

# **P6FX2-A**

V1.1

*November, 1996*

This mainboard requires correct configuration information; otherwise, a malfunction may result.



Static electricity can cause serious damage to integrated circuit mainboards. To avoid building up a static electric charging on your body, be sure you discharge any static electricity by grounding yourself before handling the motherboards. If mainboards are handed from one person to another, they should touch hands first, then pass the mainboards.

Information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

Contact your dealer for warranty details.

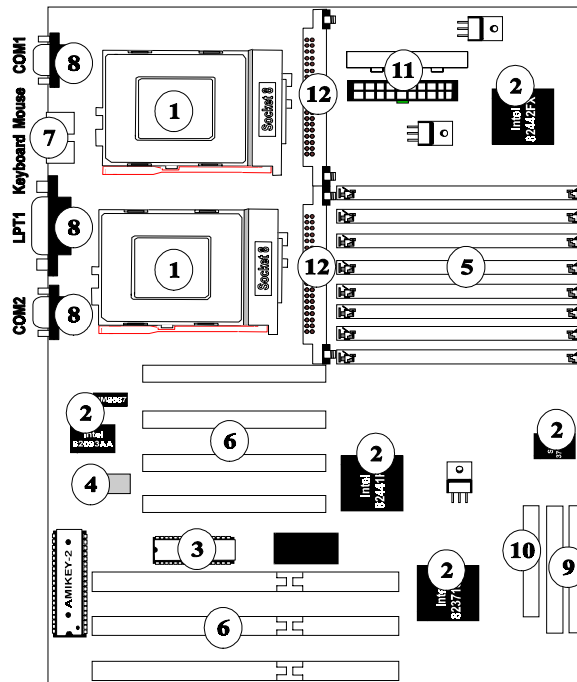
### **Trademarks**

All brands and product names used in this manual may be trademarks or registered trademarks of their respective companies.

# 1 Introduction

## Mainboard Description

### P6FX2-A PCB:1.1



- |                        |                                     |
|------------------------|-------------------------------------|
| ① Processor Socket     | ⑦ PS/2 Mouse & Keyboard Set         |
| ② Chipset              | ⑧ Serial / Parallel Ports           |
| ③ System BIOS          | ⑨ PCI IDE Connectors                |
| ④ USB Header           | ⑩ FDD Connector                     |
| ⑤ Memory Socket (SIMM) | ⑪ Power Supply Connectors           |
| ⑥ Expansion Slots      | ⑫ Header 8 VRM Sockets for PCB V1.1 |

---

## **Mainboard Introduction**

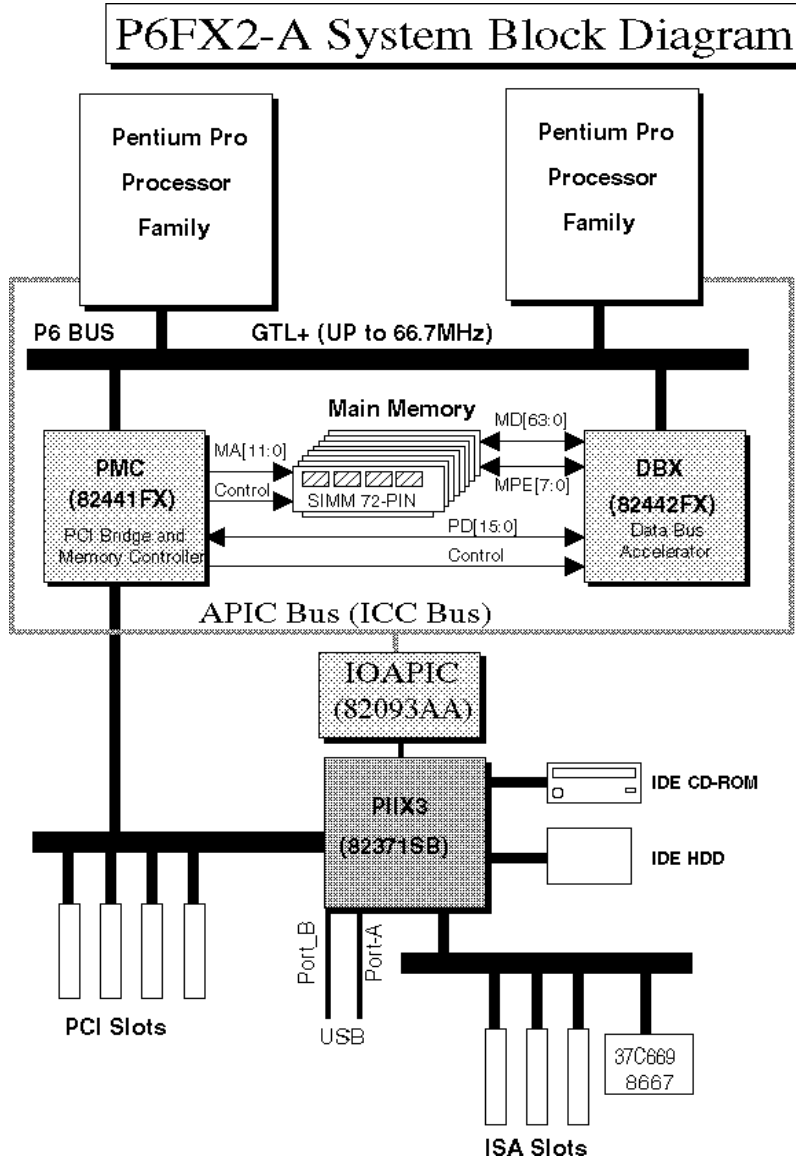
The P6FX2-A mainboard integrates the latest advances in processor, memory, and I/O technologies into an ATX form factor that combines performance, flexibility, and easy of use into a highly integrated mainboard capable of meeting a variety of price/performance levels.

The P6FX2-A mainboard is a fully Symmetric Multi-Processor (SMP) board that utilizes Intel's 82440FX PCIset. The board design will accept Pentium Pro processors at speeds of 150MHz to 200MHz with dual type 8 Zero Insertion Force (ZIF) sockets.

The memory subsystem supports up to 512MB of DRAM using standard 72-pin SIMM sockets that accept Fast Page Mode (FPM) , Extended Data Out (EDO) and Burst Extended Data Out (BEDO) memory.

The P6FX2-A integrates a full set of I/O chips on board. The Intel 82371SB PCI/IDE Xccelerator (PIIX3) provides an integrated Bus Mastering IDE controller with two high performance IDE interfaces for up to four devices. It also supports two low cost Universal Serial Bus (USB) port to fit today and tomorrow's requirement. The SMC 37C669 Super I/O controller provides standard PC I/O functions.

**System Block Diagram**



**1. Processor:**

## *P6FX2-A*

Dual Socket 8 support Intel Pentium Pro 150/166/180/200 MHz  
Upgrade to P6S and P6T CPU.

### **2. Chipset:**

Intel	440FX Pentium Pro chipset, including : 82441FX (PMC) 82442FX (DBX) 82371SB (PIIX3) 82093AA (IOAPIC)
SMC	37C669 (Super I/O Controller)

### **3. System BIOS:**

AMI BIOS

### **4. USB Header:**

Provides 1 USB Header (Header 5x2) to support 2 USB Ports.

### **5. Memory Socket (SIMM):**

Supports 8MB to 512MB , FPM, EDO and BEDO.

### **6. Expansion Slot:**

3 ISA Bus Slots.  
4 PCI Bus Slots.

### **7. PS/2 Mouse & Keyboard Set:**

Provides Connectors for PS/2 Keyboard & PS/2 Mouse.

### **8. Serial / Parallel Port:**

Provides two serial ports and one parallel port.

### **9. PCI IDE Connector:**

2 Enhanced PCI IDE up to 4 IDE Device Connectors.

### **10. FDD Connector:**

Provides an on-board FDD Connector which supports  
360KB/720KB/1.2MB/1.44MB/2.88MB type drives.

### **11. Power Supply Connectors:**

Provides the connectors for standard PC power supply and ATX power supply.

### **12. Header 8 VRM Sockets:**

P6FX2-A needs one Voltage Regulator Module (VRM) installed on header 8  
socket for each Pentium Pro Processor.

---

## Features

### □ CPU:

- Dual Socket 8 supports Pentium Pro 150/166/180/200 MHz CPU
- Upgradable to P6S and P6T CPUs.

### □ BIOS:

- AMI BIOS with Green Flash ROM .
- Compliant with Intel and Windows 95 PNP.  
    Ä PNP specification V1.0a
- Compliant with MPS V1.4.
- Compliant with APM V1.2.
- Compliant with DMI V2.0.

### □ Memory:

- 8 pieces of 72-pin SIMM sockets with memory size from 8MB to 512MB.
- Supports Parity or ECC Function. (It needs parity SIMMs to make it work).
- Supports 50ns and 60ns Fast Page Memory (FPM) with X-3-3-3 timings.
- Supports 50ns and 60ns Extended Data Out (EDO) Memory with X-2-2-2 timings.
- Supports 50ns Burst Extended Data Out (BEDO) Memory with X-1-1-1 timings.
- Supports 60ns Burst Extended Data Out (BEDO) Memory with X-2-2-2 timings.

### □ Slots:

- 3X16-bit ISA slots with 100% ISA compatible function.
- 4X32-bit PCI slots all support PCI master.  
    Ä Fully Synchronous PCI Bus Interface.

