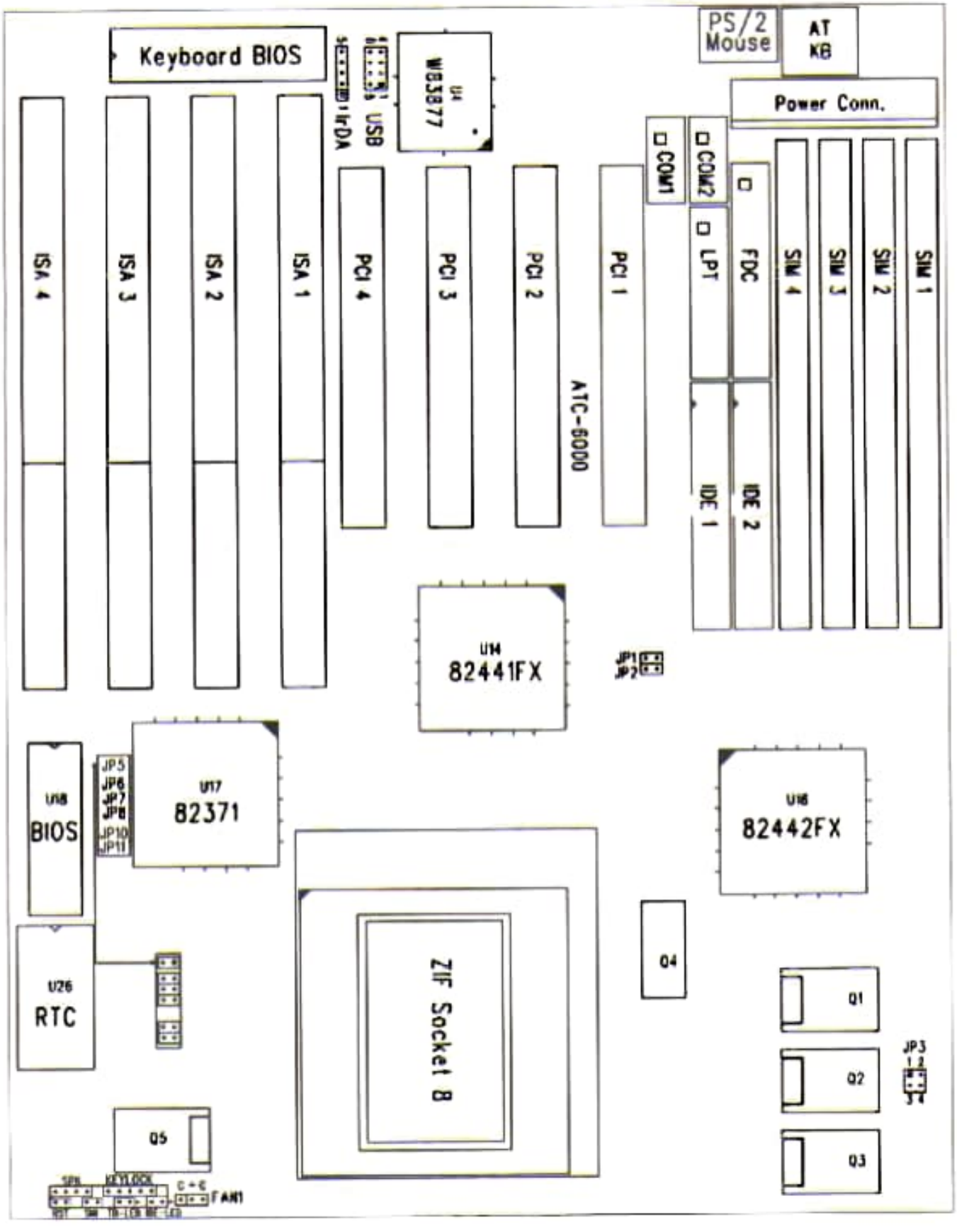
ATC-6000 Intel 440FX Mainboard
Component Location Diagram



A

2-2 CPU INSTALLATION

ATC-6000 supports INTEL Pentium Pro CPU. For installation, please notice CPU pin 1 must align with the ZIF socket 8 Pin 1 location.

2-2-1 CPU TYPE SELECTION

INTERNAL CPU CLOCK	JP3	JP6	JP7	JP8	Ext.x Frq.
150MHz	3-4	open	close	close	60x2.5
166MHz	1-2	open	close	close	66x2.5
180MHz	1-2	close	open	close	60x3.0
200MHz	1-2	close	open	close	66x3.0

INTERNAL CPU CLOCK	JP1	JP2	JP10	JP11	Ext.x Frq.
150MHz	close	open	close	open	60x2.5
166MHz	open	close	open	close	66x2.5
180MHz	close	open	close	open	60x3.0
200MHz	open	close	open	close	66x3.0

2-3 SYSTEM MEMORY INSTALLATION

ATC-6000 provides four 72-pin SIM sockets for system memory expansion from 8MB to 256MB. These four SIMs are arranged to two banks, Bank0 (SIM 1, 2) and Bank1(SIM 3, 4), please refer to page A. Each bank provides 64-bit wide data path.

