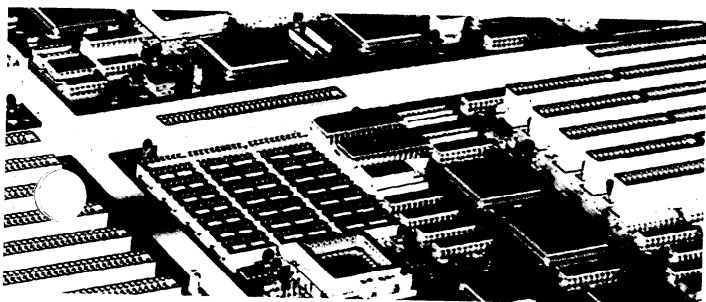


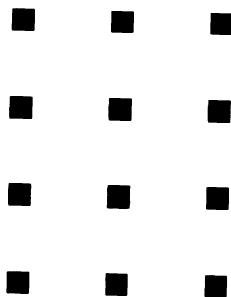


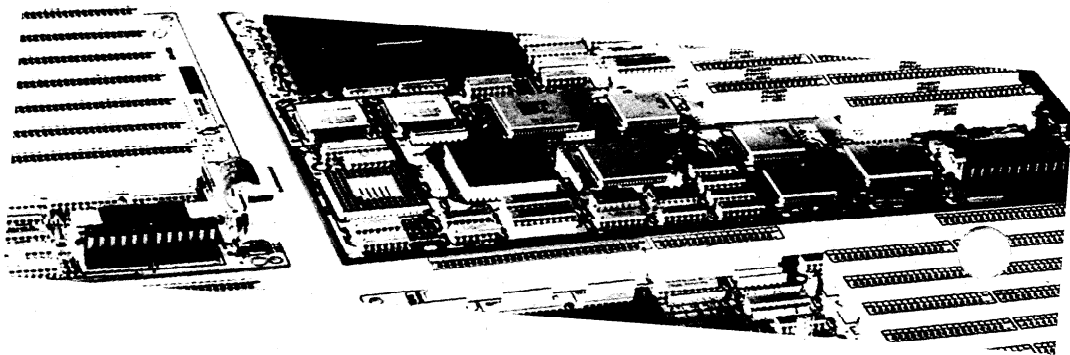
UM4981 AIO Rev 2.1

(FOR PHOENIX BIOS)



U S E R ' S M A N U A L





40-01 2-435210
Version **2.1**



RECYCLABLE



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



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

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

Table of Contents

Introduction

General Specifications	1
Features	2

Memory Configurations

System Memory	4
Cache Memory Subsystem	5

Jumper Settings and Connectors

What kind of CPU Processor are you using ?	6
Setting the Jumpers	8
Graphic Descriptions of Jumper Settings	12
Connectors	21
Board Layout	22

Built-in BIOS Setup Program

Setup Program	23
System Setup	25
Fixed Disk Setup	26
Advanced System Setup	28
Boot Options	33
Security	34
Green PC Features	35
Load ROM Default Values	38
Load Values from CMOS	38
Save Values to CMOS	38

Appendix A Setting the System Speed

1

Introduction

UM4981 AIO is a 4 layer, 3/4 baby AT size mainboard based on the UMC UM8498F and 8496F system chipset. Other on-board specifications include memory capacity of up to 64MB, cache memory sizes 64K/128K/256KB, UM8672 VESA bus IDE controller, SMC37C665GT super I/O controller, 6 AT bus slots and 2 VL-BUS slots and the Green function support that complies to the standard of Energy Star.

1.1 General Specifications

Processor:	Traditional CPU (486SX/SX2, 486DX/DX2,) Intel SL Enhance, DX4, P24D/P24T ☆ Cyrix Cx486S (M6), Cx486DX/DX2 (M7), AMD Am486DX/DX2, AMD DX4-100 UMC U5S-SUPER
Chipset:	UMC UM8498F (386/486 Single Chip) UMC UM8496F (UM8498F glue logic) UMC UM8672F (VESA bus IDE controller) SMC 37C665GT (super I/O controller) UMC 82C865F (I/O TTL integration)
External Cache:	Both cache write back and write through policies are supported. Supports 64K/128K/256KB
Memory size:	Support 4 banks of DRAM with memory size of 1 MB up to 64MB SIMM3,4 support double sides SIMM.
System BIOS:	Phoenix BIOS (EPROM or Flash)
Slots :	6 16-bit ISA slots include two VL-BUS slots. Supports two VESA master slots.
Form Factor:	3/4 Baby-AT
PCB:	4 layers
☆:	<i>Non-5V CPU is only supported on the motherboard that has installed regulator module.</i>

1.2 Features

- **CPU:**
 - ▶ ZIF socket 3 supports Intel **486SX/SX2/DX/DX2/DX4**, Overdrive CPU, AMD **DX/DX2/DX4** CPU, Cyrix **486S/DX/DX2 (M6,M7)**, UMC US.
- **BIOS:**
 - ▶ Phoenix BIOS with flash ROM supported.
 - APM specification V1.0
- **Cache:**
 - ▶ Supports the write back/through mode of CPU's internal first level(L1) cache.
 - ▶ Supports the direct map second level(L2)cache in Write Back/Through.
 - ▶ Flexible cache size **64K,128K** and 256K.
- **Memory:**
 - ▶ Sophisticated page mode DRAM controller.
 - ▶ 4 pcs of 72-pin SIMM sockets with memory size from **1MB** to 64MB SIMM3 and SIMM4 socket support **2MB**, or 8MB double density SIMM.
 - ▶ Supports RAS only or ~~CAS-before-RAS~~ DRAM hidden refresh.
- **RTC:**
 - ▶ RTC and CMOS RAM build-in UMC8498 chip.
- **Slot:**
 - ▶ 6 16-bit ISA slots include two VL-BUS slots support 2 VESA master slots.
 - ▶ 100% ISA compatible.
 - ▶ VESA spec. **V2.0**.
- **FDC:**
 - ▶ **SMC37C665** supports I/O controller.
 - ▶ 2 floppy drives support **360K/720K/1.2M/1.44M/2.88M** and 3D mode floppy drives.
- **IDE:**
 - ▶ UM8672 chip supports up to 4 VESA IDE drives.
 - ▶ Hardware jumper settings for primary/secondary IDE enable/disable.
 - ▶ Device driver includes DOS, Windows, **OS/2**, and **SCO UNIX**.
 - ▶ Compatible with **ATA-2**, enhanced IDE, fast IDE, & ATAPI specification.

- **I/O:**
 - » **One** multi-mode parallel port with chipprotect circuitry supports standard, bi-directional, Enhanced Parallel Port (EPP), Extended Capabilities Port (ECP) mode.
 - » Two high speed 16C550 compatible UARTS
- **KBC:**
 - » AMIKEY II keyboard controller.
- **Power Management:**
 - » Compatible with EPA "Energy-Star" specification.
 - » Fully compatible with Microsoft APM.
 - » Supports SMM function for INTEL SL enhanced, Cyrix, UMC CPU.
 - » Supports 4 power management modes

Green Function	CPU Clock	HDD	Display
Disable	Full-on	Normal	on
DOZE	1/2	idle	on
STANDBY	1/4	Standby	Standby
SUSPEND	0 MHz	Sleep	Off

2

Memory Configurations

In this section, the UM4981 AIO DRAM and cache configurations are discussed. Users are recommended to read through this section before installing or removing memory.

2.1 System Memory

The UM4981 AIO DRAM provides tremendous flexibility to support a number of different on-board DRAM configurations. The on-board DRAM is installed with SIMM (Single-In-Line Memory Module). There are four memory banks capable of supporting 1MB up to 64MB.

The following table lists all the possible DRAM module combinations and the total memory amount for each option.

Bank 0 (SIMM 1)	Bank 1 (SIMM 2)	Bank 2 (SIMM 3)	Bank 3 (SIMM 4)	Total
1MB				1MB
1MB	1MB			2MB
			2MB*	2MB
1MB	1MB	1MB		3MB
1MB	1MB	1MB	1MB	4MB
		2MB*	2MB*	4MB
4MB				4MB
4MB	1MB			5MB
4MB	1MB	1MB		6MB
4MB	1MB	1MB	1MB	7MB
4MB	4MB			8MB
			8MB*	8MB
4MB	4MB	1MB		9MB
4MB	4MB	1MB	1MB	10MB
4MB	4MB	4MB		12MB
4MB	4MB	4MB	1MB	13MB

Continued

Bank 0 (SIMM 1)	Bank 1 (SIMM 2)	Bank 2 (SIMM 3)	Bank 3 (SIMM 4)	Total
4MB	4MB	4MB	4MB	16MB
		8MB*	8MB*	16MB
16MB				16MB
16MB	1MB			17MB
16MB	1MB	1MB		18MB
16MB	1MB	1MB	1MB	19MB
16MB	4MB			20MB
16MB	4MB	1MB		21 MB
16MB	4MB	1MB	1MB	22MB
16MB	4MB	4MB		24MB
16MB	4MB	4MB	1MB	25MB
16MB	4MB	4MB	4MB	28MB
16MB	16MB			32MB
16MB	16MB	1MB		33MB
16MB	16MB	1MB	1MB	34MB
16MB	16MB	4MB		36MB
16MB	16MB	4MB	1MB	37MB
16MB	16MB	4MB	4MB	40MB
16MB	16MB	16MB		48MB
16MB	1 6 M B	16MB	1MB	49MB
16MB	16MB	16MB	4MB	52MB
16MB	16MB	16MB	16MB	64MB

Table 1. Memory Configurations and Requirements

*: It means double density.