## P6FX2-A

- PCI Rev. 2.1 - 5V Interface Compliant.
- 25/27.5/30/33 MHz
- PCI to DRAM > 100 MB/sec

### ☐ IDE:

- The build-in Intel 82371SB chip, 32-bit PCI IDE interface with 2 IDE channels.
  - Supports PIO and Bus master IDE
  - PIO Mode 4 Transfers Up to 16 MB/sec
  - Integrated 8X32-bit Buffer for Bus Master IDE PCI Burst Transfers
  - Supports Separate Master / Slave IDE mode.
  - Plug and Play compatible

### ☐ FDD:

- Two floppy drives support 360K/720K/1.2MB/1.44MB/2.88MB and 3 mode floppy drives.

### ☐ I/O:

- One multi-mode parallel port with chip-protect circuitry supports standard, enhanced (EPP), high speed (ECP) mode.
- Two high speed 16C550 compatible Buffer fast serial port.
- One Universal Serial Bus (USB) Header supports for 2 USB Ports.

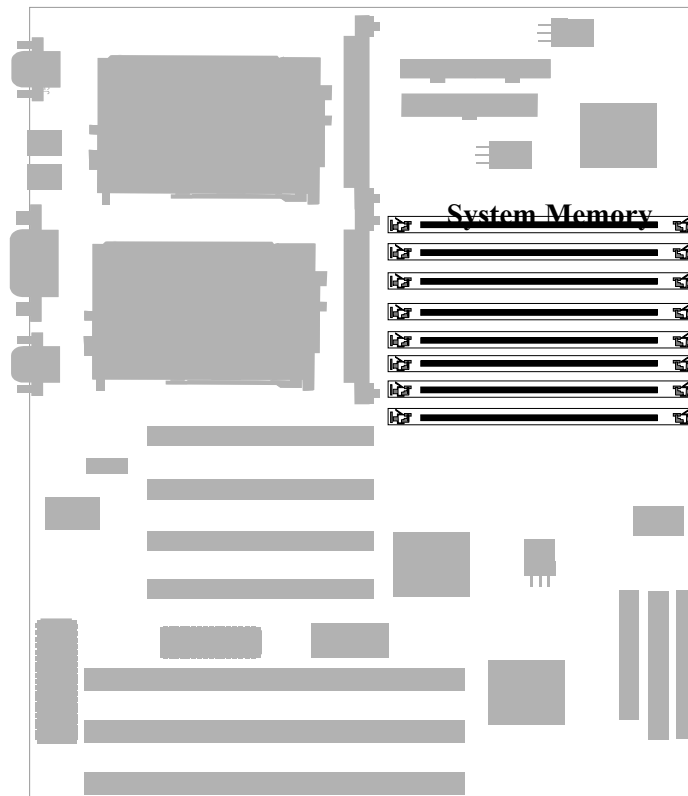
### ☐ System and Power Management:

- Supports Advanced Power Management (APM) Ver. 1.2.
- Supports Soft Power Down Function with ATX power supply.
- Supports CPU Cooling Fan Failure Detection capability. ( Via CPU Cooling Fan Connectors)
- Supports CPU Over Temperature Detection capability. (Via CPU Cooling Fan Connectors)
- Supports Green LED Flash function as system enters suspend mode.



## 2 Memory Configurations

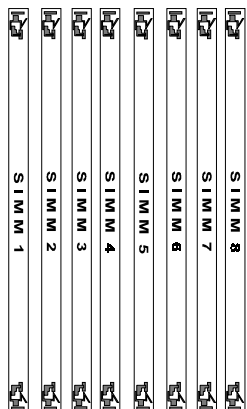
This chapter contains the detailed memory configuration: **System Memory and Cache Memory.**



The diagram above displays the location of SIMM Sockets on P6FX2-A motherboard.

## System Memory

**Bank 0 Bank 1 Bank 2 Bank 3**



### SIMM:

P6FX2-A provides tremendous flexibility DRAM configurations. It accepts a maximum 512MB memory size. The on-board DRAM is installed with 72-Pin SIMM.

There are four memory banks which support the 4M/8M/16M/32M/64M type, single and/or double-Sided modules.



*The type of SIMM must be same if they exist at the same bank.*

The following table lists a number of possible DRAM combinations.

Bank 0		Bank 1		Bank 2		Bank 3		Total
SIMM 1	SIMM 2	SIMM 3	SIMM 4	SIMM 5	SIMM 6	SIMM 7	SIMM 8	Memory Size
4MB	4MB	----	----	----	----	----	----	8MB
4MB	4MB	4MB	4MB	----	----	----	----	16MB
4MB	4MB	4MB	4MB	4MB	4MB	----	----	24MB
4MB	4MB	4MB	4MB	4MB	4MB	4MB	4MB	32MB
8MB	8MB	----	----	----	----	----	----	16MB
8MB	8MB	4MB	4MB	----	----	----	----	24MB
8MB	8MB	4MB	4MB	4MB	4MB	----	----	32MB
8MB	8MB	4MB	4MB	4MB	4MB	4MB	4MB	40MB
8MB	8MB	8MB	8MB	----	----	----	----	32MB
8MB	8MB	8MB	8MB	8MB	8MB	----	----	48MB
8MB	8MB	8MB	8MB	8MB	8MB	8MB	8MB	64MB

Continued.....

Bank 0		Bank 1		Bank 2		Bank 3		Total
SIMM 1	SIMM 2	SIMM 3	SIMM 4	SIMM 5	SIMM 6	SIMM 7	SIMM 8	Memory Size
16MB	16MB	----	----	----	----	----	----	32MB
16MB	16MB	4MB	4MB	----	----	----	----	40MB
16MB	16MB	4MB	4MB	4MB	4MB	----	----	48MB
16MB	16MB	4MB	4MB	4MB	4MB	4MB	4MB	56MB
16MB	16MB	8MB	8MB	----	----	----	----	48MB
16MB	16MB	8MB	8MB	8MB	8MB	----	----	64MB
16MB	16MB	8MB	8MB	8MB	8MB	8MB	8MB	80MB
16MB	16MB	16MB	16MB	----	----	----	----	64MB
16MB	16MB	16MB	16MB	16MB	16MB	----	----	96MB
16MB	16MB	16MB	16MB	16MB	16MB	16MB	16MB	128MB
32MB	32MB	----	----	----	----	----	----	64MB
32MB	32MB	4MB	4MB	----	----	----	----	72MB
32MB	32MB	4MB	4MB	4MB	4MB	----	----	80MB
32MB	32MB	4MB	4MB	4MB	4MB	4MB	4MB	88MB
32MB	32MB	8MB	8MB	----	----	----	----	80MB
32MB	32MB	8MB	8MB	8MB	8MB	----	----	96MB
32MB	32MB	8MB	8MB	8MB	8MB	8MB	8MB	112MB
32MB	32MB	16MB	16MB	----	----	----	----	96MB
32MB	32MB	16MB	16MB	16MB	16MB	----	----	128MB
32MB	32MB	16MB	16MB	16MB	16MB	16MB	16MB	160MB
32MB	32MB	32MB	32MB	----	----	----	----	128MB
32MB	32MB	32MB	32MB	32MB	32MB	----	----	192MB
32MB	32MB	32MB	32MB	32MB	32MB	32MB	32MB	256MB
64MB*	64MB*	----	----	----	----	----	----	128MB
64MB*	64MB*	4MB	4MB	----	----	----	----	136MB
64MB*	64MB*	4MB	4MB	4MB	4MB	----	----	144MB
64MB*	64MB*	4MB	4MB	4MB	4MB	4MB	4MB	152MB

Continued.....

Bank 0		Bank 1		Bank 2		Bank 3		Total
SIMM 1	SIMM 2	SIMM 3	SIMM 4	SIMM 5	SIMM 6	SIMM 7	SIMM 8	Memory Size
64MB*	64MB*	8MB	8MB	-----	-----	-----	-----	144MB
64MB	64MB*	8MB	8MB	8MB	8MB	-----	-----	160MB
64MB*	64MB*	8MB	8MB	8MB	8MB	8MB	8MB	176MB
64MB*	64MB*	16MB	16MB	-----	-----	-----	-----	160MB
64MB*	64MB*	16MB	16MB	16MB	16MB	-----	-----	192MB
64MB*	64MB*	16MB	16MB	16MB	16MB	16MB	16MB	224MB
64MB*	64MB*	32MB	32MB	-----	-----	-----	-----	192MB
64MB*	64MB*	32MB	32MB	32MB	32MB	-----	-----	256MB
64MB*	64MB*	32MB	32MB	32MB	32MB	32MB	32MB	320MB
64MB*	64MB*	64MB*	64MB*	-----	-----	-----	-----	256MB
64MB*	64MB*	64MB*	64MB*	64MB*	64MB*	-----	-----	384MB
64MB*	64MB*	64MB*	64MB*	64MB*	64MB*	64MB*	64MB*	512MB

Table 2 -1. System Memory Configurations

\* : means the memory type is not available for testing when the manual is edited.

---

## **Cache Memory Subsystem**

The Cache Memory Subsystem of the P6FX2-A mainboard is included in the Pentium Pro CPU. The users **do not** need to add any level 2 cache in the system. The details are described as follows:

### **Level 1 Cache**

8-Kbyte, 4-way set-associative, primary instruction cache; 8-KByte, dual-ported, two-way set-associative, primary data cache; both located on the CPU die.

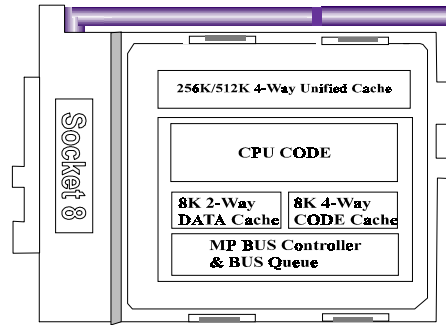
- 1. Data Cache: supports 8KB Write-Through and Write-Back policy.
- 2. Code Cache: supports 8KB Write-Through policy.