The mainboard accepts Fast Page Mode DRAM, EDO Mode (Extended Data Out) DRAM, ECC (with parity-chip) DRAM,and BEDO(Burst EDO) DRAM, with a speed at least 70 nanosecond. You should plug DRAM modules into two sockets (same bank) or four sockets at one time. Each pair of modules must be the same size, type, and speed; no matter single-side or double-side module. Please plug in Bank 0 firstly if you only have 2 modules. The mainboard supports mixing of EDO SIMMs with fast page mode DRAM SIMMs among different banks; please plug EDO in Bank 0, if you only have 2 EDO modules.

※ System Memory Combinations Options ※

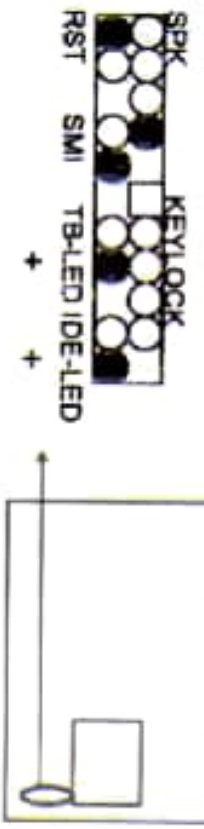
BANK0 SIM 1, 2	BANK1 SIM 3, 4	Total Memory SIM 1- 4
4MBx2	-	8MB
-	4MBx2	8MB
8MBx2	-	16MB
-	8MBx2	16MB
4MBx2	4MBx2	16MB
4MBx2	8MBx2	24MB
8MBx2	4MBx2	24MB
16MBx2	-	32MB
-	16MBx2	32MB
8MBx2	8MBx2	32MB
4MBx2	16MBx2	40MB

- continue -

2-4 CONNECTORS DESCRIPTION

The locations of following connectors are indicated in page A. When you plug a cable into the following I/O connectors, you should have the pin 1 edge of the cable aling with the pin 1 end of the connector.

CONN1 : speaker, keyboard lock, reset, SMI, turbo LED, and IDE LED connectors.



SPK : speaker

- Speaker
- GND
- GND
- VCC

KEYLOCK : keyboard lock switch and power LED connector

- Power LED +
- N/C
- GND (power)
- Keylock
- GND (keylock)

RST : Reset connector

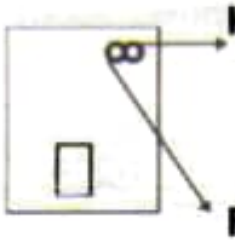
- Reset Signal
- GND

SMI : SMI lead

- GND
- SMI Signal

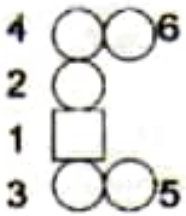
TB-LED : Turbo LED Indicator, LED on when system runs higher speed

- GND
- +5V (next to CPU)



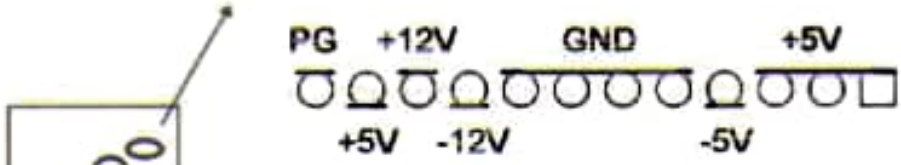
KB1 : 5-pin AT style compatible keyboard connector.

PS1 : PS/2 mouse connector, this is used to connect an optional cable.

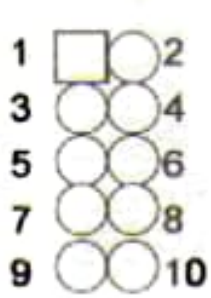


pin1 : GND
pin2 : data
pin3 : N/C
pin4 : VCC
pin5 : clock
pin6 : N/C

PW1 : +5 Voltage power supply connector.