2.2 Cache Memory Subsystem

Option	TAG RAM (U28)	Cache Bank0 (U20,U21,U22,U23)	Cache Bank1 (U24,U25,U26,U27)
64K	8Kx8	8Kx8	8Kx8
128K	32Kx8	32Kx8	None
256K	32Kx8	32Kx8	32Kx8

Table 2. Secondary Cache Memory Configuration

3 Jumper Settings and Connectors

3.1 What kind of CPU Processor are you using ?

This section contains the detail descriptions of Intel, AMD, Cyrix, and UMC CPU processors. Before you setting the jumpers, you should read this section to know the CPU voltage, CPU clock, etc.

■ Intel CPU:

» Intel486 SX SL Enhance processor

A80486SX-xx: Intel CPU: Product No. - Frequency (either 25 or 33 MHz)
 FFFFFFFF: FPO#
 &E5V1XSX###: &E = SL Enhance; 5 volt; 1X clock; spec#

» IntelSX2 SL Enhance processor

A80486SX2-50: Product No. - Frequency (50MHz)
 FFFFFFFF: FPO#
 &E5V1XSX###: &E =SL Enhance; 5 volt; 1X clock; spec#

» Intel486 DX SL Enhance processor

A80486DX-33: Product No. - Frequency (33 MHz)
 FFFFFFFF: FPO#
 &E5V1XSX###: &E =SL Enhance; 5 volt; 1X clock; spec#

» IntelDX2 SL Enhance processor

A80486DX2-xx: Product No. - Frequency (either 50 or 66 MHz)
 FFFFFFFF: FPO#
 &E5V1XSX###: &E =SL Enhance; 5 volt; 1X clock; spec#

» IntelDX2 SL Enhance LI-WB processor (P24D)

A80486DX2-xx: Product No. - Frequency (either 50 or 66 MHz)
 FFFFFFFF: FPO#
 &EW5V1XSX###: &E =SL Enhance; W=LI-Write Back; 5 volt;
 1X clock; SX954/SX955

» IntelDX4 SL Enhance processor (P24C)

A80486DX4-xx: Product No. - Frequency (either 75 or 100 MHz)
 FFFFFFFF: FPO#
 &E3VOLT SX###: &E =SL Enhance; 3.3 volt; New S-spec#

» IntelDX4 Over Drive processor

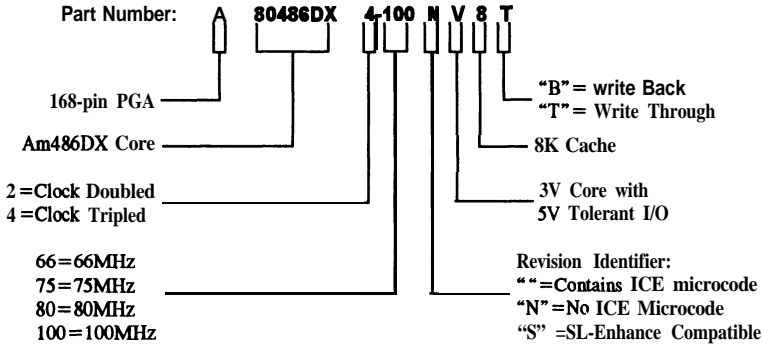
DX4ODPR-xx: Product No. - Frequency (either 75 or 100 MHz)
 FFFFFFFF: FPO#
 ##### v1 .x: SL Enhance; 5 volt; New S-spec#

» Intel SX/SX2/DX/DX2 Non-SL Enhance processor

A80486xx-xx:
 FFFFFFFF:
 SX###:

Product No. - Frequency (25/33/50/66 MHz)
 FPO#
 5 volt

■ AMD CPU:



■ Cyrix CPU:

Part No.	CPU Frequency	Nominal Voltage	Voltage range
CX486DX2-V50	50MHz	3.3 or 3.6 volts	3.15 - 3.75 volts
CX486DX2-V60	60MHz	3.6 Volts	3.45 - 3.75 volts
CX486DX2-V80	80MHz	4.0 volts	3.8 - 4.2 Volts

■ UMC CPU:

Part No.	CPU Frequency	Package	Socket Type
U5S-SUPER25	25MHZ	168PGA	s x
U5S-SUPER33	33MHZ	168PGA	s x
U5S-SUPER40	40MHZ	168PGA	s x
U5SD-SUPER25	25MHZ	168PGA	DX
U5SD-SUPER33	33MHZ	168PGA	DX
U5SD-SUPER40	40MHZ	168PGA	DX

Note If there are no "V" (Voltage) list above on the table of AMD, Cyrix and UMC CPU, the meanings are 5V core CPU.

3.2 Setting the Jumpers

The table below summarizes the appropriate function and setting of each jumper on the UM4981 AIO. Please refer to the next section for their graphic descriptions.

	Function	Jumper Settings
CPU Type	Intel 80486SX	JP16 open JP17 open JP18 short 2-3 JP19 open JP20 open JP21 short 2-3 JP29 open JP41 open
	Intel 80486DX/DX2 AMD Am486DX/DX2/DX4 NV8T	JP16 open JP17 open JP18 short 2-3 JP19 open JP20 short 1-2 JP21 short 1-2, 3-4 JP29 open JP41 open ☆ See Next Page
	Intel 80486SX/SX2 SL Enhance	JP16 short 1-2, 3-4 JP17 short 5-6 JP18 short 1-2 JP19 short 1-2 JP20 open JP21 short 2-3 JP29 open JP41 open
	Intel 80486DX/DX2/DX4 (SL Enhance, LI-WT) Overdrive ODP	JP16 short 1-2, 3-4 JP17 short 5-6 JP18 short 1-2 JP19 short 1-2 JP20 short 1-2 JP21 short 1-2, 3-4 JP29 open ☆ See Next Page JP41 open
	Intel 80486DX2 (P24D LI-Wriie Back) AMD Am486 DX2/DX4 SV8T Plus (LI-WB)	JP16 short 1-2, 3-4 JP17 short 3-4, 5-6 JP18 short 1-2, 4-5 JP19 short 1-2, 4-5 JP20 short 1-2 JP21 short 1-2, 3-4 JP29 open ☆ See Next Page JP41 open

Continued

Function		Jumper Settings
CPU Type	Intel POD5V (P24T)	JP16 short 1-2, 3-4 JP17 short 5-6 JP18 short 1-2 JP19 short 1-2 JP20 short 2-3 JP21 short 1-2, 3-4 JP29 open JP41 open
	Cyrix Cx486S (M6)	JP16 short 2-3, 4-5 JP17 short 2-3, 4-5 JP18 short 1-2, 3-4 5-6 JP19 short 1-2, 3-4 JP20 open JP21 short 2-3 JP29 open JP41 open
	Cyrix Cx486DX/DX2 (M7)	JP16 short 2-3 JP17 short 2-3, 4-5 JP18 short 1-2, 3-4 5 6 JP19 short 1-2, 3-4 JP20 short 1-2 JP21 short 1-2, 3-4 JP29 open JP41 open
	UMC U5S-SUPER	JP16 short 2-3 JP17 short 4-5 JP18 short 2-3 JP19 short 3-4 JP20 open JP21 short 2-3 JP29 open JP41 open
Intel 80486DX4 AMD Am486 DX2/DX4 SV8B (PIUS)	2X external CLK	JP29 short 2-3
	3X external CLK	JP29 open (default)
AMD Am486DX2/DX4 NV8T	2X external CLK	JP41 short
	3X external CLK	JP41 open

Continued

Function		Jumper Settings
CPU Clock Select	25MHz	JP9 open JP10 open JP11 short,
	33 MHz	JP9 short JP10 short JP11 short
	40 MHz	JP9 open JP10 short JP11 short
	50 MHz	JP9 short JP10 open JP11 open
Cache Memory Settings	64KB (8Kx8) (two Bank)	JP22 short 2-3 JP23 open JP24 open JP25 open
	128KB (32Kx8) (one Bank)	JP22 short 1-2 JP23 short 1-2 JP24 open JP25 short
	256KB (32Kx8) (two Bank)	JP22 short 2-3 JP23 short 2-3 JP24 short JP25 short
CPU Speed Select	≤ 33MHz	JP28 open
	>33MHz	JP28 short
VESA Wait State	0 Wait State	JP27 open
	1 Wait State	JP27 short
CPU Voltage	+5Vcc (from standard power supply unit)	JP26 short JP40 open
	+3.3Vcc (from 3.3V power supply unit)	JP26 short JP40 short 1-2, 3-4
	Others	JP26 VR-100 / VR-102 JP40 open
Flash ROM	only when programming a+5V flash ROM	JP2 short 1-2
	only when programming +12V flash ROM	JP2 short 23
Normal EPROM		JP2 open
On-Board Multi I/O	Enable	JP3 short 1-2
	Disable	JP3 short 2-3

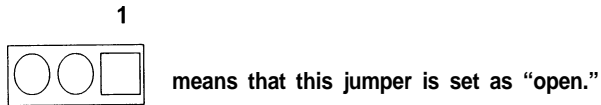
Continued.....

