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RMA FORM

CHAPTER 1 INTRODUCTION

1.1 Overview

The EXP4349 is a new single-chip solution that offers the cost-effective system integration for 486 and P24T systems. Besides the standard features, the EXP4349 also supports VESA standards and power management features for most of advanced CPUs on the market. With the use of ALI-1431 TTL ASIC buffer, the TTL components required on the main board are further reduced.

1.2 System Features

- Supports INTEL 486SX, DX, DX2, DX4, P24T, S-SERIAL, 386DX.
AMD DX, DX2, DXL.
CYRIX M6, M7, DX2.
TI 486SXL 486DLC.
- Supports H/W GREEN/WAKE UP switch.
- Supports 4 system states for power saving : DOZE / STANDBY / SUSPEND / ON.
- Supports L1/L2 write back/write through cache feature.
- Supports 2 MASTER / 3 SLAVE 32-bit VESA Bus.
- Supports 64KB/ 128KB/ 256KB cache size.
- Supports 30 pin/ 72pin SIM MODULES.
- Supports SMI/ SMM/ PMU/ APM power controllers.

1.3 System Specifications

Processor :	INTEL 486DX/SX/DX2/DX4/P24T, CYRIX DX4 M6/M7, AMD DX/DX2/DXL 486CPU, T1 486SXL, 386DX, 486DLC
CPU Clock :	25/33/40/50 MHz CPU
Memory :	up to 64MB
Memory Configuration :	2M/4M/5M/8M/16M/17MB/20M/32M/64M
SRAM Configuration :	64K/128K/256K
BIOS Subsystem :	PHOENIX BIOS AWARD BIOS
Additional BIOS feature :	Set program resides in ROM
I/O Subsystem NO. slot :	Six 16-bit ISA Bus & Three 32-bit Local Bus
Dimension :	9.8" × 8.8" , 2/3 baby AT size

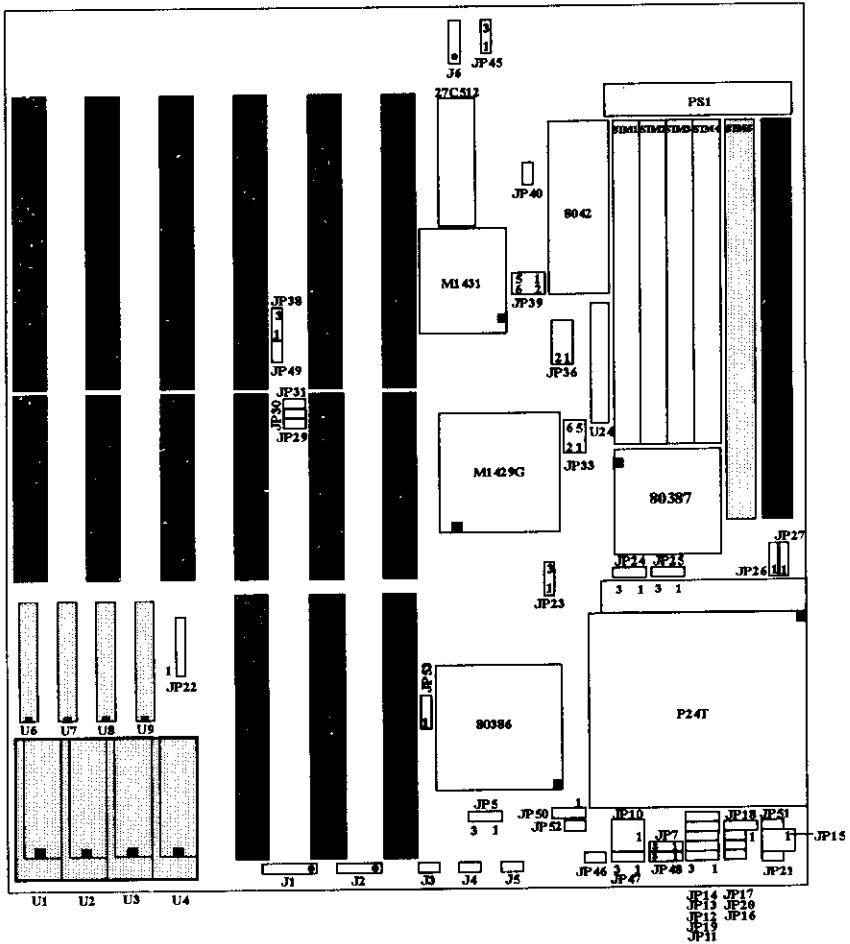
Additional features

Miscellaneous connectors :	Reset Button, Internal Battery, Turbo SW, Flash LED(Turbo LED) for power green
Board design :	4-layer implementation for low noise operation