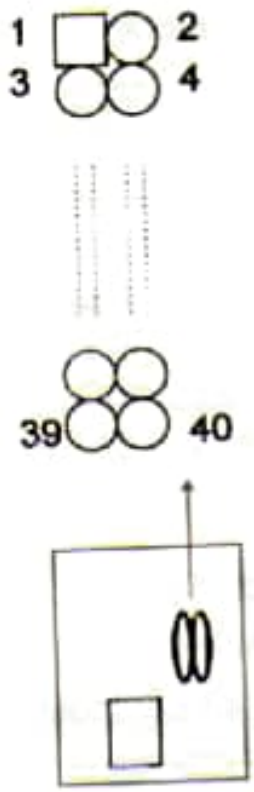


COM1/COM2 : this two connectors are used to connect serial port cables.



pin	signal name
1	DCD
2	Serial In
3	Serial Out
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	N/C

IDE1/IDE2 : this two connectors are used to connect IDE devices through IDE cables, total can connect 4 devices.



pin	signal	pin	signal
1	Reset IDE	21	DDRQ0(1)
2	GND	22	GND
3	Host Data 7	23	I/O Write-
4	Host Data 8	24	GND
5	Host Data 6	25	I/O Read-
6	Host Data 9	26	GND
7	Host Data 5	27	IORDY
8	Host Data 10	28	N/C
9	Host Data 4	29	DDAK0- (1-)
10	Host Data 11	30	GND
11	Host Data 3	31	IRQ14*
12	Host Data 12	32	IOCS16-
13	Host Data 2	33	Addr 1
14	Host Data 13	34	N/C
15	Host Data 1	35	Addr 0
16	Host Data 14	36	Addr 2
17	Host Data 0	37	ChipSele.1P-
18	Host Data 15	38	ChipSele.3P-
19	GND	39	Activity
20	Key	40	GND

* IDE1 : pin31 is IRQ14;
IDE2 : pin31 is IRQ15 or MIRQ0

3-1 UPDATE BIOS PROCEDURES

3-1-1 UPDATE AMI SYSTEM BIOS (FLASH EPROM)

If the system BIOS (Flash EPROM) needs to be updated, it can be obtained on a diskette from your system supplier. The BIOS program in the diskette includes two files:

"amiflash.com" -- Flash EPROM Programming Utility
"(update BIOS filename with version number).rom"

The update procedures are as following:

1. Boot the system to DOS mode in a normal manner.
2. Insert the updated diskette to drive A (or B).
3. Change working directory to floppy drive, A or B, which contains the update BIOS diskette. -- Type "a:\" or "b:\", "ENTER".
4. Run the Flash EPROM Programming Utility -- Type "amiflash", "ENTER".
5. Type "(update BIOS file name with version number).rom", ENTER.
6. Type "Y" when the screen displays the message : " Press "Y" to continue; "N" to reboot .". The new BIOS will be updated. If you type "N", then the system will be reboot.
7. Follow instructions displayed on the screen. DO NOT remove the update BIOS diskette from the floppy drive nor turn the system power off until the BIOS update is completed.
8. Remove diskette and type any key when the screen shows the message : " Press any key to reboot.". Then the system will be reboot.

3-1-2 UPDATE PENTIUM PRO BIOS API

Intel also provides BIOS API(Applications Programming Interface) for Pentium Pro processor-based mainboard user to update data block in BIOS quickly and easily. (You can find this utility in the IDE Driver diskette in package).

BIOS code on Pentium Pro processor-based mainboards contains data that is specific to each silicon stepping of the processor. Integrators must ensure this BIOS stepping data matches the processor stepping used. When the BIOS does not contain stepping data that matchs the processorstepping, integrators must update the data in the BIOS before shipping the system. Historically, Pentium Pro systems have been updated by replacing the entire BIOS with a new revision of BIOS that contains the correct stepping data.

Intel's BIOS update API allows just the stepping data within the BIOS to be updated as needed. Mainboards that contain a BIOS with the Intel-defined BIOS update API can be quickly and easily updated, if required, without obtaining a complete BIOS upgrade.

Using this utility, integrators can easily verify that the correct stepping data is present in all Pentium Pro processor-based mainboards. However, if the stepping data requires updating, the mainboard BIOS must contain the Intel-defined BIOS update API, otherwise a complete BIOS upgrade is required from the mainboard vendor.

This BIOS Update Utility, and it's associated files, are compressed together in the self-extracting archive file BUP_UTIL.EXE, which includes the following files : CHECKUP.EXE; PEPx.PDB; CHECKUP.HLP; LASTUP.PDB; STATUS.LOG.

