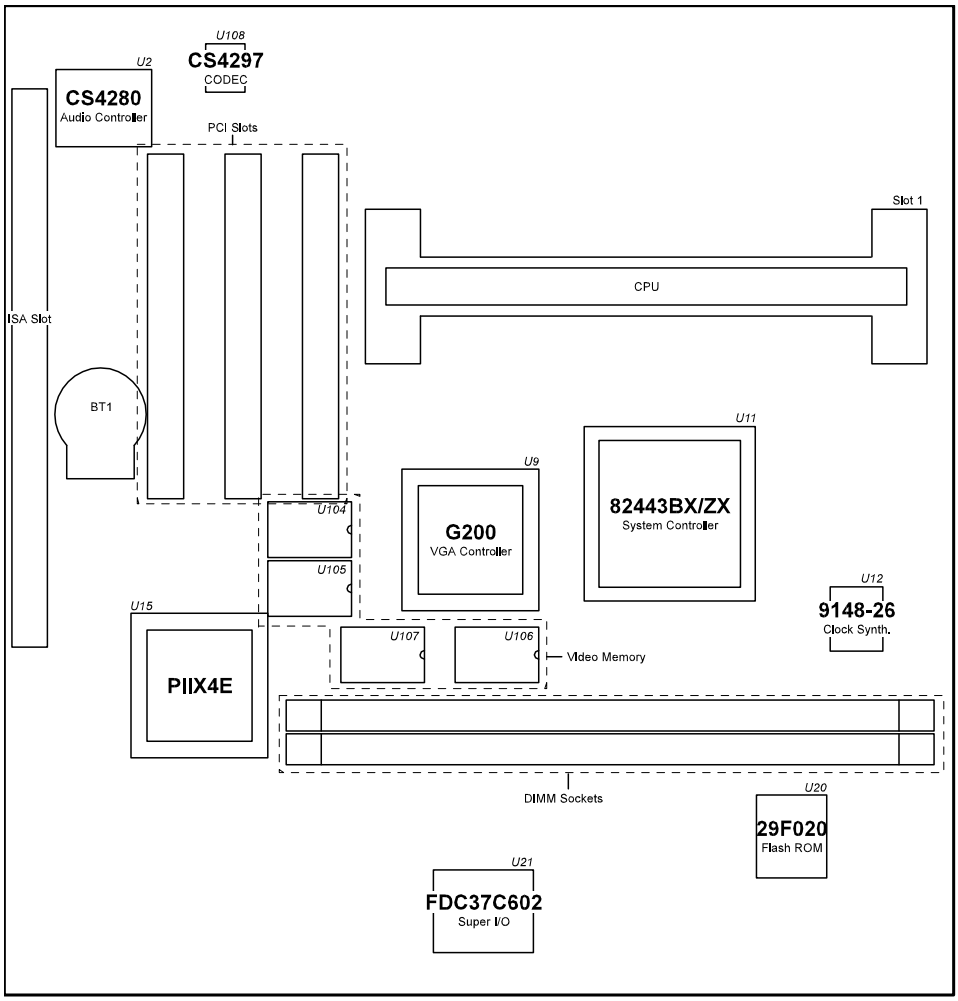

Figure 2-1. Major Components of System Board

Reference	Description	Name
U2	Audio Controller: • PCI 2.1 Compliant • PC98 Compliant • MPU-401 MIDI interface, FM synthesizer, and Game port • Full duplex operation	Crystal CS4280
U9	VGA Controller: • 320-pin BGA • 2D, 3D and video acceleration • AGP 2X support • Triple 8-bit palette DAC with gamma correction for true WYSIWYG color. Pixel rates up to 250MHz • DDC1 and DDC2B+ for Plug & Play monitors • Power Management for full VESA DPMS and EPA Energy Star Compliant	Matrox G200C/D
U11	System Controller: • PCI AGP Controller (PAC) • 492-pin BGA • Host CPU interface, AGP interface, 64-bit DRAM bus, and PCI interface integrated • Data flow between CPU bus, DRAM bus, AGP bus and PCI bus • System Management Mode (SMM) Compliant	Intel 82443BX/ZX
U12	Clock Synthesizer: • CK100 + CKBF • Supports 2.5V/3.3V CPU clock swing • Power-on default CPU/SDRAM clock frequencies • Serial data interface	ICS 9148-26
U15	PCI to ISA/IDE Accelerator: • 324-pin BGA • PCI-to-ISA bridge • USB interface • IDE/DMA control • 82C59 interrupt control • Power management logic • Enhanced DMA control • 82C54 timer and real-time clock	PIIX4E