1.4 System Performance

CPU TYPE	SOFTWARE	LANDMARK SPEED Ver:2.0	POWER METER MIPS Ver:1.7	NORTON CPU SPEED Ver:5.0
Intel	486DX-33MHz	111.36MHz	14.3MIPS	72.00
AMD	486DX-40MHz	133.83MHz	17.4MIPS	84.80
Cyrix	M7DX-40MHz	131.97MHz	15.5MIPS	68.00
Intel	486DX2-50MHz	167.63MHz	21.6MIPS	108.30
Cyrix	M7DX2-50MHz	165.30MHz	19.8MIPS	85.00
Intel	486DX-50MHz	167.64MHz	21.3MIPS	108.40
Intel	486DX2-66MHz	222.73MHz	28.7MIPS	144.00

1.5 EXP4349 BOARD LAYOUT



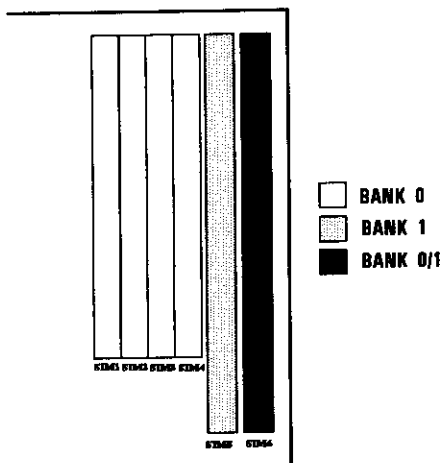
CHAPTER 2 INSTALLATION

Before the system is ready to operate, the hardware must be set up for various functions of the system. To set up the EXP4349 main board is a simple task. The user only has to set a few jumpers, connectors and sockets.

2.1 DRAM INSTALLATION

The EXP4349 main board can support expanded memory from 2MB to 64MB. Either 256K, 1MB, 2MB, 4MB, 8MB, 16MB or 32MB SIMM DRAM can be used on the EXP4349 motherboard.

- The board layout below shows the locations of the DRAM memory banks :



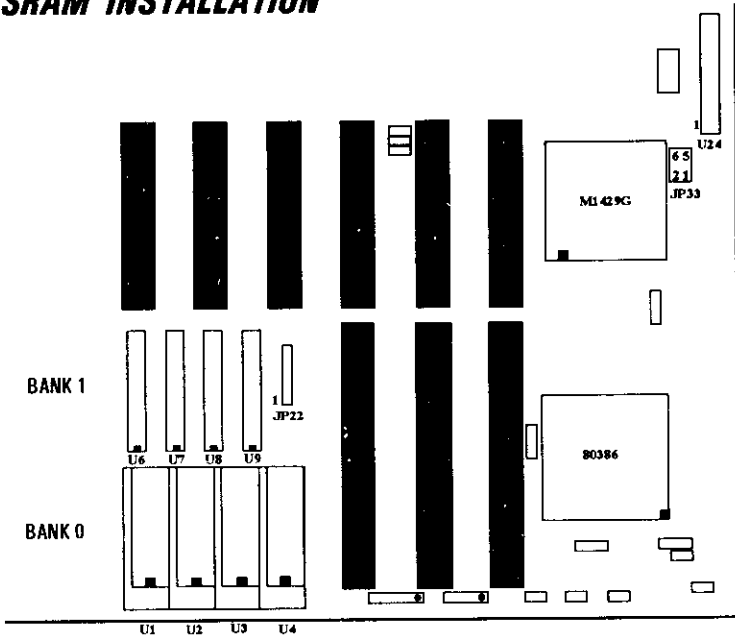
- ☞ The motherboard consists of two memory banks, BANK 0, BANK 0/1, BANK 1. For DRAM installation, completely fill up BANK 0, then fill up BANK 1.