Before using the utility, ensure that JP5 setting on the mainboard is placed in the "**BIOS clear**" position to enable writing to the flash memory. To invoke the utility, at the DOS prompt type the command line :

CHECKUP <CR>

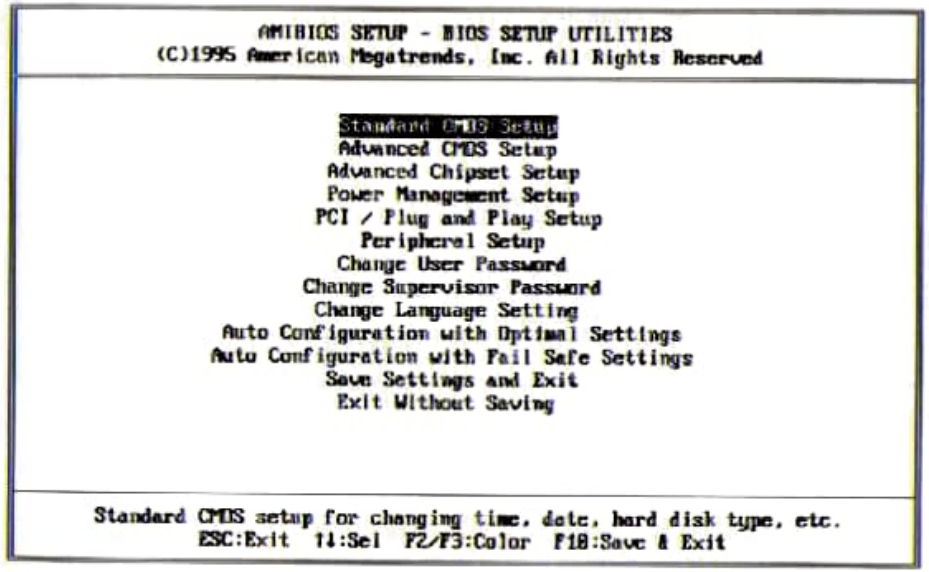
The main menu should now be displayed, showing the following four options :

1) Check and load update
2) Specify stepping data file [current : pep.pdb]
3) Help
4) Quit without loading update

Choice the right option based on your requirements. For more information, please refer to "CHECKUP.HLP" file.

3-2 AMI SYSTEM BIOS CONFIGURATION SETUP

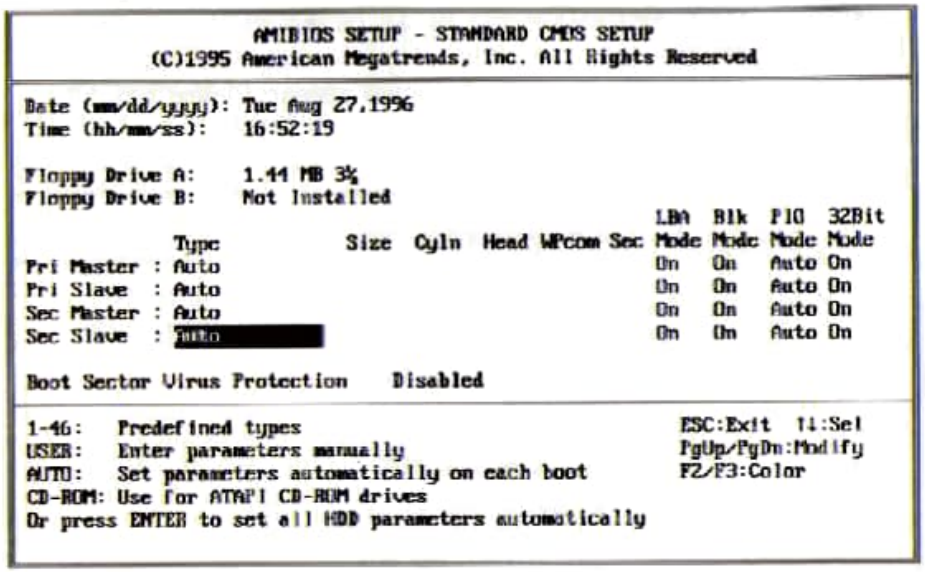
The following pages explain how to set up the system configuration (CMOS) under the AMI BIOS. The SETUP program is stored in the Read-Only-Memory (ROM) on the mainboard. Enter the SETUP procedure, press the <Del> key when the system is booting up. The following main menu will appear. Please select " STANDARD CMOS SETUP" to enter the next screen.



The section on the bottom of the main menu explains how to control this screen. The other one section displays the items highlighted in the list. The screens of "Change User Password" and "Change Language Setting" are no use.

Regarding the BIOS version number and copyright information, please refer to to initial screen when you power on the computer. The section on the top includes AMI logo, mainboard model, chipset name, BIOS version and date. The section on the bottom includes copyright and license number (such as 61-0823-001117-00111111-071595-i82440FX-H).