Function		Jumper Settings
Parallel Port Mode Select	Enable ECP Mode	JP8 short
	Standard (Normal) Mode	JP8 open
ECP Mode DMA Selection of Parallel Port	DRQ1, DACK1	JP5 short 1-2 JP6 short 1-2
	DRQ3, DACK3	JP5 short 2-3 JP6 short 2-3
Primary IDE	Enable	JP35 short 1-2
	Disable	JP35 short 2-3
Secondary IDE	Enable	JP36 short 1-2
	Disable	JP36 short 2-3
Hard Disk Timing Control	Active Time: 15T Cycle Time: 30T Speed: 1 Define Hdd Capacity: 40/50 MHz	JP37 short 23 (IDO) JP36 short 23 (ID1)
	Active Time: 15T Cycle Time: 19T Speed: 2 Define Hdd Capacity: 25/33 MHz	JP37 short 1-2 (IDO) JP38 short 23 (ID1)
	Active Time: 9T Cycle Time: 13T Speed: 3 Define Hdd Capacity: <20 MHz or Enhance IDE	JP37 short 23 (IDO) JP38 short 1-2 (ID1)
	Active Time: 18T Cycle Time: 37T Speed: 0 Define Hdd Capacity: <40 MB or Non ATA Support	JP37 short 1-2 (IDO) JP38 short 1-2 (ID1)

Table 3. Jumper Settings

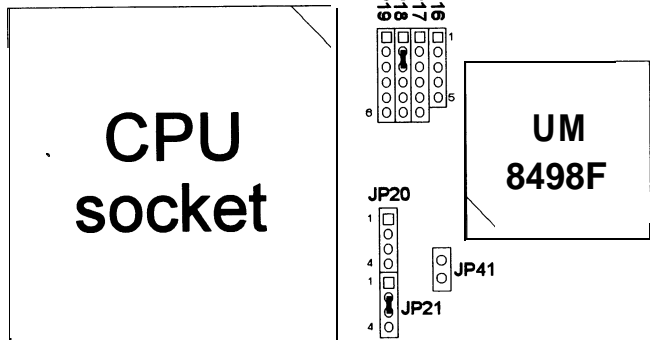
Note: T: CPUCLK
 Active Time : I/O Read timings & Write timings
 Cycle Time : According to ATA Rev. 3.x, this time variable is the P/O timing parameter for IDE driver I/O access cycle.

3.3 Graphic Descriptions of Jumper Settings



CPU TYPE

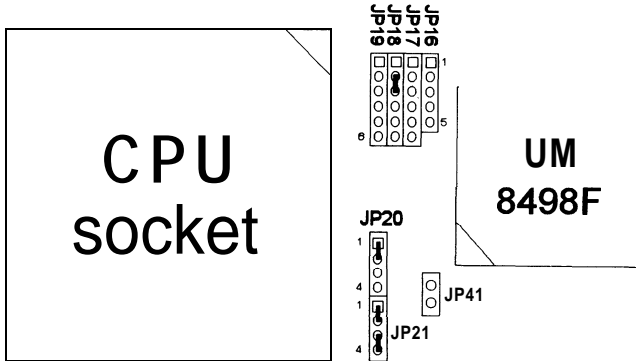
1. Intel 80486SX CPU installed on board



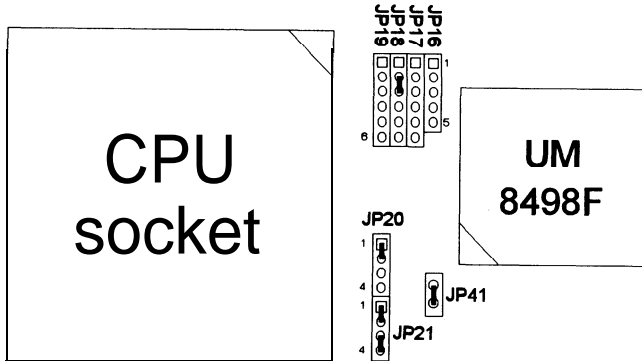
JP29



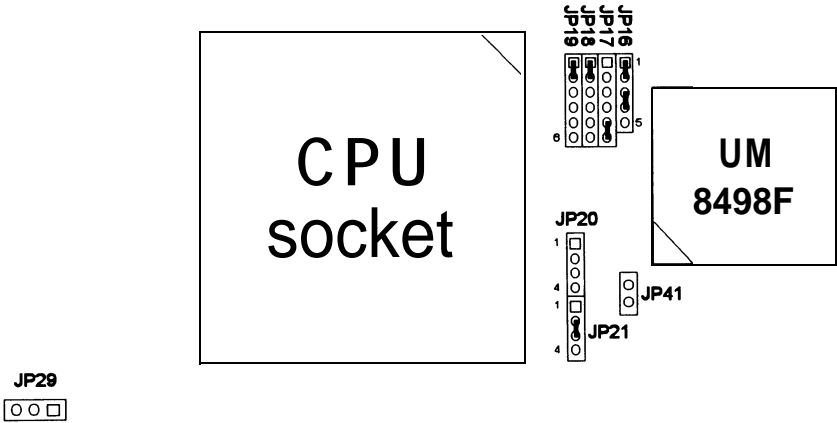
2. Intel 80486DX/DX2, AMD Am486DX,
AMD Am486 DX4 NV8T (Internal CLK 3X) CPU installed on board



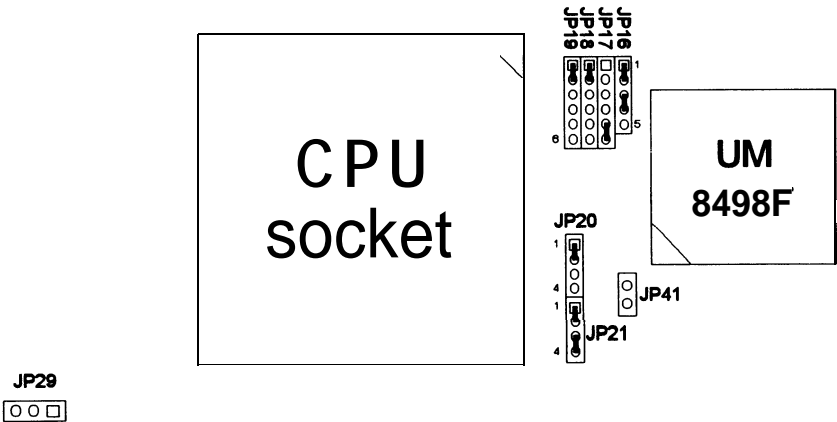
3. AMD Am486DX2 NV8T (Internal CLK 2X) CPU installed on board



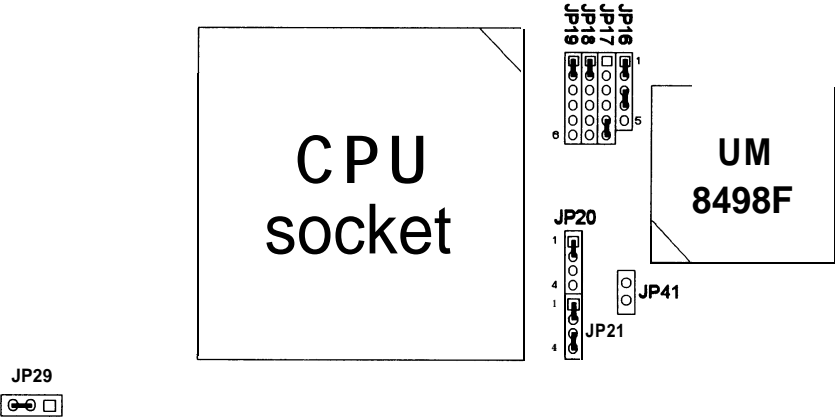
4. Intel 80486SX/SX2 SL Enhance CPU installed on board