DRAM CONFIGURATION SELECT

- Memory can be installed in many ways and the combinations are shown in the following table:

BANK 0 SIM1-SIM4	BANK 0/1 SIMB	BANK 1 SIM5	TOTAL MEMORY
256KB	NONE	NONE	1MB
NONE	1MB	NONE	1MB
256KB	NONE	1MB	2MB
1MB	NONE	NONE	4MB
NONE	4MB	NONE	4MB
256K	NONE	4MB	5MB
1MB	NONE	4MB	8MB
NONE	4MB	4MB	8MB
4MB	NONE	NONE	18MB
NONE	18MB	NONE	18MB
4MB	NONE	4MB	20MB
NONE	18MB	4MB	20MB
NONE	18MB	18MB	32MB
4MB	NONE	18MB	32MB
18MB	NONE	NONE	84MB
18MB	NONE	4MB	88MB
18MB	NONE	18MB	80MB

2.2 SRAM INSTALLATION



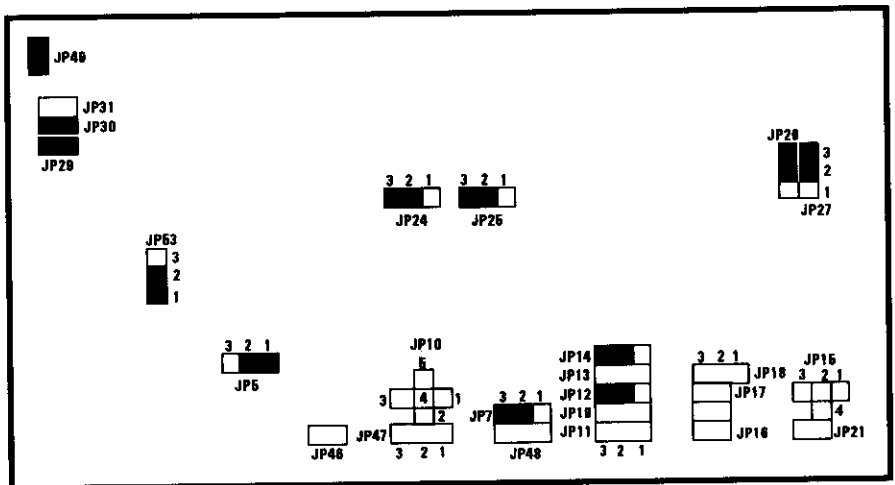
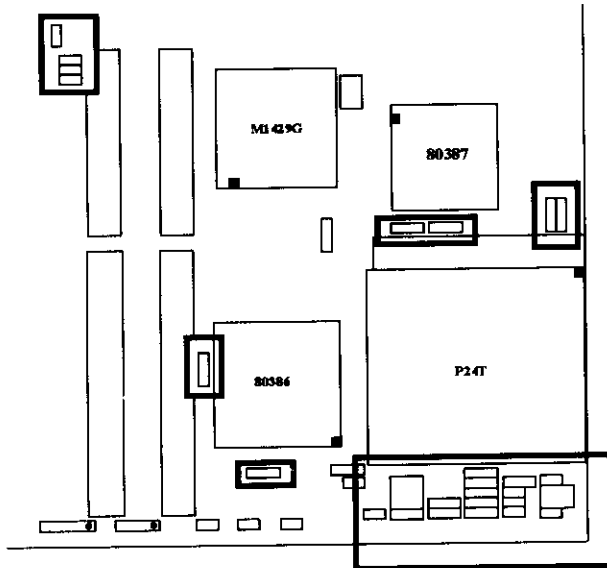
CACHE CONFIGURATION SIZE

64K		128K		256K		512K		1024K	
TAG RAM	DATA RAM	TAG RAM	DATA RAM	TAG RAM	DATA RAM	TAG RAM	DATA RAM	TAG RAM	DATA RAM
8KX8 U24	8KX8 U1-U4 U6-U9	8KX8 U24	32KX8 U1-U4	32KX8 U24	32KX8 U1-U4 U6-U9	32KX8 U24	64KX8 U1-U4	32KX8 U24	128KX8 U1-U4
 JP22 JP33	 JP22 JP33	 JP22 JP33	 JP22 JP33	 JP22 JP33					