This screen records, some basic hardware information, set the system clock and error handling. These records can be lost or corrupted if the on-board battery is fail or weak.



Date

mm is month, dd is date, yyyy is year.

date	from 1 to 31
month	from Jan. to Dec.
year	from 1900 to 2099

Time

hh is hour, mm is minute, ss is second.

hh	from 0 to 23 (24-hour military -time)
mm	from 0 to 59
ss	from 0 to 59

Pri Master
Pri Slave
Sec Master
Sec Slave

The categories identify the types of 2 channels that have been installed in the computer.

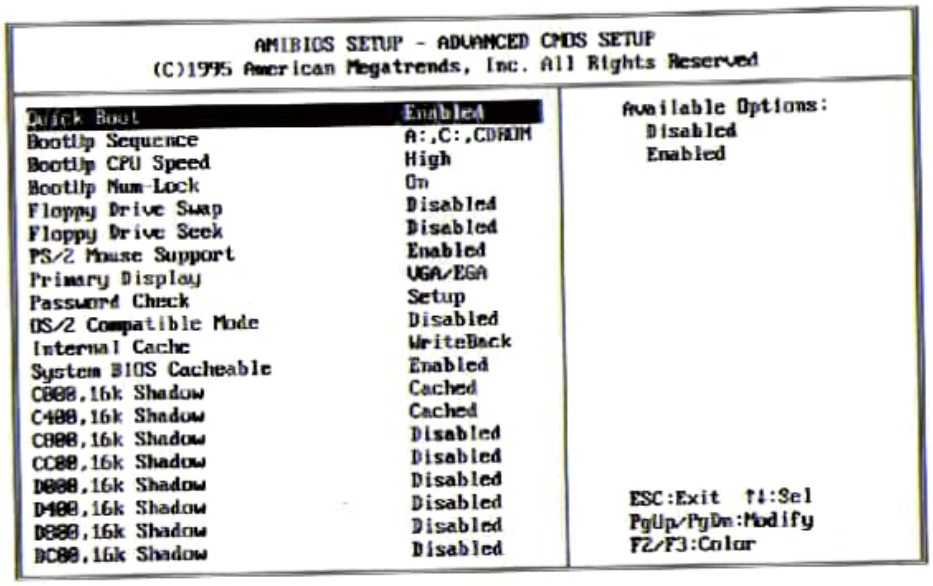
Type	drive type
Size	automatically adjusts
Cyln	number of cylinders
Head	number of heads
WPcom	write precom
Sec	number of sectors
LBA Mode	
Blk Mode	
PIO Mode	
32Bit Mode	

Floppy Drive A
Floppy Drive B

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

Not Installed	No floppy drive installed
360K, 5 1/4	5.25" PC-type 360KB capacity
1.2M, 5 1/4	5.25" AT-type 1.2MB capacity
720K, 3 1/2	3.5" double-side 720KB capacity
1.44M, 3 1/2	3.5" double-side 1.44MB capacity
2.88M, 3 1/2	3.5" double-side 2.88MB capacity

This screen is a list of system configuration options. Some of them are defaults required by the mainboard's design, others depend on the



Quick Boot Choices are Disabled and Enabled.
This category speeds up Power On Self Test after you power up the computer. If you set Enabled, BIOS will shorten or skip some check items during POST.

Boot Sequence This category determines which drive to search first for the disk operating system (i.e.,DOS). A:,C:,CDROM System will first search for FDD then HD, and next is CDROM

BootUp CPU Speed Selects the default system speed - the normal operating speed at power up.

BootUp Num-Lock This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

Floppy Drive Swap This item allows you to determine whether enable the swap floppy drive or not.

Floppy Drive Seek During POST, BIOS will determine if the floppy disk drive installed is 40 tracks (360K) or 80 tracks (720K, 1.2M, 1.44M)

Enabled	BIOS searchs for floppy disk drive to determine if it is 40 or 80 tracks
Disabled	BIOS will not search for the type of floppy disk drive by track number