(To be continued)

(Continued)

Reference	Description	Name
U20	Flash ROM: • PLCC 256KB EEPROM for system BIOS, VGA BIOS, Plug & Play configuration tables, and power management • Dynamic detect flash type • Applies different code before flashing	29F020
U21	Super I/O Controller: • 100-pin QFP • An FDD controller for 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB FDD • 3-mode FDD support • Keyboard controller • FIR/SIR support • ECP/EPP mode support • PC97 Compliant • High speed NS16C550 compatible serial port • IrDA 1.1(FIR) & IrDA 1.0 (SIR) Compliant infrared port	SMC FDC37C602
U104~ U107	8MB video memory implemented by four 1Mx16 bit 8ns SDRAM	
U108	Audio CODEC: • AC97 Compliant • Speaker-out, Line-in, Mic-in support • Internal speakers and microphone support	Crystal CS4297

(To be continued)

(Continued)

Reference	Description	Name
J13 (Slot 1)	Pentium III: • MMX technology • KNI (Katmai New Instruction) technology • 32K (16K/16K) non-blocking L1 cache • Integrated 512K L2 cache • Single-Edge Contact Cartridge (S.E.C.C.) Pentium II: • MMX technology • Dynamic execution microarchitecture • 32K (16K/16K) non-blocking L1 cache • Integrated 512K L2 cache • Single Edge Contact Cartridge (S.E.C.C.) Celeron: • MMX technology • Dynamic execution microarchitecture • 32K (16K/16K) non-blocking L1 cache • Integrated 0/128K L2 cache • Single-Edge Processor Package (S.E.P.P.)	CPU
J18, J19	DIMM sockets: • 64-bit data bus • Two 168-pin 3.3V unbuffered DIMM sockets • Supports PC100 SDRAM module • Supports 8/16/32/64/128/256MB 100MHz SDRAM	DIMM