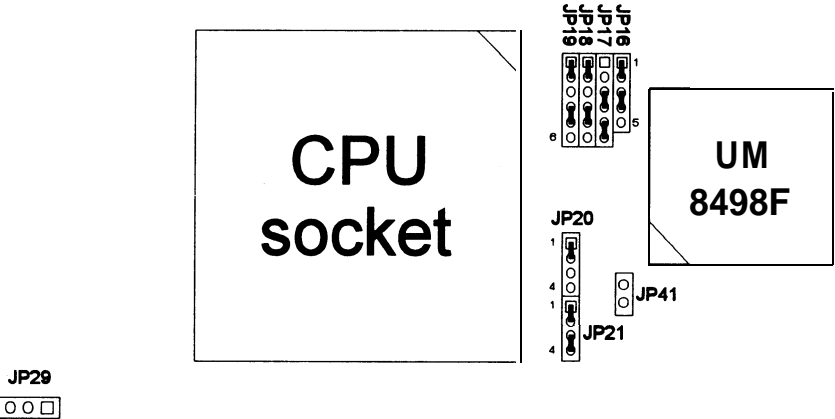
5. Intel 80486DX/DX2 SL Enhance,
Intel 80486DX4 (Internal CLK 3X) CPU installed on board



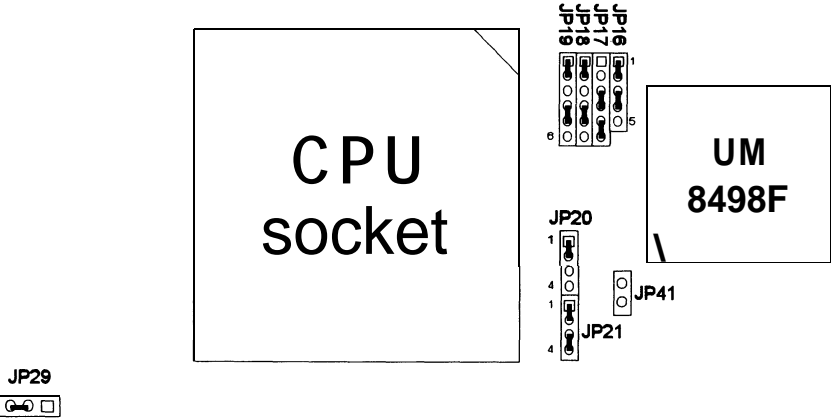
6. Intel 80486DX4 (Internal CLK 2X) CPU installed on board



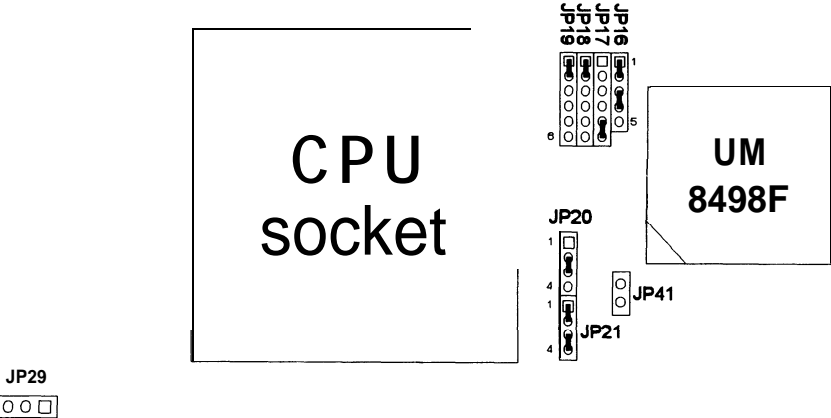
7. Intel 80486DX2 (P24D L1-Write Back) , AMD Am486DX4 SV8B (Plus) (Internal CLK 3X)CPU installed on board



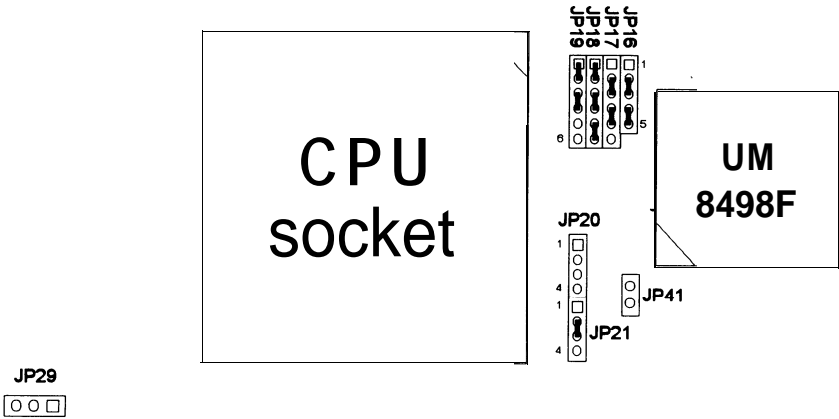
8. AMD Am486DX2 SV8B(Plus)(Internal CLK 2X) CPU installed on board



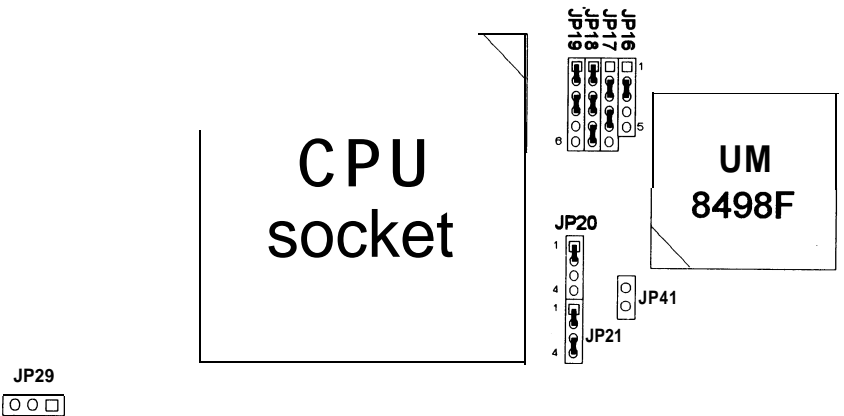
9. Intel POD5V (P24T) CPU installed on board



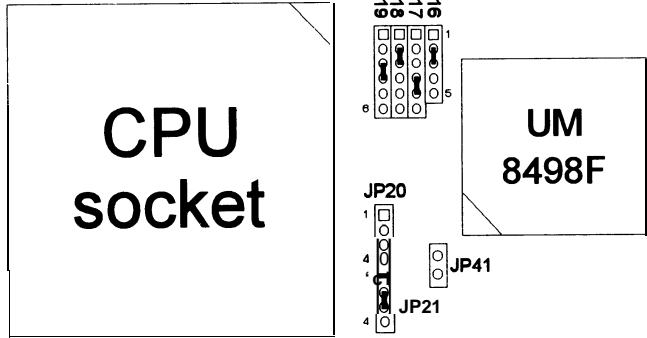
10. Cyrix Cx486S (M6) CPU installed on board