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

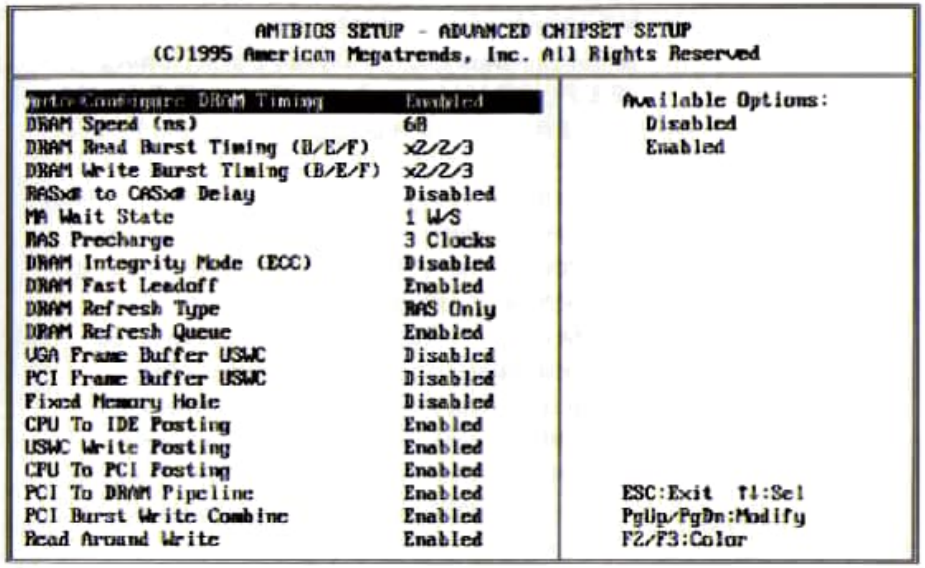
Always	The system will not boot and access to Setup will be defined if the correct password is not entered at the prompt
Setup	The system will boot, but access to Setup will be defined if the correct password is not entered at the prompt

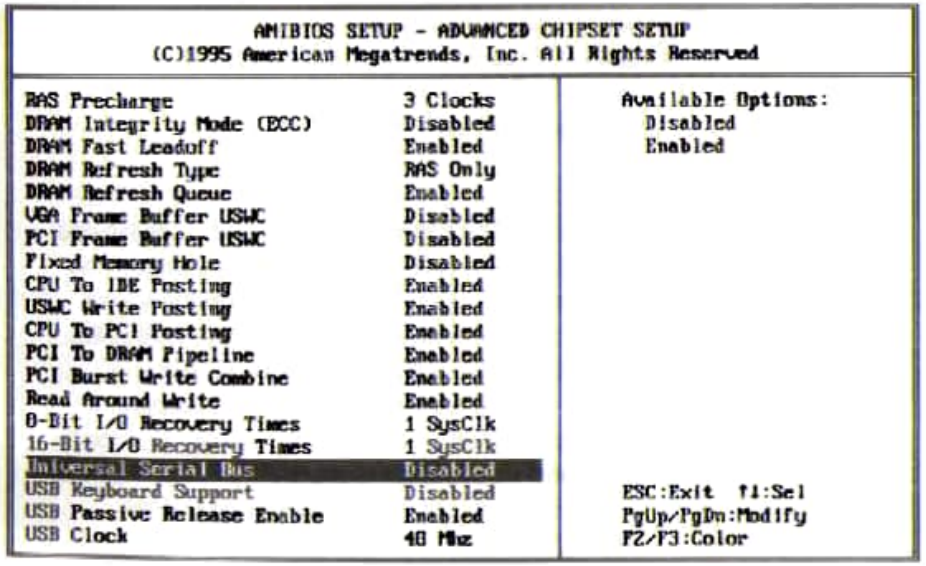
To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS/2 Compatible Mode This item allows you to access the memory that over 64MB in OS/2

System BIOS Cacheable When enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

This screen controls the setting for the chipset on the mainboard. The right section is the options for each items.





Auto Configure DRAM Timing Choices are Enabled (default); Disabled. Currently, BIOS supports 50ns/60ns/70ns of FPM, EDO, BEDO
When this item is selected to **'Enabled'**, the following items will be automatically set : ***RASx# to CASx# Delay; DRAM Read Burst Timing (B/E/F); DRAM Write Burst Timing (B/E/F); MA Wait State; RAS Precharge.***

DRAM Read Burst (B/E/F) ***DRAM Write Burst (B/E/F)*** This sets the timing for burst mode read (or writes) from DRAM. Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.
Choices are Read : x3/4/4; x2/3/4; x2/2/3; x1/2/3.
Write : x4/4/4; x3/3/4; x3/3/3; x2/2/3.

RASx# to CASx# Delay When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS to Column Address Strobe (CAS).

MA Wait State Choices are 0 W/S; 1 W/S.

RAS Precharge DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the Row Address Strobe to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost. Choices are 4 clocks, 3 clocks
* Automatically set if 'Auto Configure DRAM Timing' selected to **'Enabled'**.

DRAM Integrity Mode (ECC) During CPU reads of the DRAM, the 440FX provides error checking and correction or parity of the data.

DRAM Refresh Type Choices are CAS/RAS:POWERON; RAS Only:DEFAULT

DRAM Refresh Queue The internal 4-deep refresh queue is useful with the 4h request being the priority request

Fixed Memory Hole In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory below 16MB.
Choices are Disabled; 512K-640K; 15M-16M.