### **Level 2 Cache**

Level 2 Cache is included in Pentium Pro CPU. The Size of Level 2 Cache is 256KB or 512KB depending on CPU.

P6FX2-A

## Pentium Pro CPU



This Page Intentionally Left Blank.

## 3 Jumpers and Connectors

### Setting the Jumpers

The table below summarizes the function and jumper settings of CPU type on the P6FX2-A. You can refer to the next section for the graphic descriptions.

Function		Jumper Settings	
CPU Type	Intel Pentium Pro 150MHz (60 MHz Host Clock) (2.5X)	JP4	open 1-2 short 3-4
		JP8	open 1-2 short 3-4 short 5-6 short 7-8
	Intel Pentium Pro 166MHz (66 MHz Host Clock) (2.5X)	JP4	short 1-2 open 3-4
		JP8	open 1-2 short 3-4 short 5-6 short 7-8
	Intel Pentium Pro 180MHz (60 MHz Host Clock) (3X)	JP4	open 1-2 short 3-4
		JP8	short 1-2 open 3-4 short 5-6 short 7-8
	Intel Pentium Pro 200MHz (66 MHz Host Clock) (3X)	JP4	short 1-2 open 3-4
		JP8	short 1-2 open 3-4 short 5-6 short 7-8

Table 3 -1. CPU Type Settings



*In order to get a balanced system, the user should use the same types of CPU at the same time while two processors are installed on the main board.*



P6FX2-A

The following table shows all the jumpers' descriptions on P6FX2-A.

JP2	CMOS RAM Clear Jumper
JP4	Host Bus Frequency Selection Jumper
JP8	CPU/Bus Ratio Selection
J13, Pin 1-2	Clear Password

### **JP2: CMOS RAM Clear Jumper**

This 2X1 header is used to clear the CMOS RAM.

short 1-2 : To clear the CMOS RAM.

open 1-2 : Normal function. (Default Setting)

### **JP4: Host Bus Frequency selection Jumper**

This 2X2 header is used to select the Host Bus Frequency.

JP4		HOST FREQ (MHz)	PCI FREQ (MHz)	ISA FREQ (MHz)	REMARKS
1-2	3-4				
short	short	50	25	7.5	Note
short	open	66	33	8.33	
open	short	60	30	7.5	
open	open	55	27.5	7.5	Note



**DO NOT USE** this bus frequency if user wants to get higher performance.

### **JP8: CPU/Bus Ratio Select**

This 4X2 header is used to select the CPU/Bus Ratio.

*Note: The setting of this jumper will affect both of CPU #1 and CPU #2.*

JP8				Core Freq.
7-8	5-6	3-4	1-2	
short	short	short	short	2X
short	short	short	open	2.5X
short	short	open	short	3X
short	short	open	open	3.5X
short	open	short	short	4X

### **J13, pin 1-2: Clear Password**

This jumper is used to clear the supervisor password.

short 1-2 : To clear Password

open 1-2 : Normal function. (Default Setting)

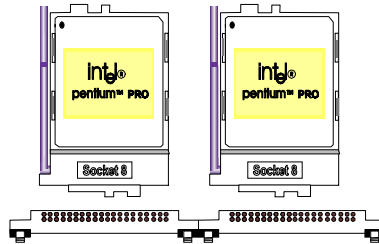
---

## **Graphic Descriptions of Jumper Settings**



## CPU Type

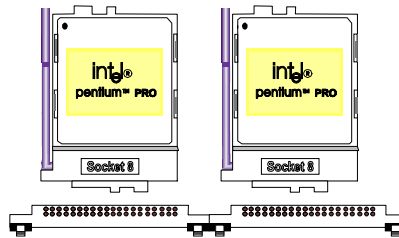
1. Intel Pentium Pro 150MHz CPU (60MHz Host Clock) (2.5X) installed on board



1 2  
3 4  
JP4

1 2  
7 8  
JP8

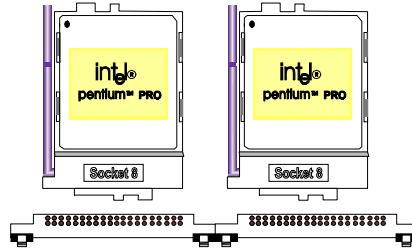
2. Intel Pentium Pro 166MHz CPU (66MHz Host Clock) (2.5X) installed on board



1 2  
3 4  
JP4

1 2  
7 8  
JP8

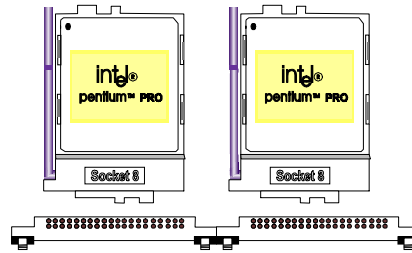
3. Intel Pentium Pro 180MHz CPU (60MHz Host Clock) (3X) installed on board



1 2  
3 4  
JP4

1 2  
3 4  
7 8  
JP8

4. Intel Pentium Pro 200MHz CPU (66MHz Host Clock) (3X) installed on board



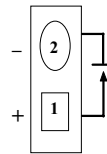
1 2  
3 4  
JP4

1 2  
3 4  
7 8  
JP8

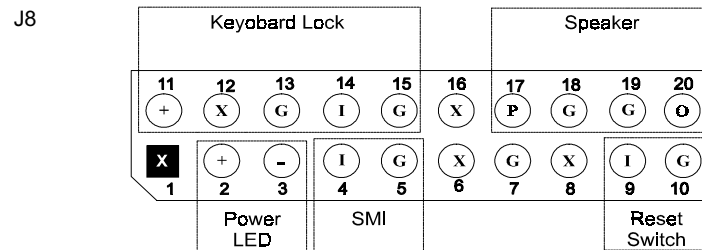
## Connectors

There are several connectors located on the P6FX2-A. Users can refer to the following diagram for the clear figure of connectors. The function is listed below.

Connector	Function
J1	PS/2 Keyboard Connector
J2	PS/2 Mouse Connector
J3	COM 1 / 3 Port
J4	Parallel Port Connector
J5/J6	IDE Active LED

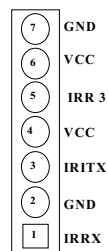


J7 COM 2 / 4 Port



X: No Function    I: Input    O: Output  
G: GND            P: Power

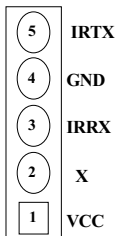
J9 FIR Connector



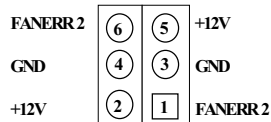
Continued.....

Connector	Function
-----------	----------

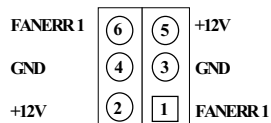
J10 IR Connector



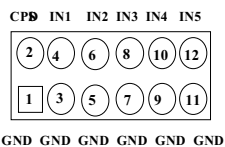
J11 CPU Cooling Fan Connector for CPU #2



J12 CPU Cooling Fan Connector for CPU #1



J13 External Sensor Connector



GND GND GND GND GND GND

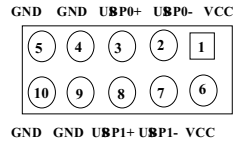
**CPSD: Clear Password**

J14 Remote Power On Switch  
 J15 FDD Connector  
 J16 Primary IDE Connector  
 J17 Secondary IDE Connector

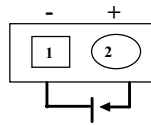
Continued....

Connector	Function
-----------	----------

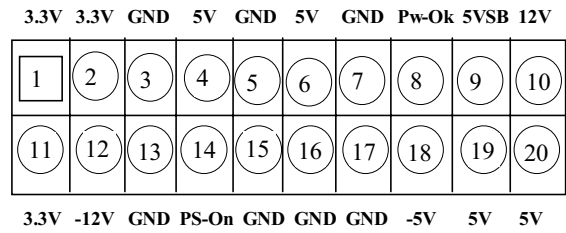
J18 USB Header



J19 Green Mode LED



PS1 ATX Power Supply Connector



PS2 Standard Power Connector

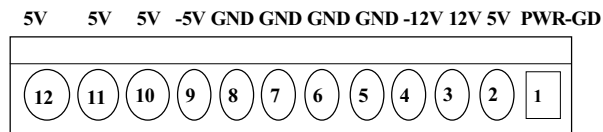


Table 3 -2. Connectors

---

## Installation Guide:

The P6FX2-A is a fully symmetric multiprocessor (SMP) system. It means that there is no master-slave relationship between these two processors. The users can base on the following guide lines to install the system:

### 1. Single Processor System:

The users can install a Pentium Pro (PPro) processor on any processor socket with related VRM (Voltage Regulator Module) installed. For example, the users can insert a PPro processor on U11 with a VRM installed on U17. (It's not necessary to install a VRM on U16 in this case) or insert a PPro processor on U10 with a VRM installed on U16. (It's also not necessary to install a VRM on U17 in this case)

### 2. Dual Processor System:

The users can install dual Pentium Pro processor to get ultra-performance from the P6FX2-A mainboard. The installation processes are very simple:

- 1) Install two Pentium Pro processors on U10 and U11.
- 2) Install CPU cooling fans on U10 and U11.
- 3) Install VRMs on U17 and U16.