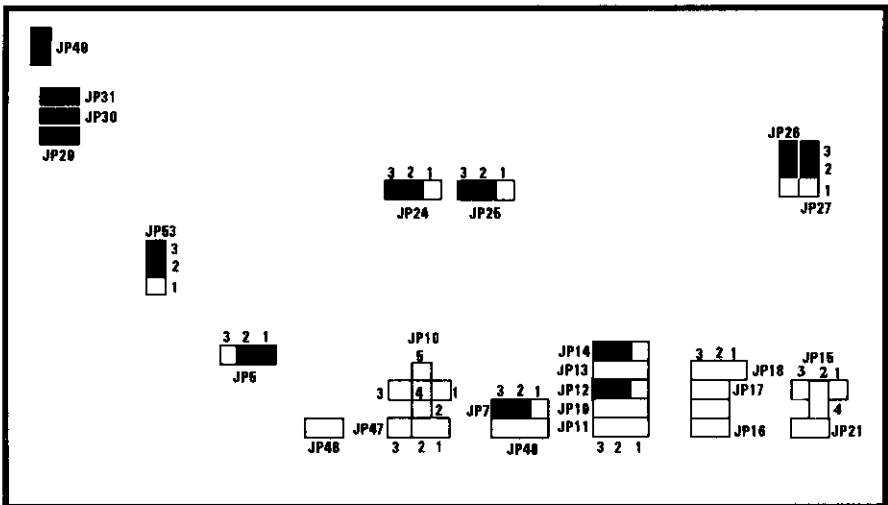
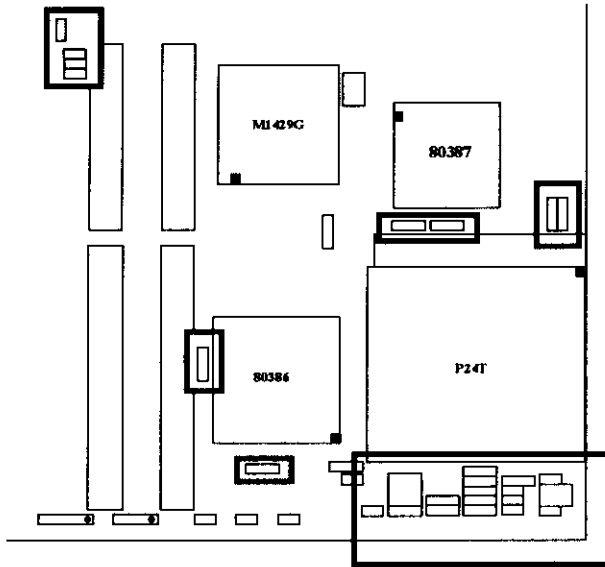
Default Setting