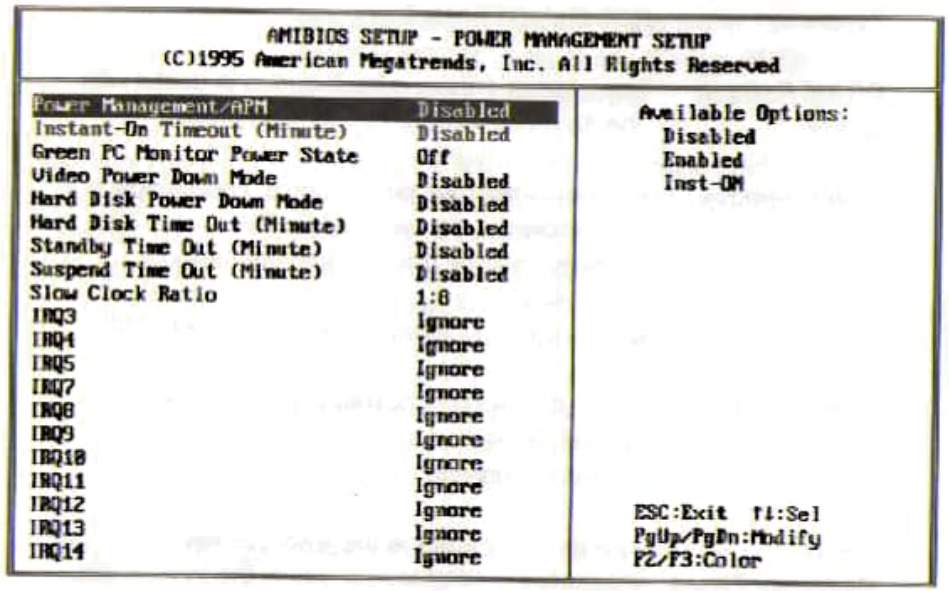
Read-Around - Write When disabled, all posted writes in the 440FX chipset are retired before a CPU or PCI read access is serviced.

8-Bit I/O Recovery Times The recovery times is the length of time, measured in CPU clocks, which the system will delay after the completion of an I/O request. This item allows you to determine the recovery times allowed for 8-bit I/O. Choices are from Disabled, 1 to 8 CPU clocks.

16-Bit I/O Recovery Times This item allows you to determine the recovery times allowed for 16-bit I/O. Choices are from Disabled, 1 to 4 CPU clocks.

USB Clock Choices are 24Mhz; 48MHz.

This screen controls the 'green' features of this mainboard. The right section is the options for each items.



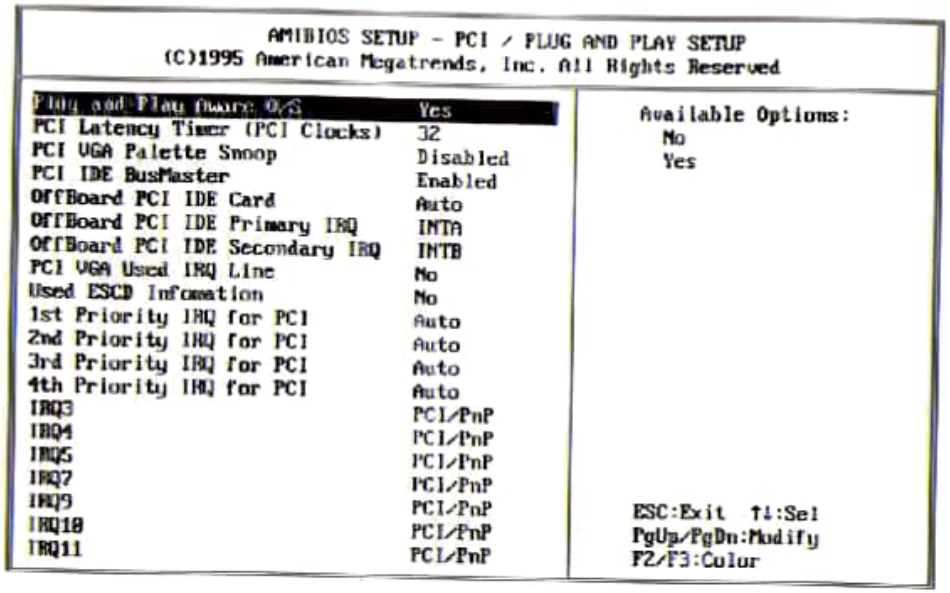
Power Management /APM This category allows you to select the type (or degree) of power saving
Choices are Disabled; Enabled; Inst-ON.
Inst-ON is Instant-On Timeout