Table 2-1. Major Components Description

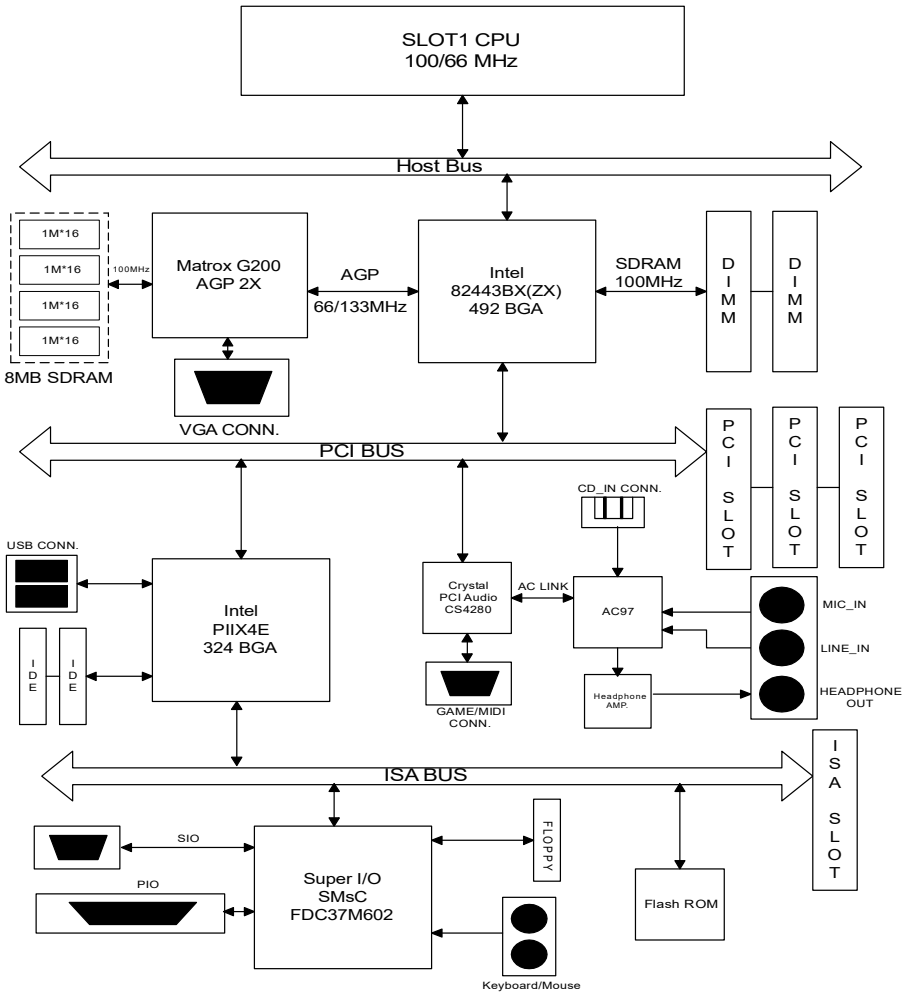
SLOT1 CPU
100/66 MHz
Host Bus
1M*16
1M*16
1M*16
1M*16
8MB SDRAM
100MHz
Matrox G200
AGP 2X
AGP
66/133MHz
Intel
82443BX(ZX)
492 BGA
SDRAM
100MHz
DIMM
DIMM
VGA CONN.
PCI BUS
PCI SLOT
PCI SLOT
PCI SLOT
CD_IN CONN.
USB CONN.
Intel
PIIX4E
324 BGA
IDE
IDE
Crystal
PCI Audio
CS4280
AC LINK
AC97
MIC_IN
LINE_IN
HEADPHONE OUT
GAME/MIDI CONN.
Headphone AMP.
ISA BUS
ISA SLOT
SIO
PIO
Super I/O
SMsC
FDC37M602
FLOPPY
Flash ROM
Keyboard/Mouse

Figure 2-2. Block Diagram of the Motherboard System

Chapter 3

Connector and Jumper Definition

This chapter defines the connectors and jumpers on the motherboard.