2.3 CPU INSTALLATION

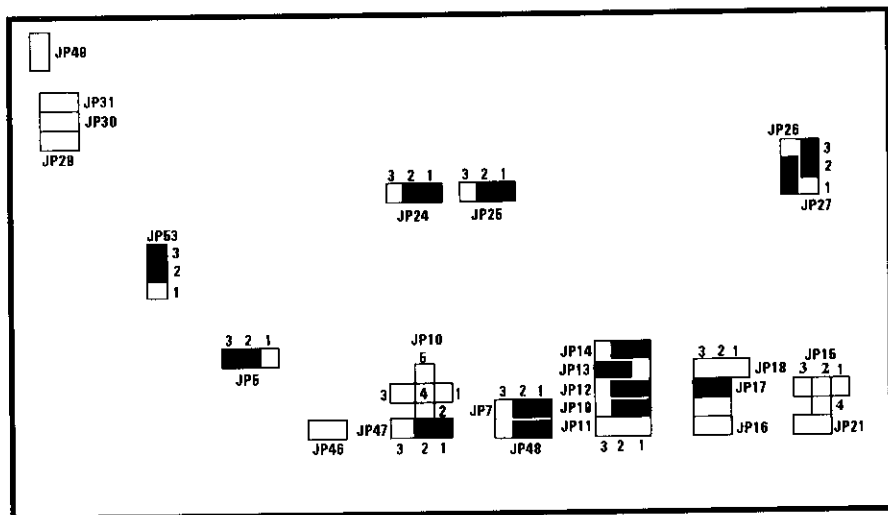
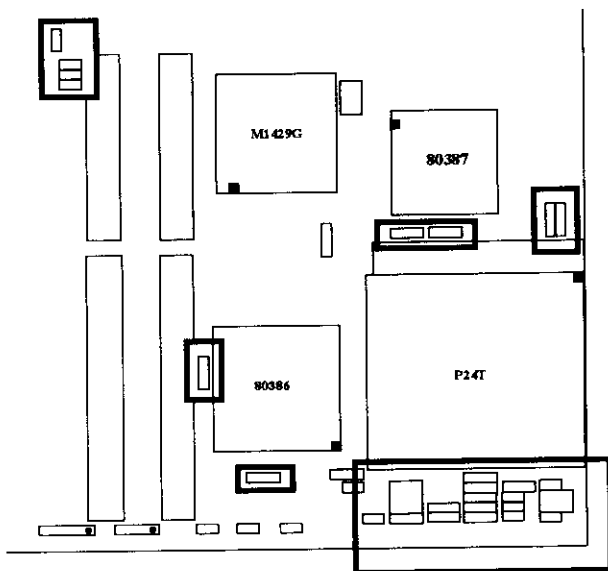
INTEL/AMD 386DX



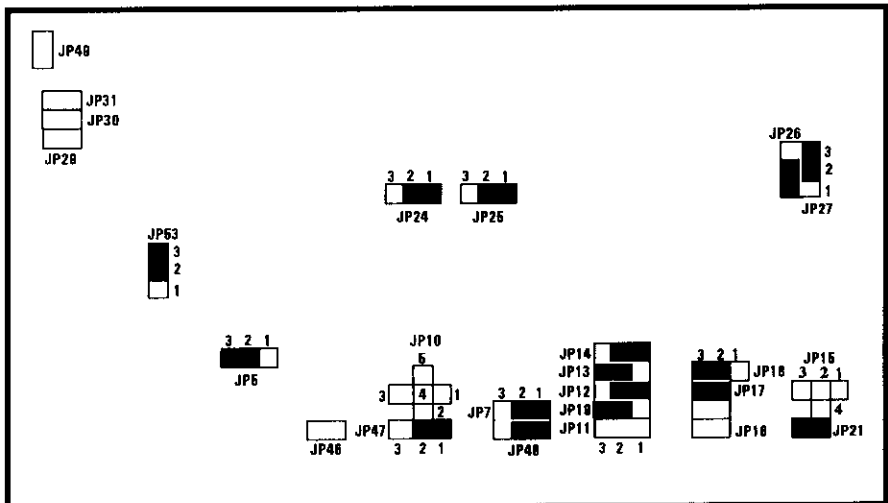
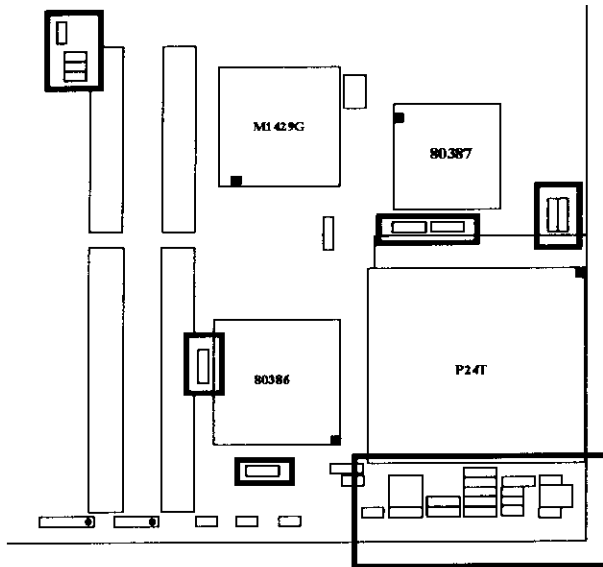
CYRIX/TI 486DLC TI SXL