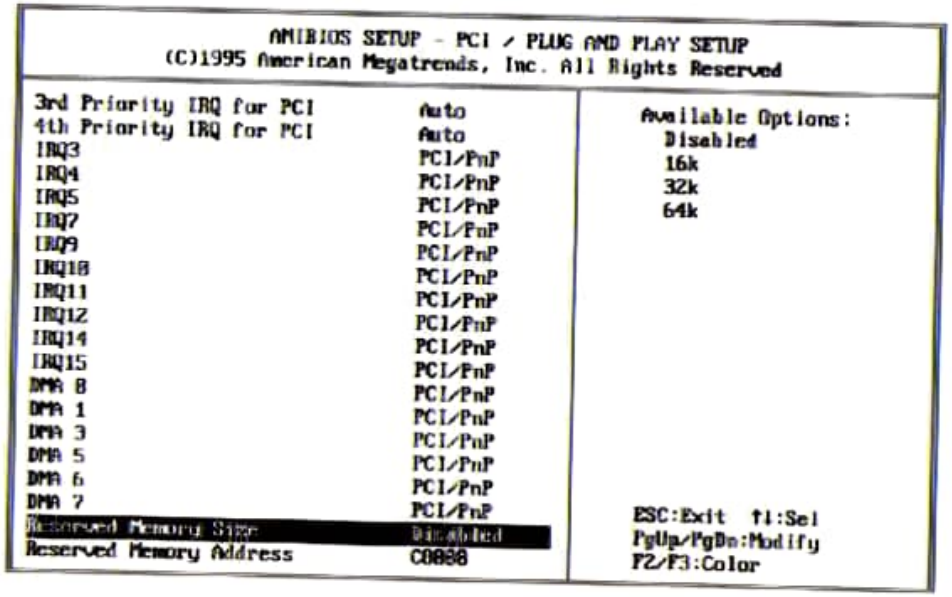
Green PC Monitor Power State Choices are Standby; Suspend; Off; Blank.
Standby mode the fixed disk drive and the video would be shut off while all other devices still operate at full speed. Suspend Mode all devices expect the CPU will be shut off.
* When insert ET-4000 PCI VGA card, choice "Blank" item normal operation.

Slow Clock Ratio Choices are 1:1; 1:2; 1:4; 1:8(default); 1:16; 1:32; 1:64; 1:128

IRQ3 ~ IRQ15 These are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ (Interrupt ReQuests) to occur. Choices are :
Ignore - Activity will be ignore during timer counts down and this IRQ will not be able to wake up the system if system is in power down mode.
Monitor - If this IRQ is generated then the timer will be reload so that system will not enter power down mode.
WakeUp - If this IRQ is generated then the timer will be back to full speed mode.
Both - Combine Monitor with WakeUp functions.

This screen configures the PCI Bus slots. The right section is the options for each items.





Plug and Play Aware O/S — Set this option to **'Yes"** if the operating system installed in the computer is Plug and Play-aware AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other PnP-aware adapter cards. Windows 95 is PnP-aware. set this option to **"No"** if the OS (such as DOS, OS/2, Windows 3.x) does not use PnP. You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.

PCI Latency Timer) (PCI Clocks) — Choices are 32(default); 64; 96; 128; 160; 192; 224; 248

OffBoard PCI IDE Card — Choices are Auto (default); Slot1; Slot2; Slot3; Slot4. You have to choose this option manually if a non-compliant PCI IDE card installed in your system.

OffBoard PCI IDE Primary IRQ — Choices are Disabled; INTA (default); INTB; INTC; INTD; Hardwired. * Not available when "OffBoard PCI IDE Card"= **Auto**

OffBoard PCI IDE Secondary IRQ — Choices are Disabled; INTA (default); INTB; INTC; INTD; Hardwired. * Not available when "OffBoard PCI IDE Card"= **Auto**

PCI VGA Used IRQ Line — Choices are No (default); Yes. * If set **'No'**, the BIOS will not assign any IRQs to PCI VGA card.

Used ESCD Information — Choices are No (default); Yes. * If set **'No'**, the BIOS will not use any informations stored in ESCD when boot.

Reserved Memory Size — Choices are Disabled(default); 16k; 32k; 64k. * This option specifies the size of the memory area reserved for legacy ISA adapter cards.

Reserved Memory Address Memory adress area reserved for legacy ISA adapter cards. Choices are C0000; C4000; C8000 (default); CC000; D0000; D4000; D8000; DC000. *This option specifies the beginning address (in hex)of the reserved memory area. The specified ROM memory area is read.

The right section is the options for each items.