Connector Definitions

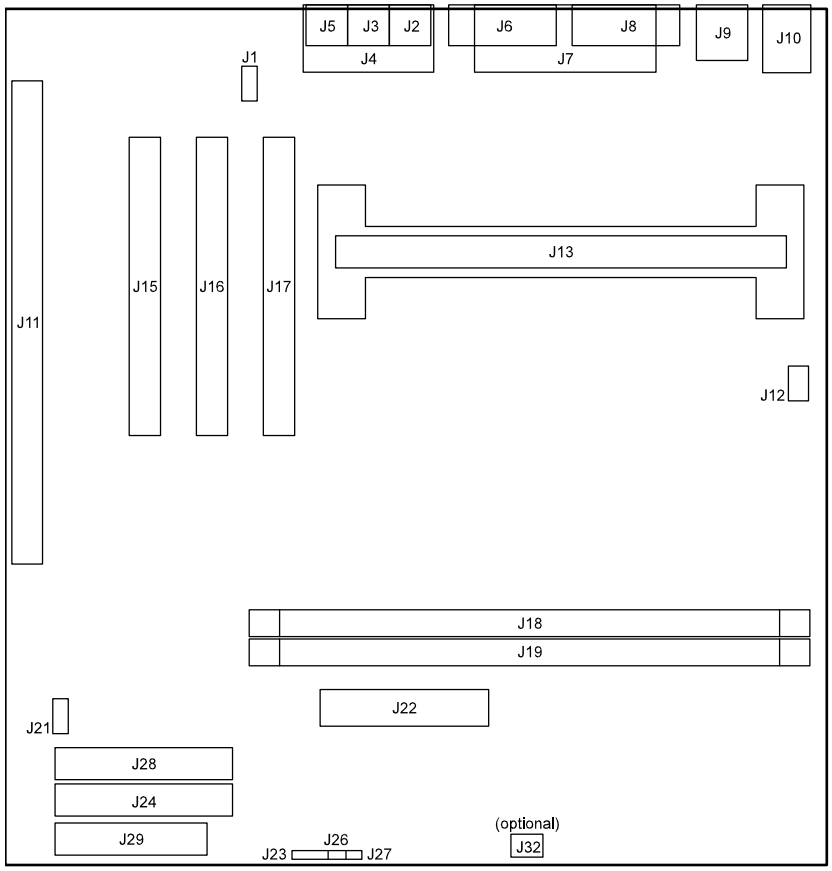

Figure 3-1. Connector Locations

Connector	Definition	Connector	Definition
J1	CD-in	J13	Slot 1
J2	Headphone-out	J15, J16, J17	PCI slots
J3	Line-in	J18, J19	DIMM sockets
J4	Game/MIDI port	J21	Wake_on_LAN
J5	Mic-in	J22	Power
J6	VGA	J23	Power LED
J7	PIO port	J24	1st IDE
J8	COM1	J26	HD LED
J9	USB	J27	Power/Suspend button
J10	PS/2 keyboard/mouse	J28	2nd IDE
J11	ISA	J29	FDD
J12	CPU fan	J32	System fan (optional)

Table 3-1.Connector Definition

Jumper Settings

NOTE: Jumpers not described in this chapter are reserved for factory use only. Do not change the default settings.