11. Cyrix Cx486DX/DX2 (M7) CPU installed on board



12. UMC USS-SUPER CPU installed on board

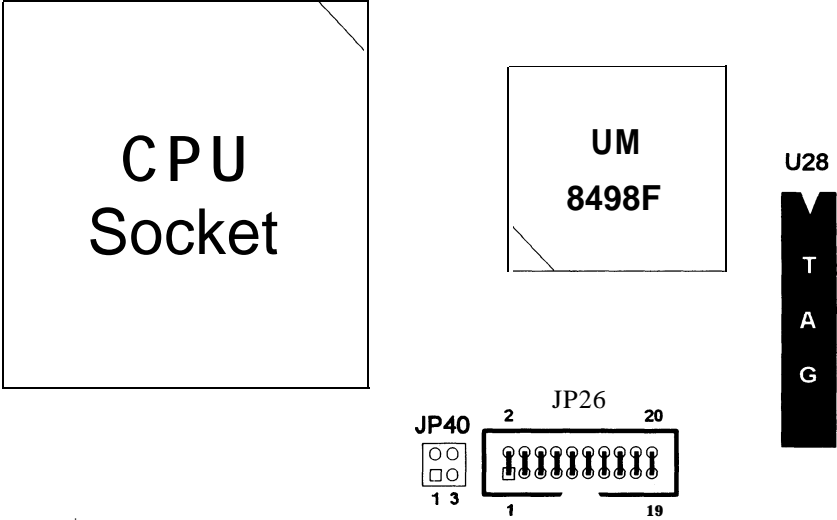


JP29

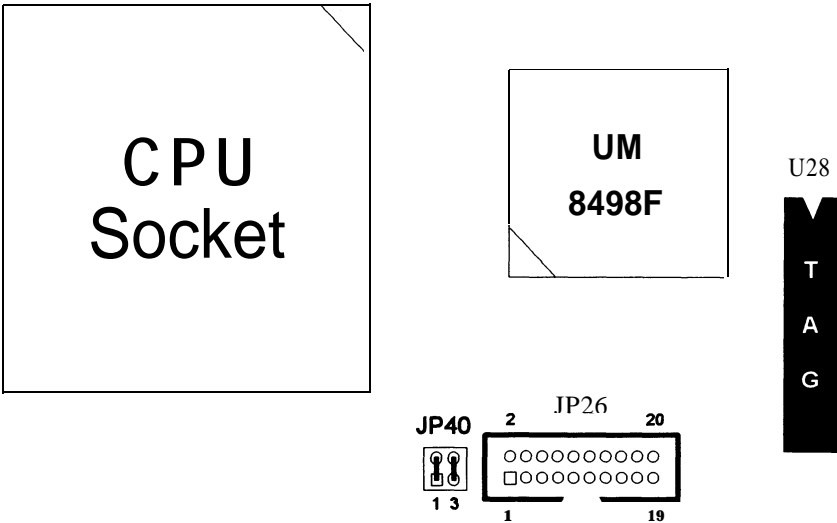


CPU Voltage Source

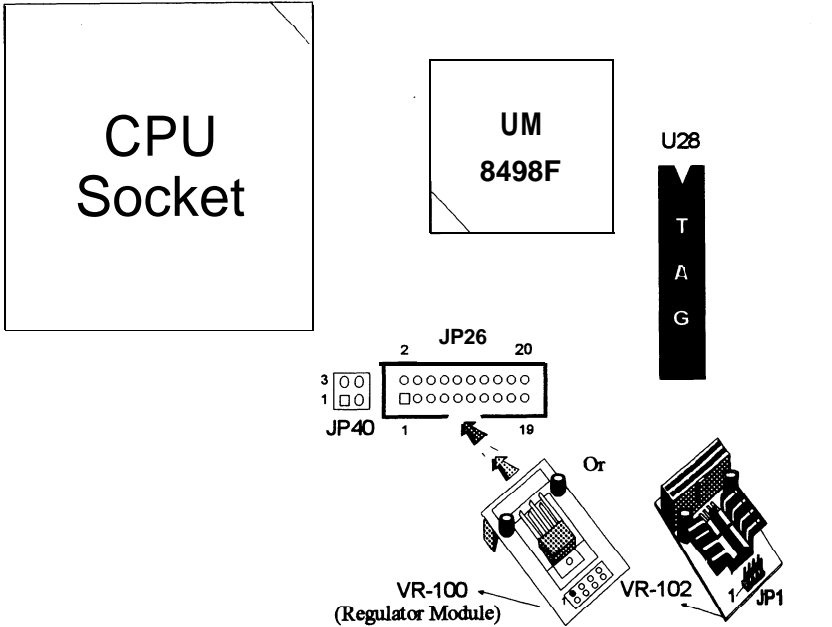
1. +5Vcc (SOURCE from standard power supply unit)



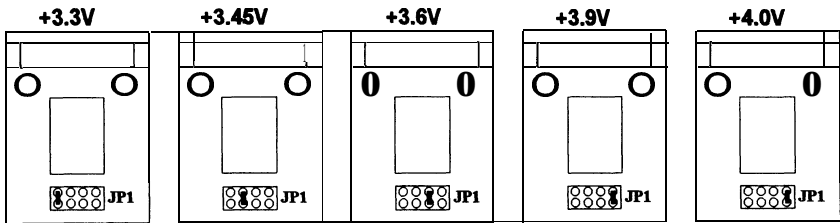
2. +3.3Vcc (source from 3.3V power supply unit)



3. Others



Jumper Settings for VR-100 and VR-102 :



Only for VR-100 with 3-pin regulator

3.4 Connectors

The following table lists the connectors located on the UM4981 AIO. They are used to connect with some peripheral devices to enhance the operating performance of the system.

Refer to the Mainboard layout figure on next page for the positions of all the connectors on the mainboard.

Connector	Function
J1	Parallel Port Connector
J2	Serial Port 1 Connector
J3	Serial Port 2 Connector
J4	FDD Connector
J5	Primary IDE Connector
J6	Secondary IDE Connector
J7	PS/2 Keyboard Connector (optional)
J8	PS/2 Mouse Connector (optional)
JQ	PS/2 Mouse Header
JP1	Battery Connector
JP14	Not use (only for internal 8042)
JP26	Voltage Regular Modulator
JP30	

The diagram shows a 20-pin connector header with two rows of pins. The top row is numbered 10 to 1 and the bottom row is numbered 20 to 11. Labels with brackets indicate the following functions:

- Reset**: Pins 10 and 9
- Turbo Switch**: Pins 7 and 6
- SMI Switch**: Pins 5 and 4
- Turbo LED**: Pins 3 and 2
- Speaker**: Pins 17, 18, 19, and 20
- Keyboard Lock**: Pins 13, 12, and 11
- Input**: Pin 14
- Pin 1 is a black square.
- Pin 3 has a '-' sign, and pin 2 has a '+' sign.
- Pin 13 has a '-' sign, and pin 11 has a '+' sign.

JP39	HDD LED
KB1	Keyboard Connector
PI	Standard Power Connector
P2	3.3V Power Connector (Optional)

Table 4. Mainboard Connectors

3.5 Board Layout

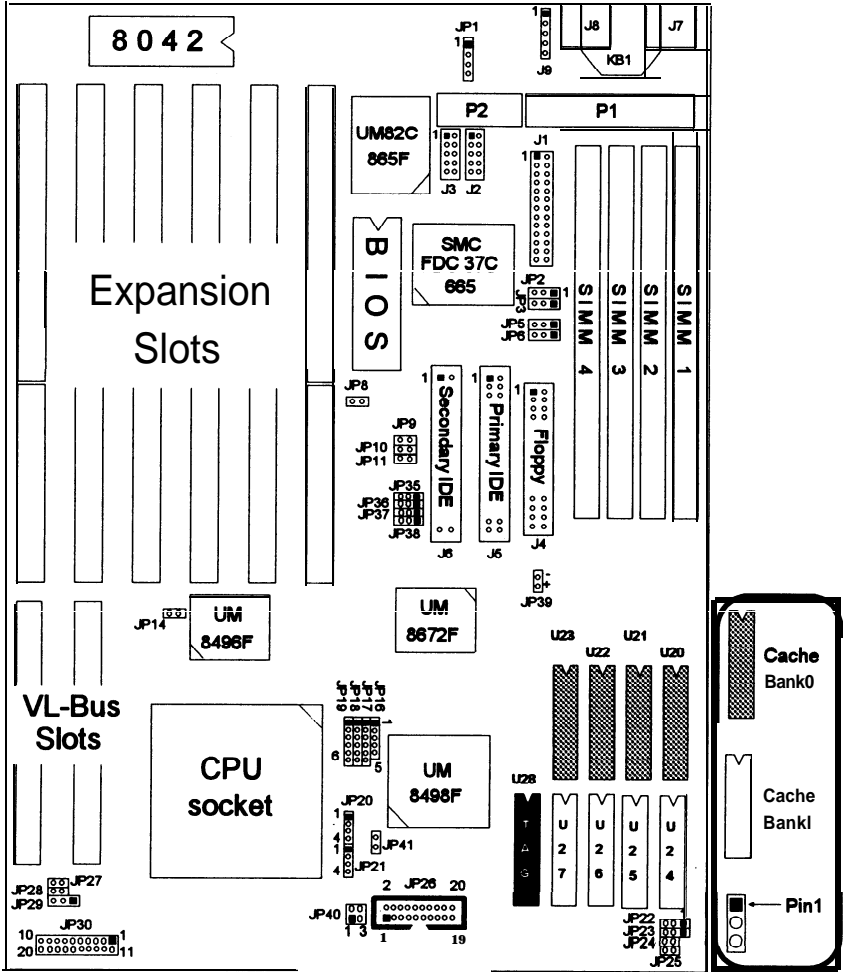


Figure 1. UM4981AIO Mainboard Layout

4

Built-in BIOS Setup Program

4.1 Setup Program

Use the BIOS for UM4981 AIO to record changes in your hardware and to control its special features. The Setup program uses a number of menus in which you can specify changes to your hardware and turn the special features to on or off.