*Please use Multiprocessor operating system (MP OS) to get benefit gaining from dual processors. Any OS that is MPS V1.1 \* compliant can be used on P6FX2-A mainboard. The known OSs which are MPS V1.1 compliant are : Windows NT, OS/2 SMP, SCO UNIX, Solaris , Unix ware, Netware SMP,.....*



*Multi-Processor specification, which released by Intel co., , defines a MP table that can be accessed by the operating system. The intent of this specification is to establish an MP platform interface standard that extends the performance of the existing PC/AT platform beyond the traditional single processor limit, while maintaining 100% PC/AT binary compatibility. The users can down load the detailed specification from Intel's web server.*

- 4) Set the proper Host Bus frequency (JP4) and CPU/Bus ration (JP8).



**Board Layout : (for PCB V1.1)**

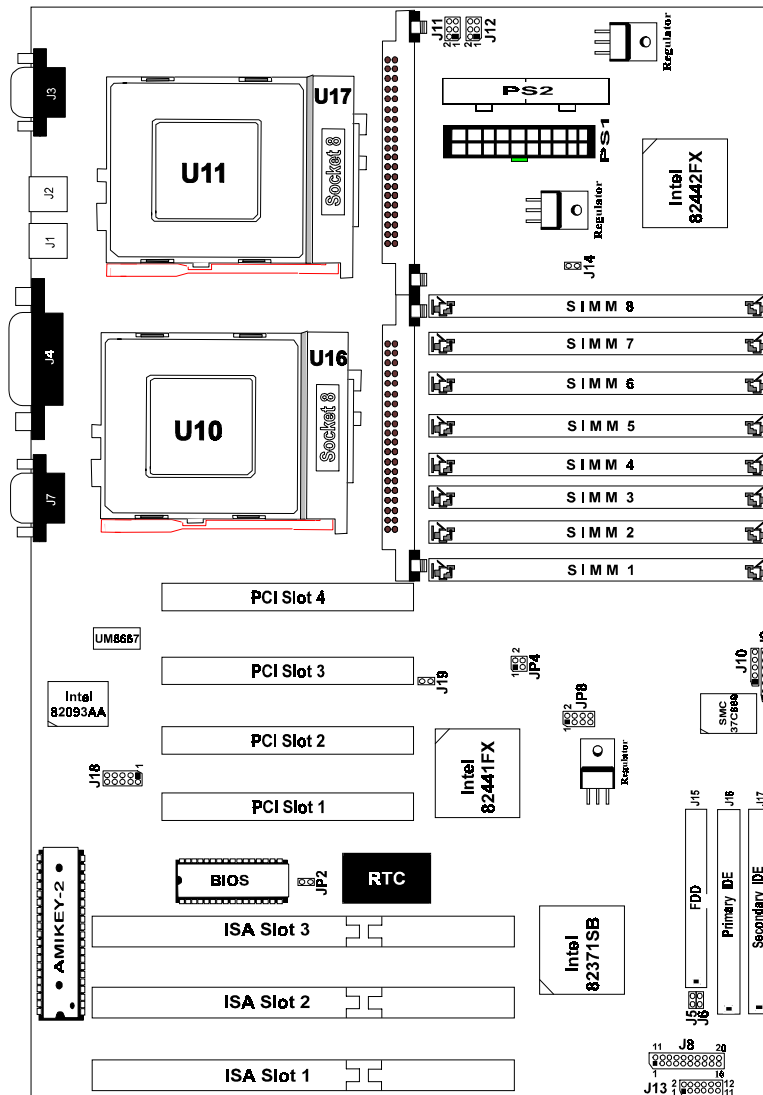


Figure 3 -1. P6FX2-A Mainboard Layout

## 4 Built-in BIOS SETUP Program

### SETUP Program

This chapter describes the AMI BIOS setup for P6FX2-A. The setup program uses a number of menus that you can specify changes to your hardware and turn the special features on or off.

To enter the BIOS setup program, users can turn on or reboot the system. Press the <DEL> key when the system displays "Press DEL to enter SETUP".

The following screen will be displayed.

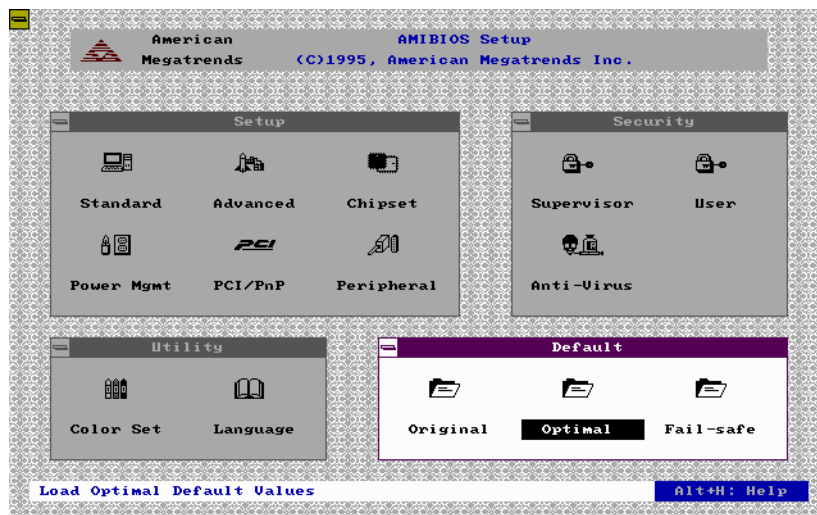


Figure 4 -1. Setup Main Menu



*The instructions at the bottom of Main Menu Screen show the items of each option.*

*P6FX2-A*

Each section contains several icons. Clicking on each icon activates a specific function. The sections are:

- Setup** - There are six icons that permit you to set system configuration options such as date, time, hard disk type, floppy type, ....and so on.
- Utilities** - There are two icons that perform the functions of IDE Setup and Color Set.
- Security** - There are three icons that control AMI BIOS security features.
- Default** - There are three icons that permit you to select a group of setting for all AMI BIOS Setup options.

---

## Setup

### Standard Setup

The Standard Setup Screen will be displayed after choosing the Standard icon from the AMI BIOS Setup main menu screen.

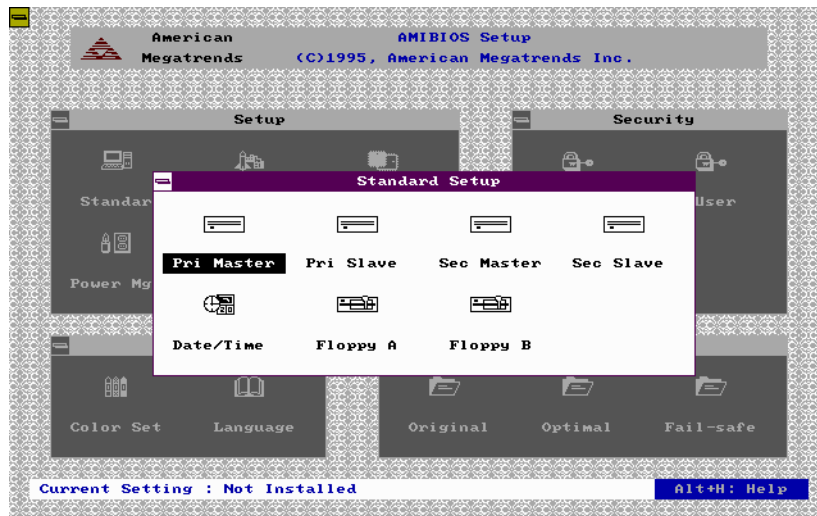


Figure 4 -2. Standard Setup Screen

**Date/ Time** - After selecting the Date and Time icon, the current values for each category are displayed. Enter new values through the keyboard.

**Floppy A:/B:** - Users can move the cursor to these fields via  $\uparrow$  and  $\downarrow$  and select the floppy type. The available options are:

- not installed
- 1.2 MB 5¼"
- 1.44 MB 3½"
- 360 KB 5¼"
- 720 KB 3½"
- 2.88 MB 3½"

Primary / Secondary Master & Primary / Secondary Slave - select one of these hard disk drive icons to configure the drive named in the option. A scrollable screen that lists all valid disk drive types is displayed. Select the correct type and press < Enter >. The following list is presented the hard disk drive types:

Type	Cylinders	Heads	Write Precompensation	Landing Zone	Sectors	Capacity
Not Installed						
1	306	4	128	305	17	10 MB
2	615	4	300	615	17	20 MB
3	615	6	300	615	17	31 MB
4	940	8	512	940	17	62 MB
5	940	6	512	940	17	47 MB
6	615	4	65535	615	17	20 MB
7	462	8	256	511	17	31 MB
8	733	5	65535	733	17	30 MB
9	900	15	65535	901	17	112 MB
10	820	3	65535	820	17	20 MB
11	855	5	65535	855	17	35 MB
12	855	7	65535	855	17	50 MB
13	306	8	128	319	17	20 MB
14	733	7	65535	733	17	43 MB
16	612	4	0	663	17	20 MB
17	977	5	300	977	17	41 MB
18	977	7	65535	977	17	57 MB
19	1024	7	512	1023	17	60 MB
20	733	5	300	732	17	30 MB
21	733	7	300	732	17	43 MB
22	733	5	300	733	17	30 MB
23	306	4	0	336	17	10 MB
24	925	7	0	925	17	54 MB
25	925	9	65535	925	17	69 MB
26	754	7	754	754	17	44 MB
27	754	11	65535	754	17	69 MB
28	699	7	256	699	17	41 MB
29	823	10	65535	823	17	68 MB
30	918	7	918	918	17	53 MB
31	1024	11	65535	1024	17	94 MB
32	1024	15	65535	1024	17	128 MB
33	1024	5	1024	1024	17	43 MB
34	612	2	128	612	17	10 MB
35	1024	9	65535	1024	17	77 MB
36	1024	8	512	1024	17	68 MB
37	615	8	128	615	17	41 MB
38	987	3	987	987	17	25 MB
39	987	7	987	987	17	57 MB
40	820	6	820	820	17	41 MB
41	977	5	977	977	17	41 MB
42	981	5	981	981	17	41 MB
43	830	7	512	830	17	48 MB
44	830	10	65535	830	17	69 MB
45	917	15	65535	917	17	114 MB
46	1224	15	65535	1223	17	152 MB
User						
Auto						
CDROM						

Type - The number for a drive with certain identification parameters.