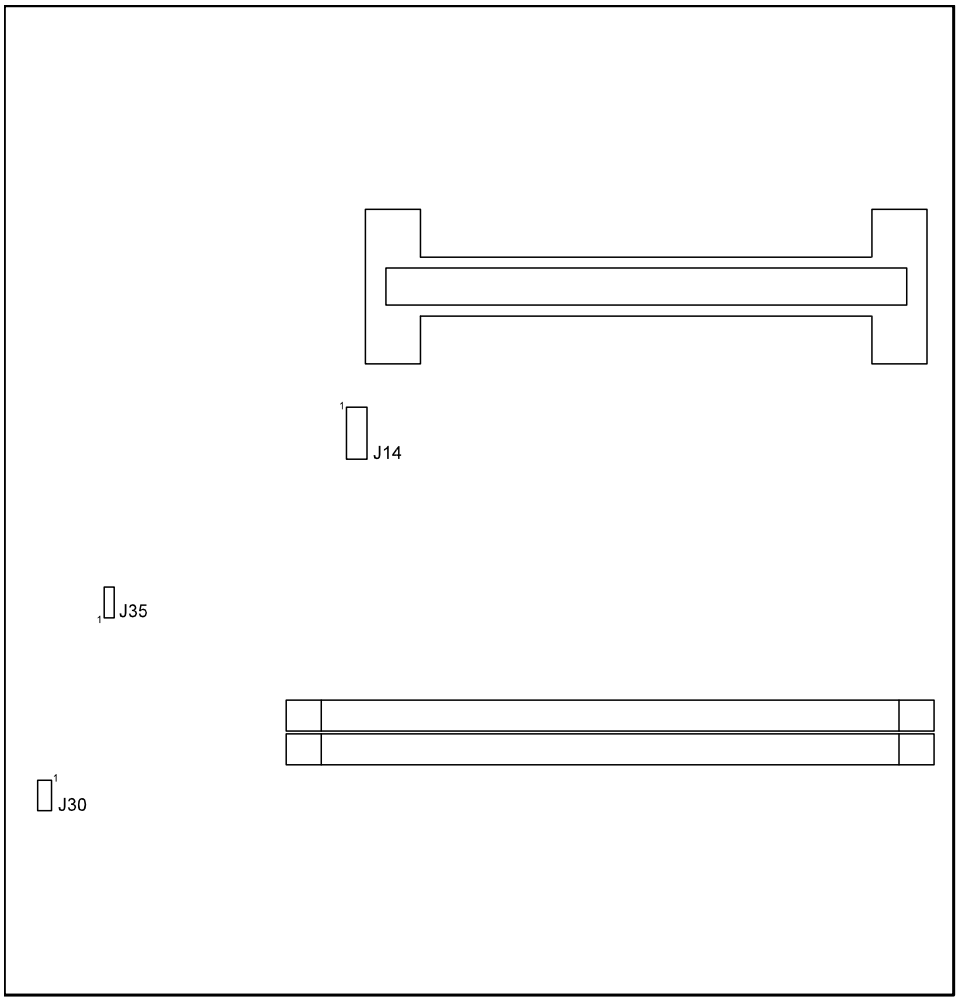

Figure 3-2. Jumper Locations

For CPU

CPU Bus Frequency		J14
FSB: 66MHz*	FSB: 100MHz**	Setting
233	350	1-2, 9-10
266	400	5-6, 7-8, 9-10
300	450	5-6, 9-10
333	500	7-8, 9-10
366	550	9-10
400	600	1-2, 5-6, 7-8
433	650	1-2, 5-6

Table 3-2. CPU Jumper Settings

Others

Jumper	Definition	Setting
J30	RTC setting	1-2: Normal 2-3: Clear RTC *
J35	Password setting	1-2: Normal 2-3: Clear password

* To clear the RTC and CMOS RAM, set J30 to 2-3 for one second, and set it back to 1-2 again.

Table 3-3. Other Jumper Settings

Chapter 4

CPU and Memory Installation

NOTE: To avoid damage during installation, you are advised to ask your dealer for help.

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.

CPU Installation

The motherboard supports Intel Pentium series (SECC1 and SECC2), as well as Celeron series CPUs.

SECC1 CPU

1. Locate Slot 1 (J13) on the motherboard. Lift the horizontal part of the retention module to the vertical position.

2. *Align the CPU cartridge's knobs with the retention module's holes and firmly insert the cartridge into the module until it snaps into place.*

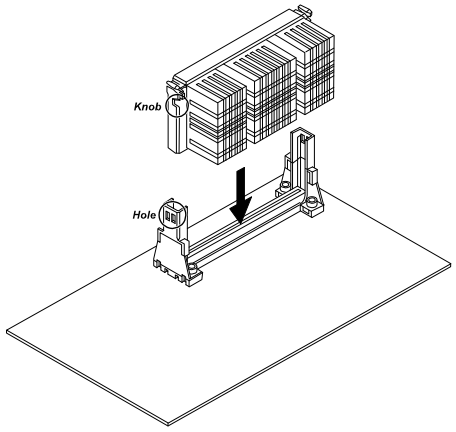

Figure 4-1. Installing SECC1 CPU

3. If you install an Active heatsink module, connect the fan cable to J12.
4. Clear the CMOS by setting J30 to 2-3 for one second, and then set it back to 1-2 again.