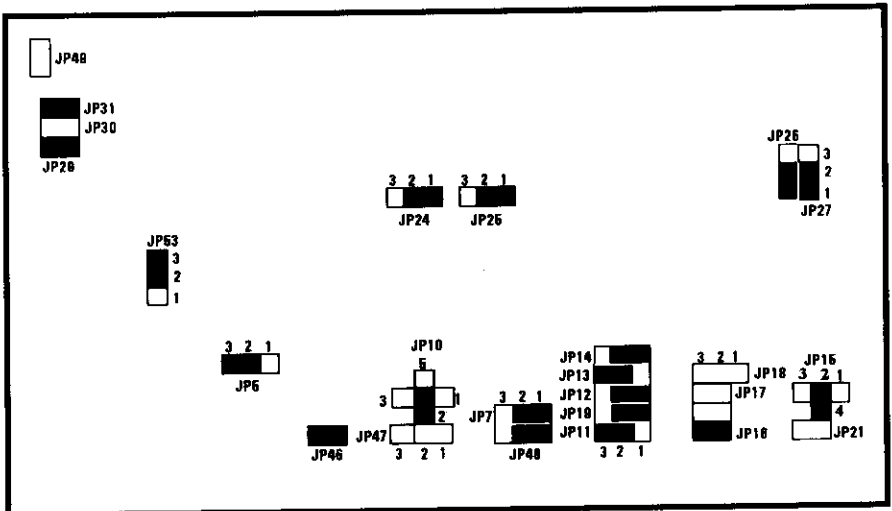
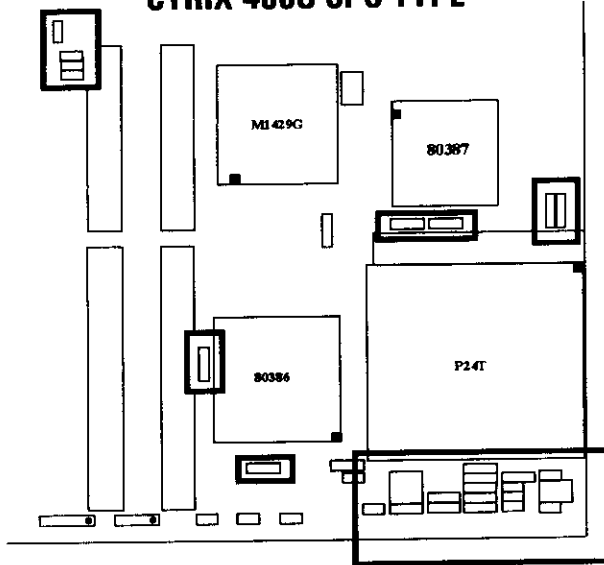
486SX CPU TYPE