To enter the BIOS Setup program, turn on or reboot the system. Press the key then the system displays the following message:

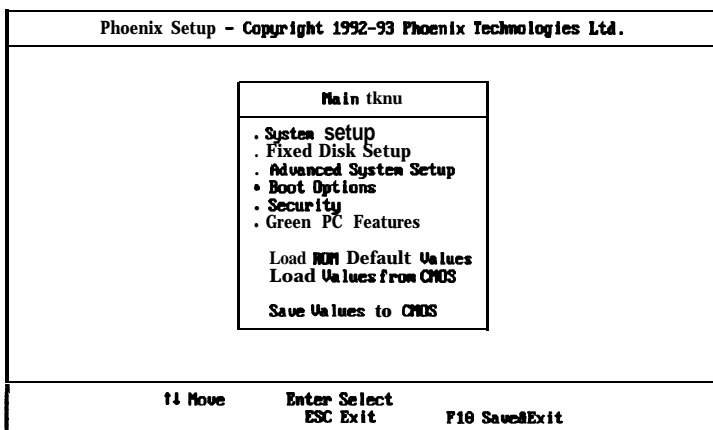


Figure 2. Setup Main Menu

It is highly recommended that you list down all the values of the Setup program before making any changes. Doing so will save a lot of time restoring the system back in the event of a configuration memory loss.

Note: *On-screen instructions at the bottom of each screen explain how to use the program.*

- System Setup - allows checking or modification of general configuration information.
- **Fixed Disk Setup** - allows for automatic detection of the hard disk drive type including the number of cylinders and heads, write pie-compensation time, read/write head landing zone, number of sectors per track and LBA mode control.

- **Advanced System Setup** - sets **the** various system options for the user, including the Integrated Peripherals, System Timing, Memory Shadow, and Advanced **Chipset** Control.
- **Boot Options** - enables the system to perform seek on the floppy drives before booting. And determines the sequence with which the system will proceed when booting the operating system.
- **Security** - provides special access for the user to enter the operating system and Setup program, and restricts unauthorized access to the floppy disk drives.
- **Green PC Features** - allows the timer settings for the DOZE, STANDBY and SUSPEND modes. It also lists the SMI events by which the system wakes up from STANDBY or SUSPEND modes. If the device is not active, Power Management Function will slow down the CPU speed and both IDE and monitor will be put into doze, standby, or suspend mode.
- **Load ROM Default Values** - allows for automatic configuration of all the above options using the default values of BIOS.
- **Load Values from CMOS** - allows for automatic configuration of all *the* above options using the previous values saved in the CMOS SRAM.
- **Save Values to CMOS** - saves the changes you have made in the Setup program, then quits and reboots the system.

To choose an item from the Setup main menu, move the cursor to appropriate line using the Up <↑> and Down<↓> arrow keys and press <Enter > .

4.2 System Setup

Phoenix Setup - Copyright 1992-93 Phoenix Technologies Ltd.			
System Setup			
System Time:	[00]:58:59]		
System Date:	[04/01/1994]		
Video System:	[EGA / UGA]		
System Memory:	640 KB		
Extended Memory:	1 MB		
Diskette Drive E1:	[Not Installed]		
Diskette Drive B:	[Not Installed]		
Keyboard:	[Installed]		
↑↓ Move	ESC Exit	PgUp Previous Value PgDn Next Value	F5 Previous Configuration F6 Default Configuration

Figure 3. System Setup

System Time - includes hours, minutes, seconds but only the values of hour and minute can be set.

System Date - allows manual setting of the electronic calendar on the mainboard.

Video System - specifies the display adapter installed.

System Memory and Extended Memory - displays important information about your system which includes the conventional and extended memory sizes. They are updated automatically by the Setup program according to the status detected by the BIOS self-test. This section of the System Setup screen is for viewing purpose only and manual modifications are not allowed.

Diskette Drives A: and B: - specify the capacity and format of the floppy drives installed in your system.

Keyboard - Selects install/not install for keyboard device setting.

4.3 Fixed Disk Setup

The Fixed Disk Setup provides auto configuration of the hard disk drives installed in the system. After pressing the < Enter > key on this item on the main menu, the screen will display the following screen.

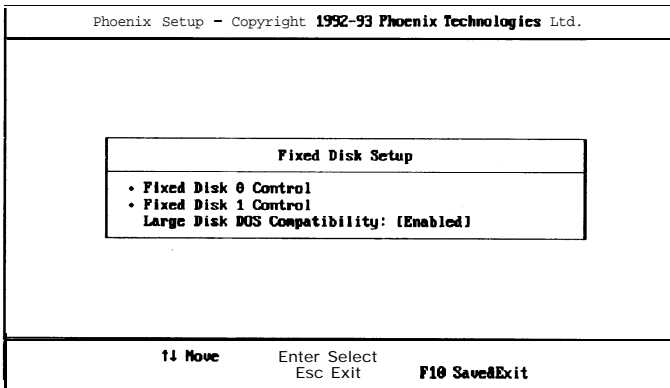


Figure 4. Fixed Disk Setup Screen 1

Large Disk DOS Compatibility - provides support for hard disk drives with capacities over 528MB. Set this option to "**Enabled**" under DOS compatibility environment. When running the system under UNIX, it is highly recommended to set it to "Disabled". The default value of this option is "**Enabled**".

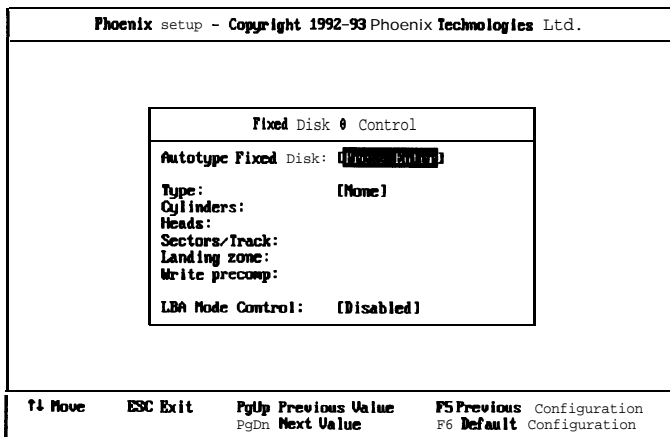


Figure 5. Fixed Disk Setup Screen 2

Once the program detects the type of hard disk 0 **and/or** 1 installed, it will display the relative information such as the type, cylinders, heads, write precompensation, landing zone, and number of sectors per track.

If the program fails to detect the hard disk(s) or the <Enter > key was not pressed in the **Autotype** Fixed Disk option, manual setting of the values is recommended.

Autotype Fixed Disk - detects the type of fixed disk 0 and/or 1 installed. If successful, it fills the remaining fields on this menu.

Type - 1 to 39 fills in remaining fields with values for predefined disk drives. *"User"* allows the user to fill in the remaining fields.

Cylinders - specifies the number of cylinders of the hard disk drive.

Heads - specifies the number of read/write heads of the hard disk drive.

Sectors/ Track - provides the number of sectors per track **defined** for the hard disk drive.

Landing Zone - refers to the cylinder number where the disk drive heads (read/write) are positioned to when the disk drive is parked.

Write Precomp - refers the cylinder number, above which, disk drive operations require reduced write current. Also specifies the number of cylinder at which to change the write timing.

LBA Mode Control - sets the mode of the LBA disk addressing. The available options are:

- **Disabled (default)**
- **Enabled**

4.4 Advanced System Setup

The Advanced System Setup allows the user to program four main groups of parameters under the Advanced System Setup namely the Integrated Peripherals, the System Timing, the Memory Shadow, and the Advanced Chipset Control. This BIOS Setup parameter is designed for programmers who wish to fine tune the on board chipset.

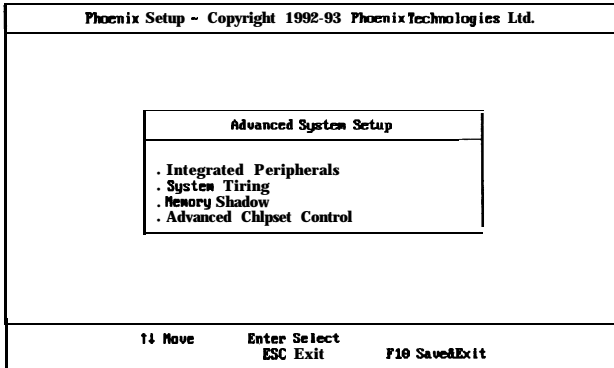


Figure 7. Advanced System Setup Screen

Integrated Peripherals

Selecting Integrated Peripherals from the Advanced System setup main menu display the following screen. The actual features displayed depend on the capabilities of your system's hardware.