SECC2/Celeron CPU

1. Locate Slot 1 (J13) on the motherboard. Lift the horizontal part of the retention module to the vertical position.

2. Align the CPU with the retention module, then firmly insert the CPU into place.

SECC2 ***Celeron***

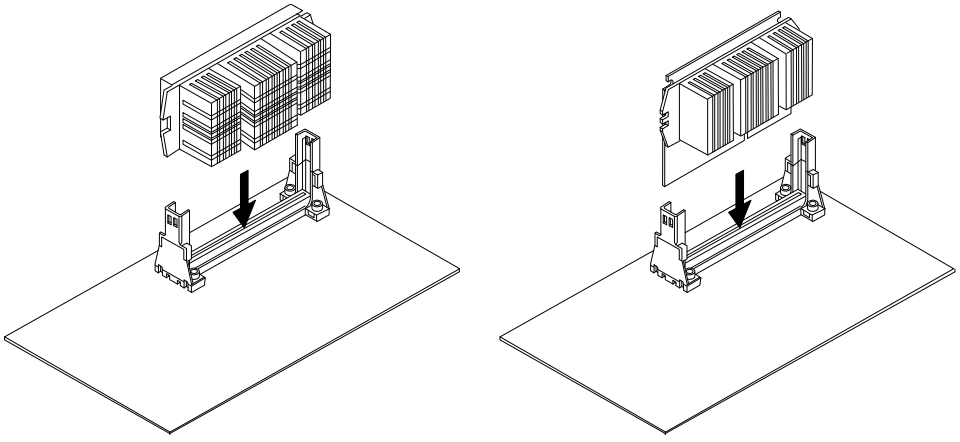

Figure 4-2. Installing SECC2/Celeron CPU

3. If you install an Active heatsink module, connect the fan cable to J12.
4. Clear the CMOS by setting J30 to 2-3 for one second, and then set it back to 1-2 again.

System Memory Installation

1. Locate the DIMM sockets (J18, J19) on the motherboard.
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.

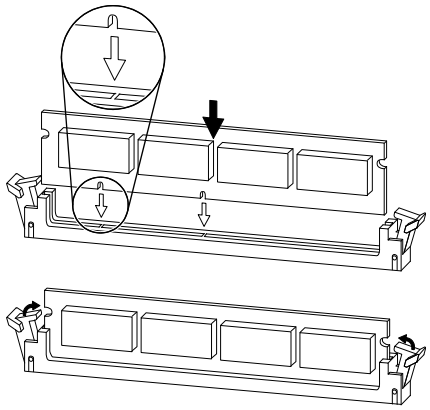

Figure 4-3. Installing DIMM Module

Chapter 5

The SETUP Program

This chapter tells you how to configure your system using the SETUP program.

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; special features include security and power savings.

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.

You may need to run SETUP when:

- You see an error message on the screen requesting you to run SETUP.
- You change factory default settings for some special features.
- You want to modify the configuration information.

Running SETUP and Moving Around

The SETUP program is built into the system board. To run SETUP program, press **[F2]** during system startup.

> ***NOTE:***
> The SETUP program may have been updated after this manual was published.

The SETUP program contains six options:

- Main - Basic system configuration
- Advanced - Detailed configuration besides basic system configuration, including the configuration of internal chipset
- Security - Security settings
- Power - Power management settings
- Boot - Boot sequence settings
- Exit - Exiting the SETUP program

A brief description of keyboard usage is listed below:

Key	Description
[↑], [↓]	Move the highlight to the previous or the next item.
[←], [→]	Move the highlight to the previous or next option.
[+]/[F6], [–]/[F5]	Cycle through the pre-defined values for the selected item. Pressing [+]/[F6] brings up the next value; pressing [–]/[F5] brings up the previous one.
Enter	Select a sub-menu.
[Esc]	1) From the SETUP menu, exit SETUP without saving. 2) From a sub-menu, return to the previous menu.
F9	Load the SETUP default values for the current page.
F10	Save the changes and exit SETUP.
[F1]	General help information

Table 5-1. Keyboard Usage in the SETUP Program

In general, you use the **[←]**/**[→]** arrow keys to highlight options, the **[↑]**/**[↓]**arrow keys to highlight items, and the **[+]**/**[–]** keys to change values.

Main

The “Main” option contains the basic configuration settings of the system. The followings describe in sequence all the items of this option.

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.

BIOS Version

This item is not user-definable. It shows the version of BIOS.

Diskette A/B

These items set the type of floppy disk drives in your system.

Floppy 3 Mode Support

This item sets if your system has the 3 Mode (NEC/Fujitsu/Toshiba) floppy disk drive for 1.2MB diskettes used in Japan.

IDE Primary/Secondary Master/Slave

These items set the hard disk information including *IDE HDD Auto-Detection, Type, Head, Sector, Capacity, Access Mode, PIO Mode*, and *Ultra DMA Mode*. You can press **[Enter]** to go to the sub-menus for settings.

Keyboard Features

This item selects the keyboard features, such as *Numlock*, K*eyboard Auto-Repeat Rate* and *Keyboard Auto-Repeat Delay*. Press **[Enter]** to go to the sub-menus for settings.

CPU Type/Speed, Cache RAM, Base/Extended Memory

These items are not user-definable. They show the CPU type, CPU speed, capacity of cache/system/extended memory.