**Cylinders** - The number of cylinders in the disk drive.

**Heads** - The number of heads.

**Write precompensation** - The size of a sector gets progressively smaller as the track diameter diminishes. Yet each sector must still hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner tracks. This parameter is the track number where write precompensation begins.

**Sectors** - The number of sectors per track. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drive may have even more sectors per track.

**Size** - The formatted capacity of the drive is ( Number of heads) x ( Number of cylinders) x ( Number of sectors per track) x (512 bytes per sector)

## AdvancedSetup

The Advanced Setup Screen will be displayed after choosing the Advanced icon from the AMI BIOS Setup main menu screen.

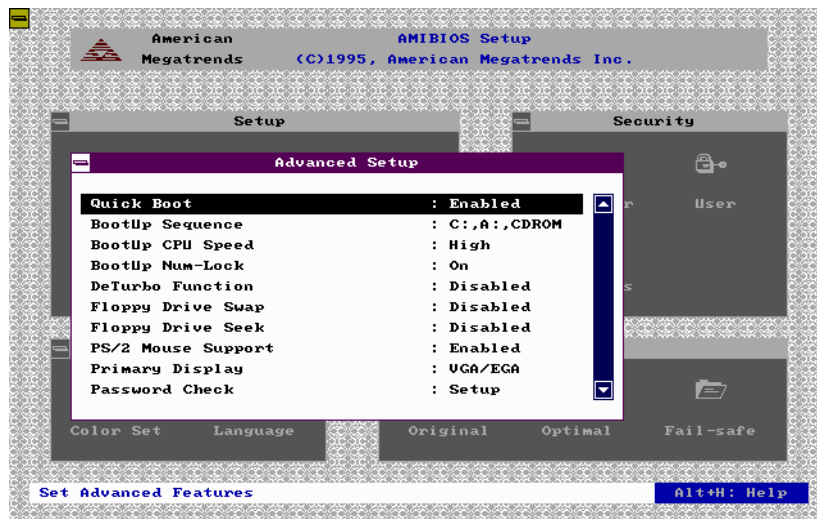


Figure 4 -3. Advanced Setup Screen 1

**Quick Boot** - If this option is set to “enabled”, the system will not do a raw checking over 1MB but sizing only. During sizing, the system will remove the tick sound. The available options are:

- Enabled (default)
- Disabled

**BootUp Sequence** - This option sets the sequence of boot drive (either floppy drive A: or hard disk drive C:0) that AMI BIOS attempts to boot from after POST completes. The available options are:

- C:, A:, CDROM (default)
- A:, C:, CDROM
- CDROM, C:, A:

**BootUp CPU Speed** -The system will slow the bootup speed when this option is set to “low”. Otherwise, a normal turbo speed will process The available options are:

- High (default)
- Low

**BootUp Num Lock** - When Off, this option turns off Num Lock when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard. The available options are:

- On (default)
- Off

**Deturbo Function** -If this option is set as enabled, system speed will be slowed down. The available options are:

- Disabled (default)
- Enabled

**Floppy Drive Swap** - The floppy drive setting in Advanced Setup always corresponds to the physical drive configuration. The floppy drive error messages during POST, the floppy drive in the BIOS global data area, after boot-up correspond to the logical drive setting. The logical drive setting will be reserved from the physical drive setting if floppy drive swapping is enable in Advanced Setup. The available options are:

- Disabled (default)
- Enabled

**Floppy Drive Seek** - When this option is enabled, AMI BIOS performs a seek command on floppy drive A: before booting the system. The available options are:

- Disabled (default)
- Enabled

**PS/2 Mouse Support** - When this option is enabled, AMI BIOS supports a PS/2-type mouse. The available options are:

- Enabled (default)
- Disabled

**Primary Display** - Selects this icon to configure the type of monitor attached to the computer. The available options are:

- VGA / EGA (default)
- CGA 40 x 25
- Mono
- Absent
- CGA 80 x25

**Password Check** - This option enables the password check option every time the system boots or the end user runs Setup. If always is chosen, a user password prompt appears every time the computer is turned on. If setup is chosen, the password prompt appears if AMIBIOS is executed. The available options are:

- Setup (default)
- Always

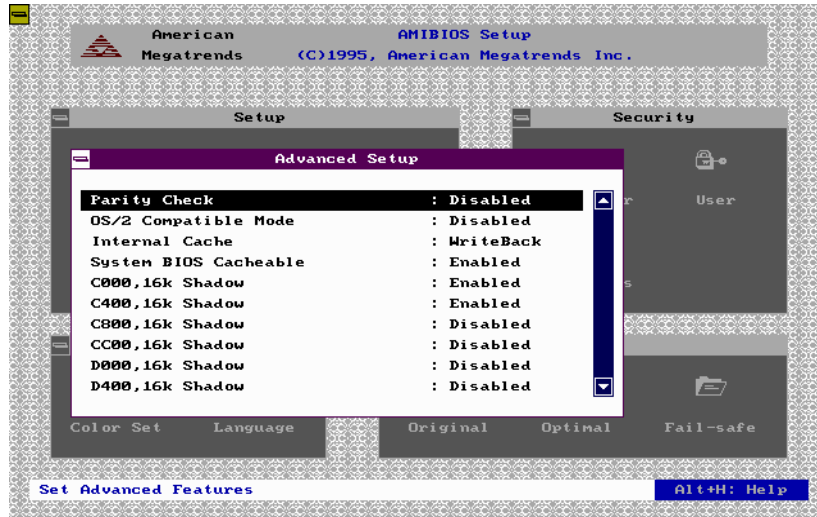


Figure 4 -4. Advanced Setup Screen 2

**Parity Check** - This option enables or disables parity check for system RAM. The available options are **Enabled** (all system RAM parity is checked) or **Disabled** (parity is checked only on the first 1 MB of system RAM). The available options are:

- Disabled (default)
- Enabled

**OS/2 Compatible Mode** - This option is recommended to set to disabled when the platform is OS/2. Especially when the DRAM size is more than 64MB. The available options are:

- Disabled (default)
- Enabled

**Internal Cache** - The internal cache memory support two kinds of access mode. One is write back mode, the other mode is write through mode. The available options are:

- WriteBack (default)
- WriteThrough

**System BIOS Cacheable** - The System BIOS Cacheable supports F000h-FFFFh shadow to RAM area, so the system BIOS cacheable performance is better than non-cacheable. The available options are:

- Enabled (default)
- Disabled



C000, 16K / C400, 16K / C800, 16K / CC00, 16K / D000, 16K / D400, 16K / D800, 16K / DC00, 16K Shadow - These options partition C000h-DC00h to six 16K blocks shadow area for ISA adapter card. The available options are:

- Disabled (default)
- Enabled (C000, C400 default)
- Cached

## ChipsetSetup

The Chipset Setup Screen will be displayed after choosing the Chipset icon from the AMI BIOS Setup main menu screen.

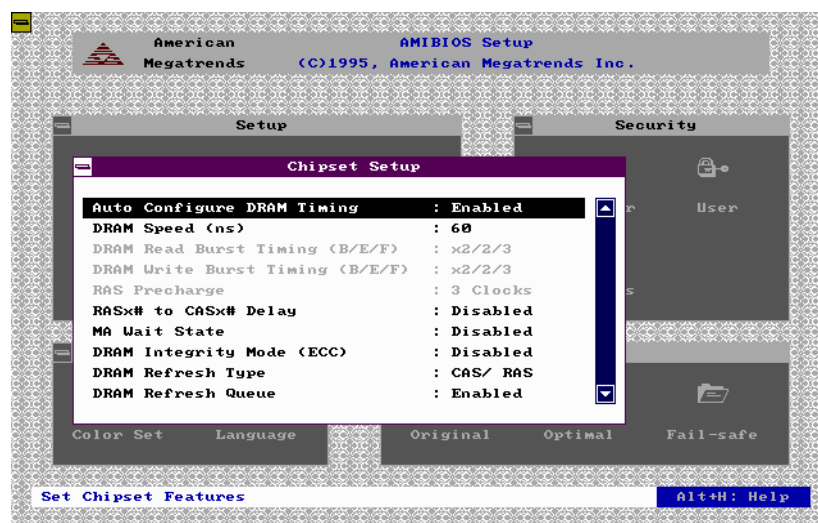


Figure 4 -5. Chipset Setup Screen 1

**Auto Configure DRAM Timing** - The default value of this option is “Enabled”

The available options are:

- Enabled (default)
- Disabled



*If user sets this option to “Disabled”, the “DRAM Read Burst Timing (B/E/F)”, “DRAM Write Burst Timing (B/E/F)” and “RAS Precharge” options below cannot be set on the screen.*

**DRAM Speed (ns)** - Allows to select DRAM speed. The default value is 60 ns which is preferable. After changing this option will affect RAS Prechange option.