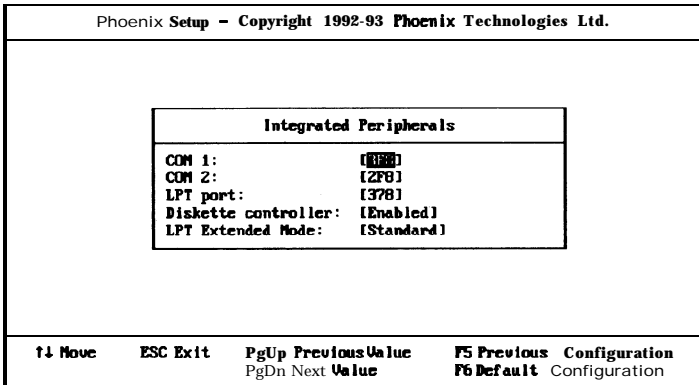


Figure 6. Integrated Peripherals

COM Port 1 - assigns the address of the primary serial ports on board. The available options are:

- 3F8 (default) . 3E8
- Disabled

COM Port 2 - assigns the address of the secondary serial ports on board. The available options are:

- 2F8 (default) . 2E8
- Disabled

LPT Port - assigns the address of the parallel port on board. This option also prevents the system from encountering any conflict when an add-on card with parallel port is installed in the future. The available options are:

- 378 (default) . 278
- Disabled . 3BC

Diskette controller - sets the diskette controller mode of the SMC 665 I/O chip to either on or off. the available options are:

- Enabled (default)
- Disabled

LPT Extended Mode -Sets LPT mode depending on the mode of parallel port device. "Standard" mode is commonly used as **uni-direction** device. "EPP" mode is used as bidirectional and enhanced parallel port mode. "ECP" mode is used as extended capabilities port for high speed DMA transfer.

- Standard (default)
- EPP Mode
- ECP Mode . ECP & E P P

System Timing

Selecting System Timing from the Advanced System Setup main menu displays the following screen. The actual features displayed depend on the capabilities of your system's hardware.

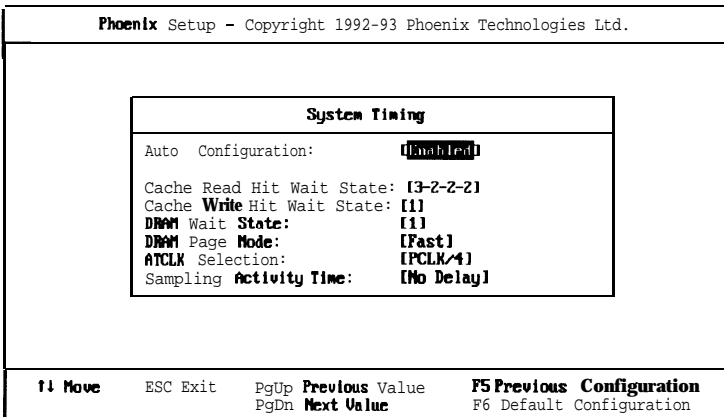


Figure 8. System Timing Screen

Auto **Configuration - Enabling** (default) will restrict you from making any changes. **Disabling** this option allows the values for the other parameters to be changed.

Cache Read Hit Wait State - determines the number of cycle times to be inserted when CPU reads data to SRAM. The setting depends on the speed of the CPU and SRAM. If the CPU is of high speed, the time required by SRAM to process data will need an extension, with the exception of some **SRAMs** that are fast enough to catch up with the speed of the CPU. The available options are:

- **3-2-2-2**
- **3-1-1-1**
- **2-1-1-1**

Cache Write Hit Wait State - the setting of this option makes no difference from that of the Cache Read Hit Burst. Check the CPU speed and SRAM before changing the default value. The available options are:

- **0**
- **1**
- **2**

DRAM Wait State - determines the number of wait states to be inserted when the CPU writes data into the local DRAM. The following are the available options.

- **0**
- **1**
- **2**

DRAM Page Mode - determines the number of wait states to be inserted the the CPU writes data into the local **DRAM**. Fewer wait states are recommended to improve the system performance. The following are the available options.

- Fast
- Normal

ATCLK Select - specifies the speed of the AT Bus clock of the system. The available options are:

- **PCLK/2**
- **PCLK/3**
- **PCLK/4**
- **PCLK/5**
- **PCLK/6**
- **PCLK/8**

Sampling Activity Time - sets the **UM8498F** Activity Monitor Register's sampling activity time when SMI events occurred. The available options are:

- No Delay
- Delay **1T**

Memory Shadow

Selecting Memory Shadow from the Advanced System Setup main menu displays the following screen. The actual features displayed depend on the capabilities of your system's hardware.

Phoenix Setup - Copyright 1992-93 Phoenix Technologies Ltd.	
Memory Shadow	
System shadow:	[Enabled]
Video shadow:	[Enabled]
Shadow Memory Regions	
C800 - CBFF:	[Disabled]
CC00 - CCFF:	[Disabled]
D000 - D3FF:	[Disabled]
D400 - D7FF:	[Disabled]
D800 - DBFF:	[Disabled]
DC00 - DPPF:	[Disabled]
↑↓ Move	WC Exit
PgUp Previous Value	F5 Previous Configuration
PgDn Next Value	F6 Default Configuration

Figure 9. Memory Shadow Screen

System shadow - allows shadowing of the system BIOS and improves the system performance. The available options are:

- Enable Into L2
- Enable Into L1+L2
- Enable (default)

Video shadow - sets the mode of the system's video BIOS shadowing mode. The available options are:

- Enabled (default)
- Disabled

Shadow Memory Regions - shadows the option ROM located in the specified blocks of memory, and can improve the system performance.

Note: Some option ROMs do not work properly when shadowed.

Advanced Chipset Control

Selecting **Advanced Chipset Control** from the **Advanced System Setup** main menu displays the following screen. Technicians use this menu then changing values in the **chipset** register and optimizing the system's performance.

Phoenix Setup - Copyright 1992-93 Phoenix Technologies Ltd.			
Advanced Chipset Control			
Internal cache feature:	[Write through]		
External cache:	[Enabled]		
External cache feature:	Write through1		
DRAM Parity check:	[Disabled]		
DRAM Refresh Method:	[CAS before RAS]		
Signal CAS# select:	[Chipset]		
Signal RC select:	[Chipset]		
Local Ready Delay Setting:	[1T]		
CPU ADS# Delay:	[None]		
I/O Recovery Time Select:	c7.31		
↑↓ Move	ESC Exit	PgUp Previous Value PgDn Next Value	F5 Previous Configuration F6 Default Configuration

Figure 10. Advanced Chipset Control Screen

Note: The contents of this menu depends on the **chipset** installed on your **main-board**, and **chipsets** vary widely. Consult your dealer before **changing** the items on this menu. Incorrect settings can cause your system to **malfunction**.

Internal cache feature - sets the internal code/data memory of the CPU to either **Write back** or **Write through** (default).

Note: The "Write back" option is only for **Cyrix Cx486S (M6)** and **Cyrix Cx486DX/DX2 (M7)** CPUs. This option does not serve any purpose for other CPUs.

External cache - sets the function of the second level cache on board. If **Enabled** (default), the settings of the following options can be set. **Disabling** this option will deem the following options useless.

External cache feature - sets the external secondary cache memory to either **Write back** or **Write through** (default).

DRAM Parity Check - During a local memory read cycle, the **UM8498F** not only monitors bus steering, but also checks the parity bit for each data byte from **DRAM** to ensure that the correct data is read. The available options are:

- Enabled
- Disabled (default)

DRAM Refresh Method - indicates the **DRAM** refresh style. The available options are:

- RAS only
- CAS before RAS (default)

Signal GA20# select - sets the method of select Signal GA20#. The available options are:

- Chipset (default)
- Keyboard

Local Ready Delay Setting - sets the delay time of Local Ready Signal. The available options are:

- IT (default)
- 2T/3T
- None

I/O Recovery Time Select -sets the I/O command recovery time except for some add-on cards. The available options are:

- 7,3 (default)
- 5,3/9,3/12,3/0,0/1,1/2,2/3,3/5,5/7,7/9,9/12,12

Note: *This option is not included in the BIOS which supports PS/2 mouse.*

CPU ADS# Delay - This option is only for the BIOS which supports PS/2 mouse. The available options are:

- None (default)
- IT

4.5 Boot Options

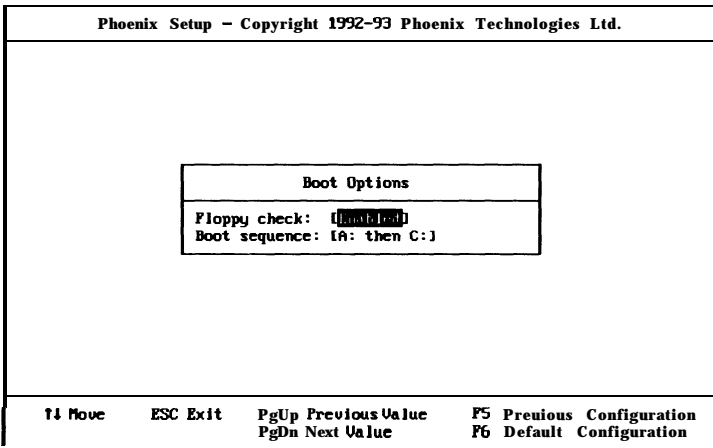


Figure 11. Boot Options Screen

Floppy check - enables the system to perform seek on the floppy drives before booting. The available options are:

- Enabled (default)
- Disabled

Boot sequence - sets the sequence from where the BIOS will attempt to load the operating system. The options are:

- A: then C: (default)
- C: then A:
- C: only

4.6 Security

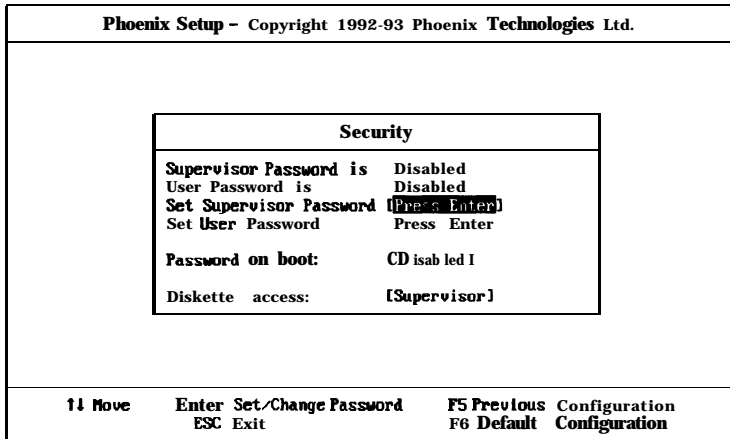


Figure 12. Security Screen

Supervisor Password is - shows whether the supervisor password is *enabled or disabled* (default).

User Password is - shows whether the user password is *enabled or disabled* (default).

Set Supervisor Password - requires a password when entering Setup. The passwords are not case sensitive. Pressing the <Enter> key will display a message requiring for the supervisor password which can be up to seven alphanumeric characters. This option also gives full access to the Setup menus.

Set User Password - Pressing the <Enter> key will display a message requiring for the user password which can be up to seven alphanumeric characters. This option also gives restricted access to the Setup menus and requires the setting of the Supervisor Password first.

Password on boot - determines whether the password is required on boot. The option needs the setting of the Supervisor Password. If Supervisor Password is set and this option is *disabled* (default), BIOS assumes that the user is booting.

Diskette access - restricts the use of floppy drives only to the supervisor when set as *Supervisor* (default). Also, choosing Supervisor for this option will require the setting of the Supervisor Password. Setting it as User allows access to the floppy drives at any time.

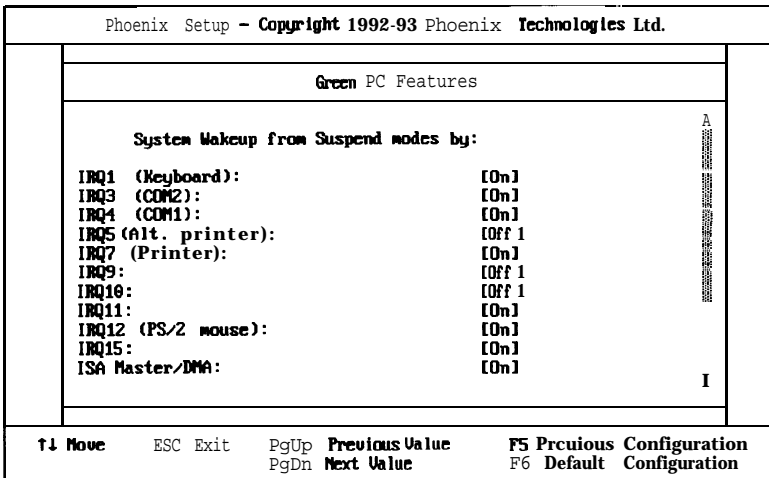


Figure 15. Green PC Features Screen 3

Power Saving Mode - *enables* or *disables* (default) the power saving mode feature of the chipset. Once enabled, the values of the following options can be set.

System Doze Timer - sets the time interval after system inactivity when the system enters DOZE mode. The available options are:

- 30s (default)
- Disabled
- 1/2/4/8 m

System Standby Timer - sets the time interval after system inactivity when the system events enters STANDBY mode. The options are:

- 2m (default)
- Disabled
- 4/8/16/32/64/128/256/512 m

System Suspend Timer - sets the time interval after system inactivity when the system enters SUSPEND mode. The available options are:

- 2m (default)
- Disabled
- 4/8/16/32/64/128/256/512 m

VGA with Power Down features - sets the method by which the VGA chip enters SLEEP mode. The options are:

- None (default)
- VESA DPMS
- Standard

Non-SMI CPU Support - selects the interrupt request signal to replace System Management Interrupt (SMI) events when the CPU does not support SMI. The options are:

- By IRQ10 (default)
- By IRQ15

Note 1: *If your CPU is Intel S-series, Cx486S/DX/DX2 or UMC U5 series CPU, it can support **varied operating systems** for SMI features, such as, MS-DOS, OS2, and Windows NT, etc.*

Note 2: *If your CPU is not one of the above CPU types, the system supports **IRQ green-function service**. The **IRQ mode** for green-function only supports MS-DOS. Therefore, if your **operating system** is not MS-DOS, you must set **Power Saving Mode disabled**.*

Hard Disk Standby Timer - sets the time interval after hard disk inactivity when the system events enters STANDBY mode. The options are:

- Disabled (default)
- 1-15 m

Advanced Power Management Setup

System enters Doze/Standby modes by - The menu lists the SMI events by which the system enters Doze or Standby modes. Switch the following parameters to on or off.

- VGA access
- Hard Disk access
- COM access
- ISA Master access
- Floppy access
- Keyboard access
- LPT access
- VESA Slave access

System Wakeup from Suspend modes by - The menu lists the SMI events by which the system wakes up from SUSPEND mode. Switch the following parameters to on or off.

- IRQ1 (Keyboard)
- IRQ3 (COM2)
- IRQ4 (COM1)
- IRQ5 (Alt. printer)
- IRQ7 (Printer)
- IRQ9
- IRQ10
- IRQ11
- IRQ12 (PS/2, mouse)
- IRQ15
- ISA Master/DMA

4.8 Load ROM Default Values

Press **“Load ROM Default Values”** in the screen of **“Main Menu”** (Figure 2). After loading the default values, press **<Enter >** to continue.

If the BIOS program detects a problem in the integrity of the CMOS during **bootup**, it will display a message asking you to either press the **** key to run Setup or the **<F1>** key to resume booting. This probably means that the CMOS values have been corrupted or modified incorrectly, perhaps by an application program that **changes** data stored in CMOS.

Press the **<F1>** key to resume the boot or **** to run Setup with the ROM default values already loaded in the menus. You can make other changes before saving the values to CMOS.

4.9 Load Values from CMOS

If you change your mind about your selections and have not yet saved the values to CMOS, you can restore the values you previously saved to CMOS. Then, select **“Load Values from CMOS”** on the Main Menu (Figure 2)

4.10 Save Values to CMOS

After making your selections on the Setup menus, always select **“Save Values to CMOS”** in order to make them operative. The screen will then display a message asking you whether you would like to save *and exit or not*. **Unlike** standard RAM memory, CMOS RAM is sustained by an on board battery and stays on after you turn your system off.

If you attempt to exit without saving, the **program** will ask you if you would like to save the changes made before exiting.

During **bootup**, BIOS for the **chipset** attempts to load the values you saved in the CMOS RAM. If the values saved in the CMOS cause the system boot to fail, reboot and press the **** key to enter Setup. In Setup, you may load the ROM default values (as described in the section 4.8) or try to change the values that caused the boot to fail.

If you made changes to the CMOS values and then press the **<ESC >** key, the program will prompt you whether you would like to **QUIT** without saving or not.

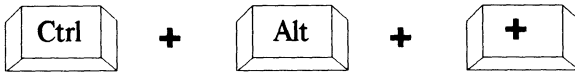
Appendix A

Setting the System Speed

There are two methods in changing the system processing speed of your UM4981 AIO. The first method is implemented through the hardware turbo switch JP30. The second method, software setting, requires the simultaneous pressing of several keys on the keyboard known as hot-keys. You may change the speed during normal operate while working with your application program.

The hot-key combinates for setting the system speed on your UM4981 AIO are shown on the following diagrams.

■ High Speed



■ Low Speed