Advanced

The “Advanced” option contains all the items of your system’s special enhanced features. The followings describe in sequence all the items of this option.

Plug & Play O/S

Select *Yes* if you are using operation system that supports Plug and Play, such as Windows 95, 98 and 2000. Otherwise, select *No*.

Reset Configuration Data

This item allows you to clear the system configuration data.

On-Chip Primary/Secondary IDE

These items enable the integrated local bus Primary/Secondary IDE adapter.

Memory Hole At 15M-16M

This item, when enabled, turns system RAM off to free address space for use with an option card. 1MB extended memory gap, starting at 15MB, will be created in system RAM.

Standard Applications

This feature applies to Year 2000 transition. Select *No* only if your applications interface directly with the Real Time Clock hardware, bypassing the BIOS and the the OS. It will slightly affects the PC performance. Keep *Yes* otherwise. Windows NT Pcs and those stopped during Year 2000 transition are not concerned.

Shadow Options

This item allows you to configure the Shadow options. Press **[Enter]** to go to the sub-menus for settings.

PCI Configuration

This item allows you to configure the PCI devices. Press **[Enter]** to go to the sub-menus for settings.

PCI/PNP ISA IRQ Resource Exclusion

This item allows you to reserve specific IRQs for use by legacy ISA devices. You can press **[Enter]** to go to the sub-menus for settings.

I/O Device Configuration

This item allows you to configure the I/O devices and information, such as *Serial port A*, *Parallel port* and *Floppy disk controller*. Press **[Enter]** to go to the sub-menus for settings.

Security

The “Security” option allows you to limit the access to the system/SETUP and set the hard disk boot sector.

> ***NOTE:*** If you forget your password and wish to cancel it, ask your dealer to reset the CMOS RAM for you.

Set Supervisor/User Password

When a password has been enabled, you will be prompted to enter it every time you try to enter SETUP or system. This prevents an unauthorized person from changing your system configuration and computer.

These two items allow you to limit the access to SETUP items. A “supervisor” can access more items than an “user” does.

Password on Boot

This item allows you to enable or disable the access to system at boot.

When this item is enabled, you will be prompted to enter a password every time your system is rebooted. This would prevent unauthorized use of your computer.

Power

The “Power” option allows you to configure you system to save energy. The followings describe in sequence all the items of this category.

GENERAL POWER SETTING Section

Auto Suspend Timeout

This item sets the time-out period for the system to enter Suspend mode if the system has been idle for the set period.

HDD Power Down

This item sets the time-out period for the hard disk to enter Suspend mode if the system has been idle for the set period.

State After Power Failure

This item sets the state that your PC returns to after a power failure. If set to *off*, the PC will not boot after a power failure. If set to *On*, the PC will restart after a power failure. If set to *Auto*, the system uses the same power state before power failure.

RESUME EVENTS Section

On Date/Time

This item wakes the system up from the Suspend mode at the date and time defined in the next items.

On External Activity

This item sets the activities which will wake up the system from the Suspend mode.

On IRQ

This item lets the system monitor the activities on the specific IRQs. Any activity detected wakes up the system from the Suspend mode; if no activity is detected, system will enter the Suspend mode.

Press **[Enter]** to go to the sub-menus for settings.

POWER-UP EVENTS Section

On Date/Time

Set ot *On* if you want to power up the system on at a specific date and time.

On External Activity

This item, when it is set to *on*, powers up your system after receiving a signal on the serial port. This item is usually used to power up your system with an external modem or LAN card.

Boot

Boot Device Priority

This item sets the search order of the boot devices like *Floppy, HDD, SCSI, CD-ROM*, and *LAN*. Press **[Enter]** to go to the sub-menus for settings.

Exit

To exit the SETUP program, you can choose *Exit Saving Changes*, *Exit Discarding Changes, Load Default Values for all Settings* from the “Exit” option.

Exit Saving Changes

After finished with your settings, you must save and exit SETUP so that the settings can take effect.

Exit Discarding Changes

After finished with your settings, you can exit SETUP without saving so that the settings will not take effect.