The available options are:

- 60 (default)
- 50 / 70

**DRAM Read Burst Timing (B/E/F)** - Controls DRAM Read Burst Timings. If users set the option to x2/2/3 (default), the Burst Read Timings of **B**EDO, **E**DO and **F**PM DRAM respectively are x222, x222, and x333. The available options are :

- x2/2/3 (default)
- x1/2/3
- x2/3/4

**DRAM Write Burst Timing (B/E/F)** - Controls DRAM Write Burst Timings. The available options are :

- x2/2/3 (default)
- x3/3/3
- x3/3/4
- x4/4/4

**RAS Precharge** - Determines the clocks of RAS Prechange time. The available options are :

- 3 Clocks (default)
- 4 Clocks

**RASx# to CASx# Delay** - Allows 1 clock delay or none between assertion of RASx# and CASx#. The available options are :

- Disabled (default)
- Enabled

**MA Wait State** - One additional wait state is inserted before the assertion of the first Maxx and CASx# / RASx# assertion during DRAM read or write leadoff cycles.

The available options are :

- Disabled (default)
- Enabled

**DRAM Integrity Mode (ECC)** - Provides software configurability of selecting ECC mode / parity or non-parity mode. The available options are :

- Disabled (default)
- Enabled

**DRAM Refresh Type** - Determines DRAM refresh type RAS only or CAS-before-RAS. The available options are :

- CAS / RAS (default)
- RAS Only

**DRAM Refresh Queue** - If DRAM is set to “ Enabled”, the internal 4 deep refresh queue is enable for adjusting the DRAM refresh rate. The available options are:

- Enabled (default)
- Disabled

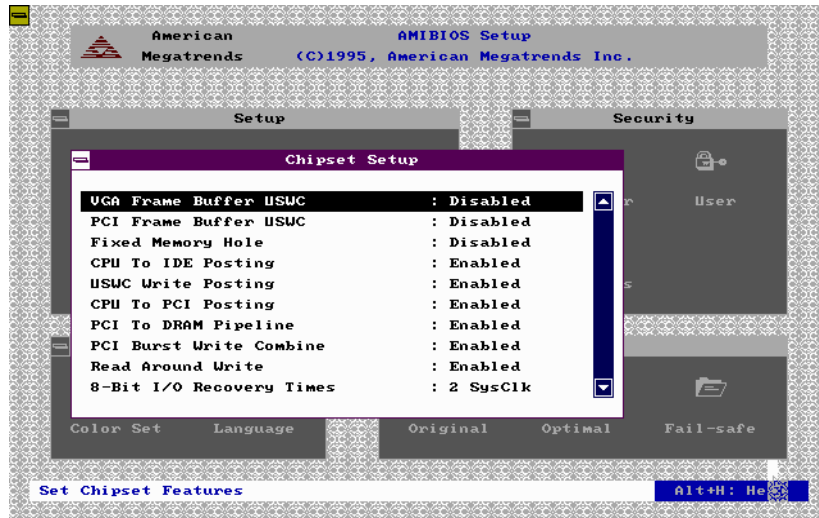


Figure 4 -6. Chipset Setup Screen 2

VGA Frame Buffer USWC - If the option is set to enabled, the VGA Frame Buffer from A000-Bfff to USWC cache type and improve VGA performance. The available options are:

- Disabled (default)
- Enabled

PCI Frame Buffer USWC - If the option is set to enabled, the PCI Frame Buffer from A000-Bfff to USWC cache type and improve PCI performance. The available options are:

- Disabled (default)
- Enabled

Fixed Memory Hoe - The available options are:

- Disabled (default)
- 512KB - 640KB
- 15MB - 16MB

CPU to IDE Posting - When the option is disable, the cycles are treated as normal I/O write transaction. The available options are:

- Enabled (default)
- Disabled

USWC Write Posting - PMC allows posting of CPU to PCI cycle that destine for a USWC region even during a passive release cycle. The available options are:

- Enabled (default)
- Disabled

CPU To PCI Posting -Enables the CPU PCI Posting when this option is set as enabled. The available options are:

- Enabled (default)
- Disabled

PCI To DRAM Pipeline - Restricts pipelining of PCI to DRAM Write cycles when this option is set as disabled. The available options are:

- Enabled (default)
- Disabled

PCI Burst Write Combine - If this option is set as enabled, DBX is allowed to combine back-to-back sequential CPU to PCI Writes into a single PCI Write Burst. The available options are:

- Enabled (default)
- Disabled

Read Around Write - When the option is disabled, all posted writes in the DBX are retired before a CPU or PCI read access is serviced. The available options are:

- Enabled (default)
- Disabled

8-Bit I/O Recovery Times - Defines the 8-bit I/O recovery time with one of the following system clock options. The available options are:

- 2 SysClk (default)
- 1/3/4/5/6/7/8 SysClk

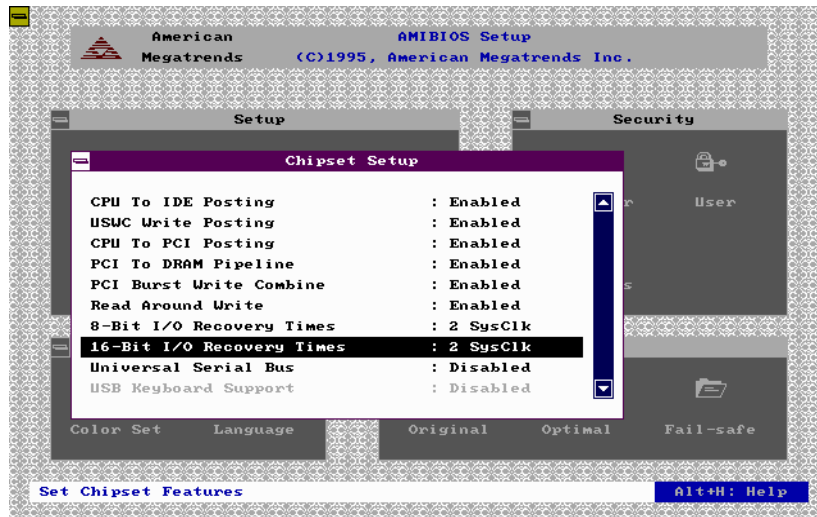


Figure 4 -7. Chipset Setup Screen 3

16- Bit I/O Recovery Times - Defines the 16-bit I/O recovery time with one of the following system clock options. The available options are:

- 2 SysClk (default)
- 1/3/4 SysClk
- Disabled

Universal Serial Bus - When the option is enabled, open USB function and allocate IRQ and I/O port for USB controller. The available options are:

- Disabled (default)
- Enabled



*If user set this option to "Disable", the "USB Keyboard Support" option below cannot be set on the screen.*

USB Keyboard Support - Enable this option to initial USB keyboard. The available options are:

- Disabled (default)
- Enabled

## PowerManagementSetup

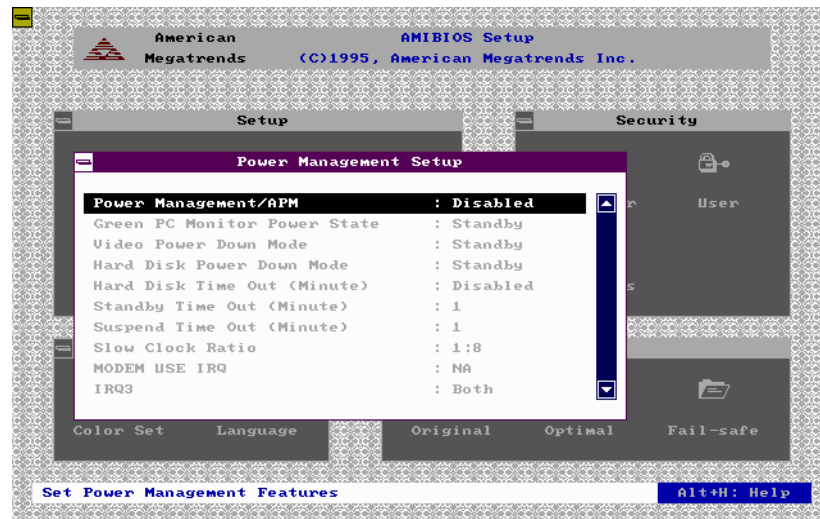


Figure 4 -8. Power Management Setup Screen

Power Management / APM - Sets this option to enabled in order to enable the power management and APM (Advance Power Management) features. The available options are:

- Disabled (default)
- Enabled



*If user sets this option to "Disabled", the following options below cannot be set on the screen.*

Green PC Monitor Power State - Specifies the power management state that the Green PC-compliant video monitor enters after the specified period of display inactivity has expired. The available options are:

- Standby (default)
- Off
- Suspend
- Blank

**Video Power Down Mode** - Specifies the power management state that the video subsystem enters after the specified period of display inactivity has expired. The available options are:

- Standby (default)
- Disabled
- Suspend

**Hard Disk Power Down Mode** - Specifies the power management state that the hard disk drive enters after the specified period of display inactivity has expired. The available options are:

- Standby (default)
- Disabled
- Suspend

**Hard Disk Time Out (Minute)** - Specifies the length of a period of hard disk inactivity. When this period expires, the hard disk drive enters the power-conserving mode. The available options are:

- Disabled (default)
- 1/2/3/4/5.....14/15

**Standby / Suspend Time Out (Minute)** - Specifies the length of the period of system inactivity when the computer is in Standby mode before the computer is placed in Suspend mode. In Suspend mode, nearly all power used is curtailed. The available options are:

- 1 (default)
- 2/3/4/5.....14/15

**Slow Clock Ration** - Specifies the speed at which the system clock runs in power saving modes. The settings are expressed as a ration between the normal clock speed and the power down clock speed. The available options are:

- 1:8 (default)
- 1:2
- 1:16
- 1:64
- 1:1
- 1:4
- 1:32
- 1:128

**MODEM Use IRQ** - In order to support resume on ring and to pass APM 1.2, this option is required to be set same IRQ as the modem add-in-card used. The available options are:

- NA (default)
- 3/4/5/7/9/10/11

**IRQ 3/4/5/6/7/8/9/10/11/12/13/14/15** - These options enable event monitoring. When the computer is in a power saving mode, activity on the named interrupt request line is monitored by AMIBIOS. When any activity occurs, the computer enters Full On mode. The available options are:

- Both (default of IRQ 3/ 4/ 12/14/15)
- Ignore (default of IRQ 8)

- Monitor 5/ 7/9/10/11/13
- WakeUp

## PCI/PnPSetup

PCI/PnP Setup options are displayed by choosing the PCI/PnP setup icon from the Main Setup Screen.