Load Default Values for all Settings

After finished with your settings, you can still reload the default SETUP values.

Appendix A

Software Drivers and Utilities

This appendix describes the drivers and utilities used in your system. The drivers and utilities allow you to take advantage of special features of your system.

> ***NOTE:*** The driver and utility CD may have been updated after this manual was published. If your CD is different from that described in this appendix, refer to the latest information on Internet. (Internet Address: mitac.mic.com.tw.)

Installation Instructions for Windows 95/98

IDE/USB Bus Driver

For Windows 95

The IDE/USB bus driver is provided for Windows 95 (OSR2 and later versions) to recognize the PIIX4E controller chip used by your system. This chip controls the functions such as USB, IDE, and Power Management of your system. You must install the driver to use the capabilities of PIIX4E.

To install IDE/USB bus driver for Windows 95:

1. Run the **USBSUPP.EXE** program from Windows 95 950B (OSR2.1) or 950C (OSR2.5) CD. Contact the Microsoft dealer if you can not find this program.
2. Insert the driver and utility CD into the CD-ROM drive.
3. Run the **SETUP.EXE** program in the **\DRIVER-R1.1\DRIVER-AP\WIN98 WIN95\IDE** directory on the CD to set up the new hardware.
4. Use the default settings to complete the setup when Windows 95 is re-started.

For Windows 98

The IDE/USB bus driver is provided for Windows 98 to recognize the PIIX4E controller chip used by your system. This chip controls the USB function of your system. You must install the driver to use the capabilities of PIIX4E.

To install IDE/USB bus driver for Windows 98:

1. Insert the driver and utility CD into the CD-ROM drive.
2. Run the **SETUP.EXE** program in the **\DRIVER-R1.1\DRIVER-AP\WIN98 WIN95\IDE** directory on the CD to set up the new hardware.
3. Use the default settings to complete the setup when Windows 95 is re-started.

Audio Driver

The audio driver is required for using your system's audio capabilities. To install the audio driver for Windows 95/98, follow these steps:

1. Insert the driver and utility CD into the CD-ROM drive.
2. Run the **SETUP.EXE** program in the **\DRIVER-R1.1\DRIVER-AP\WIN98 WIN95\AUDIO-V285R** directory on the CD to set up the new hardware.
3. Follow the on-screen instructions.

Video Driver

The video driver is required for using your system's video capabilities. To install the video driver for Windows 95/98, follow these steps:

1. Insert the driver and utility CD into the CD-ROM drive.
2. Run the **SETUP.EXE** program in one of the following directories on the CD to set up the new hardware:

   Asia: **\DRIVER-R1.1\DRIVER-AP\WIN98 WIN95\VGA-ASIA-R429038**

   US/Europe: **\DRIVER-R1.1\DRIVER-AP\WIN98 WIN95\VGA-US-EU-R428037**

3. Follow the on-screen instructions.

Installation Instructions for Windows NT

Audio Driver

The audio driver is required for using your system's audio capabilities. To install the audio driver for Windows NT 4.0, follow these steps:

1. In Windows NT, select "Control Panel", "Multimedia", and "Devices" tab.
2. Click on "Add" button.
3. Select "Unlisted or Updated Driver" and click on "OK".
4. Insert the CD into the CD-ROM drive.
5. Specify the path **\DRIVER-R1.1\DRIVER-AP\NT4.0\AUDIO-V201R** on the CD, choose the driver from the list, and click on "OK".
6. Follow the on-screen instructions. Select "Use Dual DMA" or "Enable MPU401" if you need these two features.
7. Restart the system.

Video Driver

The video driver is required for using your system's video capabilities. To install the video driver for Windows NT 4.0, follow these steps:

1. Insert the CD into the CD-ROM drive.
2. Run the **SETUP.EXE** program in one of the following directories on the CD to set up the new hardware:

   Asia: **\DRIVER-R1.1\DRIVER-AP\NT4.0\VGA-ASIA-R370146**
   US/Europe: **\DRIVER-R1.1\DRIVER-AP\NT4.0\VGA-US-EU-R366**

Follow the on-screen instructions.