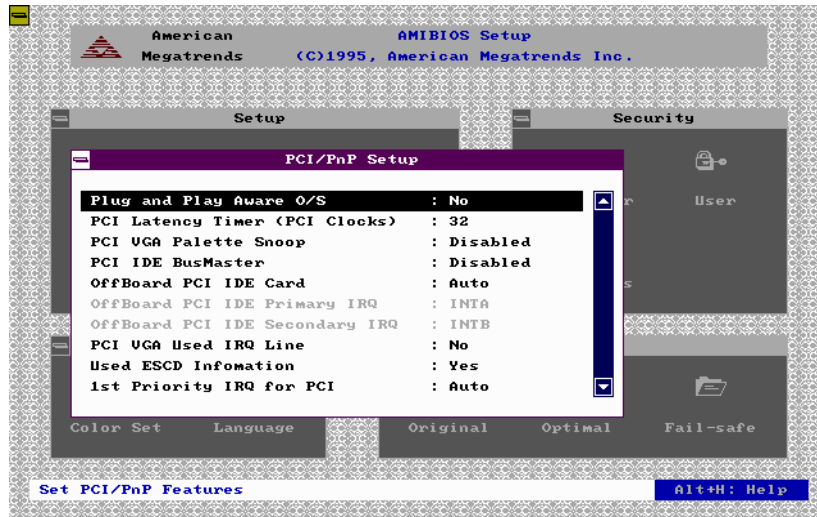


Figure 4 -9. PCI/ PnP Setup Screen 1

Plug and Play Aware O/S - Sets 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 available options are:

- No (default)
- Yes



*This option has to be set correctly or PnP-aware adapter cards is installed in your computer will not be configured properly.*

PCI Latency Timer (PCI Clocks) - Sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. The available options are:

- 32 (default)
- 64/96/128/160/192/224/248

PCI VGA Palette Snoop -Selects "Enabled" to solve the abnormal color in Windows while using ISA MPEG and PCI VGA card. The available options are:

- Disabled (default)
- Enabled

**PCI IDE BusMaster** -Sets this option to enabled in order to specify that the IDE controller on the PCI local bus has bus mastering capability. The available options are:

- Disabled (default)
- Enabled

**OffBoard PCI IDE Card** -Specifies if an offboard PCI IDE controller adapter card is used in the computer. The available options are:

- Auto (default)
- Slot1 / Slot2 ./ Slot3 / Slot 4



*If user sets this option to "Auto", the "OffBoard PCI IDE Primary IRQ" and "OffBoard PCI IDE Secondary IRQ" two options below cannot be set on the screen.*

**OffBoard PCI IDE Primary IRQ** -Specifies the PCI interrupt used by the primary IDE channel on the offboard PCI IDE controller. The available options are:

- INTA (default)
- INTC
- Hardwired
- INTB
- INTD
- Disabled

**OffBoard PCI IDE Secondary IRQ** -Specifies the PCI interrupt used by the Secondary IDE channel on the offboard PCI IDE controller. The available options are:

- INTB (default)
- INTC
- Hardwired
- INTA
- INTD
- Disabled

**PCI VGA Used IRQ Line** - If this option is set to no, BIOS will not assign IRQ for VGA. Then one more IRQ are spared for PCI routing. The available options are:

- No (default)
- Yes

**Used ESCD Information** - BIOS will re-new and re-check system information and update again into ESCD if this option is set to No. The available options are:

- Yes (default)
- No

**1st Priority IRQ for PCI** - Defines 1st available IRQ among IRQ 3/4/5/6/7/9/10/11/12/13/14 that assigned to PCI device that requires a IRQ. The available options are:

- Auto (default)
- 3/4/5/6/7/10/11/12/14/15



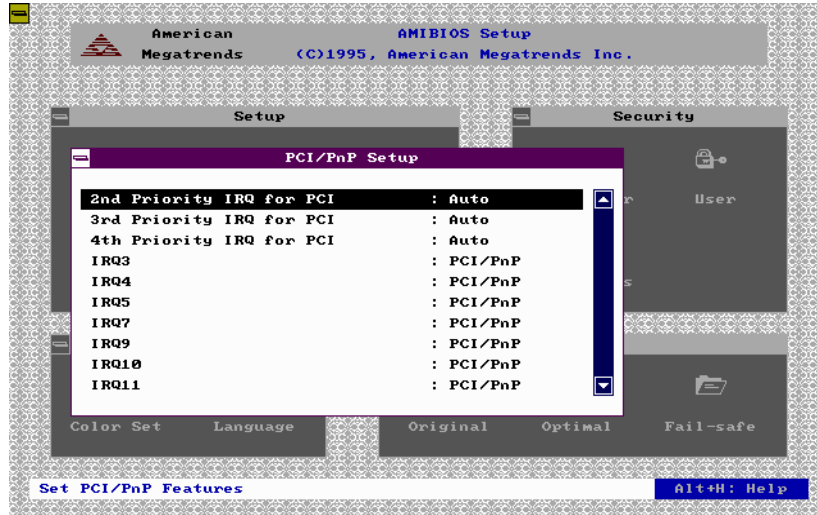


Figure 4 -10. PCI/ PnP Setup Screen 2

2nd/ 3rd/ 4th Priority IRQ for PCI - Defines 2nd/3rd/4th available IRQ among IRQ 3/4/5/6/7/9/10/11/12/14/15 that assigned to PCI device that requires a IRQ. The available options are:

- Auto (default)
- 3/4/5/6/7/9/10/11/12/14/15

IRQ3 / IRQ4 / IRQ5 / IRQ7 / IRQ9 / IRQ 10 / IRQ 11 / IRQ 12 / IRQ 14 / IRQ 15 - These options specify the bus that the named interrupt request lines (IRQs) are used on. These options allow you to specify IRQs for use by legacy ISA adapter cards. The available options are:

- PCI/ PnP (default)
- ISA/ EISA

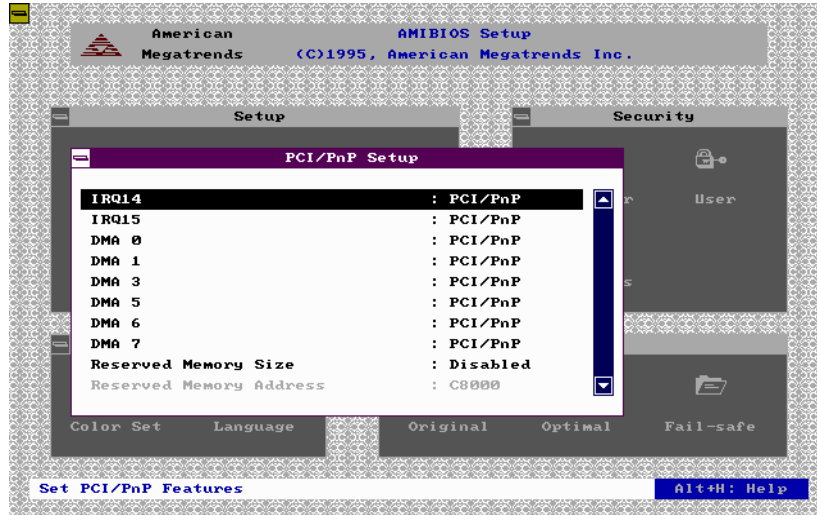


Figure 4 -11. PCI/ PnP Setup Screen 3

DMA 0 1/3/5/6/7 - These options specify the bus that the named interrupt request lines are used on. These options allow you to specify DMAs for use by legacy ISA adapter cards. The available options are:

- PCI/ PnP (default)
- ISA/ EISA

Reserved Memory Size - Reserves a memory size starting from Reserved Memory Address for ISA legacy device. The available options are:

- Disabled (default)
- 16 /32/64 K



*If user set this option to "Disabled", the option below cannot be set.*

Reserved Memory Address - Reserves a memory size starting from Reserved Memory Address for ISA legacy device. The available options are:

- C8000 (default)
- C0000/C4000/CC00/D0000/D4000 /D8000/DC000

## Peripheral Setup

The Peripheral Setup Screen will be displayed after choosing the Peripheral icon from the AMI BIOS Setup main menu screen.

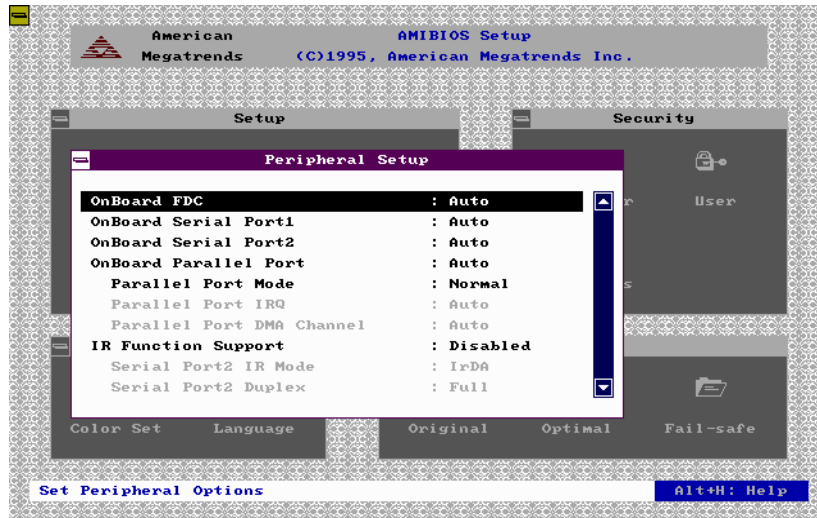


Figure 4 -12. Peripheral Setup Screen

OnBoard FDC - Enables the floppy drive controller on the motherboard. The available options are:

- Auto (default)
- Enabled
- Disabled

OnBoard Serial Port 1/2 - Enables serial port 1/2 on the motherboard and specifies the base I/O port address for serial port 1/2. The available options are:

- Auto (default)
- 3F8h
- 3E8h
- Disabled
- 2F8h
- 2E8h



*If user sets this option to "Normal", the option "Serial Port2 Duplex" below cannot be set on the screen*

**Onboard Parallel Port** - Enables the parallel port on the motherboard and specifies the parallel port base I/O port address. The available options are:

- Auto (default)
- 378h
- 3BCh
- Disabled
- 278h



*If user sets this option to "Auto" (default), the "Parallel Port IRQ" and "Parallel Port DAM Channel" below cannot be set on the screen*

*If user sets this option to "Disabled", the "Parallel Port Mode", "Parallel Port IRQ" and "Parallel Port DAM Channel" below cannot be set on the screen*

**Parallel Port Mode** - Specifies the parallel port mode. ECP and EPP are both bi-directional data transfer schemes. The available options are:

- Normal (default)
- ECP
- EPP

**Parallel Port IRQ** - A flexible IRQ option for selecting whenever parallel port mode is normal, EPP or ECP. The available options are:

- 5
- 7

**Parallel Port DMA Channel** - If the setting for the Parallel Port Mode option is ECP, this option will be available. The available options are:

- 0
- 1
- 3

**IR Function Support** - Enables this option if users want to USE IR function. The available options are:

- Disabled (default)
- Enabled



*If user sets this option to "Disabled", the option "Serial Port2 IR Mode" and "Serial Port 2 Duplex" below cannot be set on the screen*

**Serial Port 2 IR Mode** - Determines which type of IR module to be used. The available options are:

- IrDA (default)
- ASKIR

**Serial Port 2 Duplex**- Allows users to control the Infrared communication duplex mode. The available options are:

- Full (default)
- Half

**Onboard IDE** - Specifies the onboard IDE controller channels that will be used. The available options are:

- Both (default)
- Primary
- Disabled
- Secondary

---

## Security

### Password Setup

AMI BIOS Setup has an optional password feature. The system can be configured so that all users must enter a password every time the system boots or when AMI BIOS Setup is executed. The following screen appears when you select the password icon.

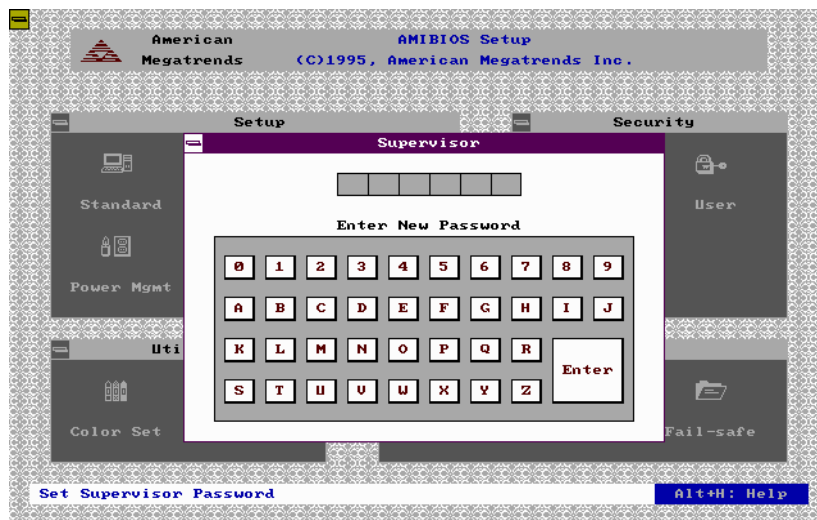


Figure 4 -13. Supervisor Setup Screen

Supervisor / User selects the Password icon from the Security section of the AMI BIOS Setup main menu. Enter the password and press <Enter>. The screen does not display the character entered. After the new password is entered, retype the new password as prompted and press <Enter>.



*If the password confirmation is incorrect, an error message appears. If the new password is entered without error, press <ESC> to return to the AMI BIOS Setup Main Menu. The password is stored in CMOS RAM after AMI BIOS Setup completes. The next time the system boots, you are prompted for the password if the password function is present and*

is enabled. If both supervisor and user passwords are set, user is privileged to modify only user password.

## Anti-VirusSetup

When this icon is selected from the Security section of the AMI BIOS Setup main menu, AMI BIOS issues a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The following screen appears when you select the Anti-Virus icon:

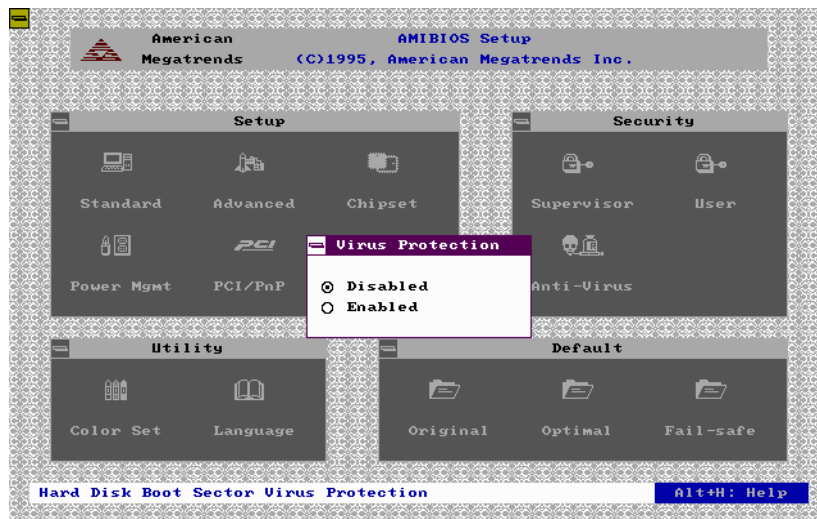


Figure 4 -14. Virus Protection Screen

The available options are *Enabled* or *Disabled*. If enabled, the following appears when a write is attempted to the boot sector. You may have to type N several times to prevent the boot sector write.

```
Boot Sector Write!!!
Possible VIRUS: Continue (Y/N)?__
```

The following is displayed after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard Disk Drive Service:

```
Format!!!
Possible VIRUS : Continue (Y/N)?__
```

---

## Utility

### ColorSet

The Color Set Screen will be displayed after choosing the Color icon from the AMI BIOS Setup main menu screen. From this option, you can set the AMI BIOS Setup screen colors.

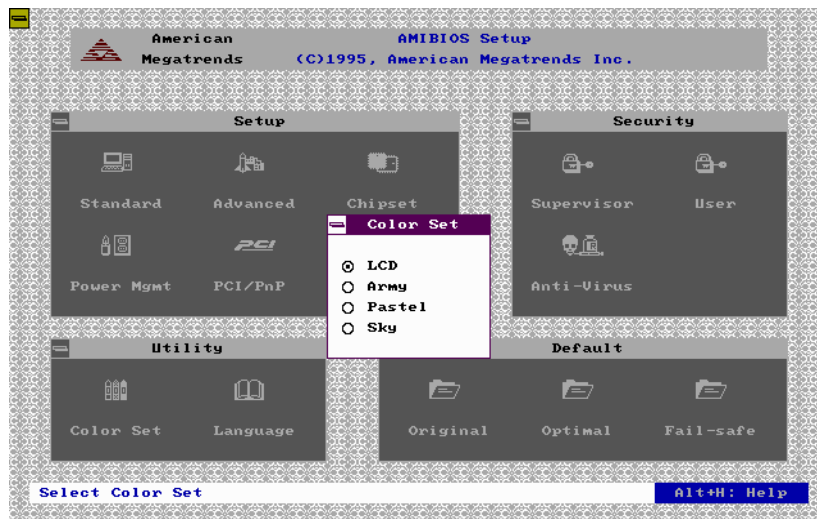


Figure 4 -15. Color Set Screen

### Language

Language allows you to select English language screen prompts and message.

---

## **Default**

The icons in this section permit you to select a group of settings for all AMI BIOS Setup options. Not only can you use these icons to quickly set system configuration parameters, you can choose a group of settings that have a configuration-related problems.

## **Original**

Choose the Original icon to return to the system configuration values present in AMI BIOS Setup when you first began this AMI BIOS Setup session.

## **Optimal**

You can load the optimal default settings for the AMI BIOS Setup options by selecting the Optimal icon. The optimal default settings are best values that should optimize system performance. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

## **Fail-Safe**

You can load the Fail-Safe AMI BIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the AMI BIOS Setup main menu. The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.