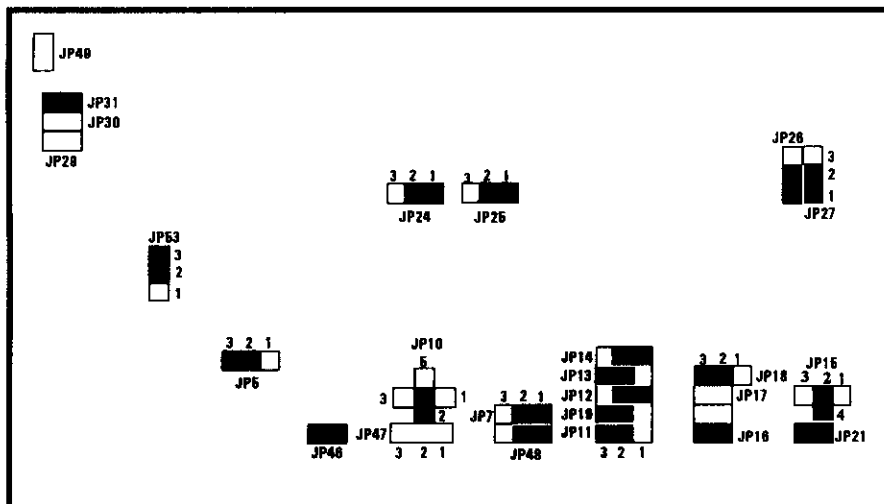
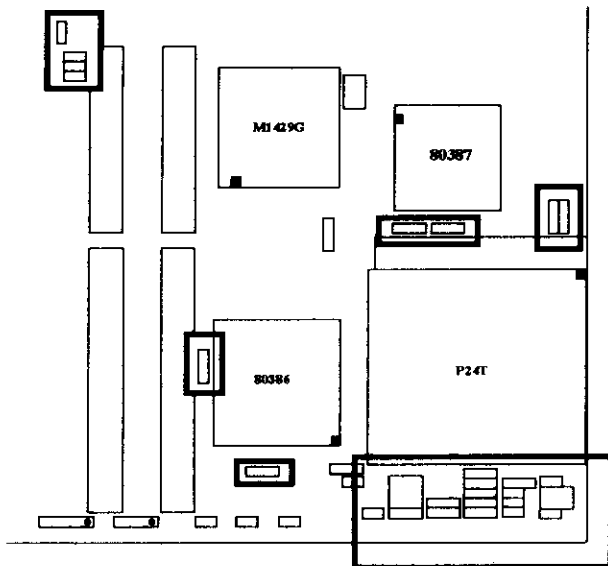
486DX CPU TYPE



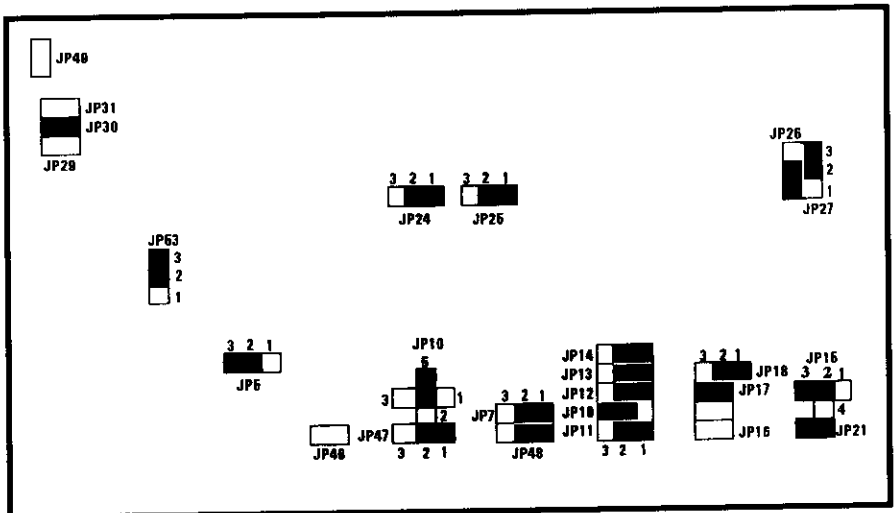
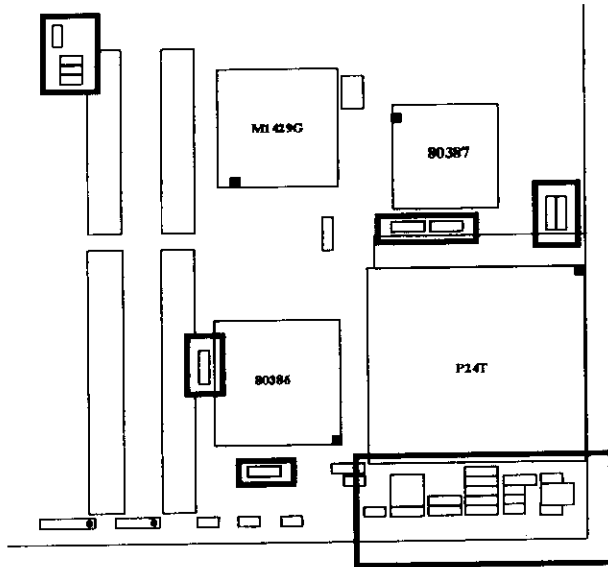
CYRIX 486S CPU TYPE



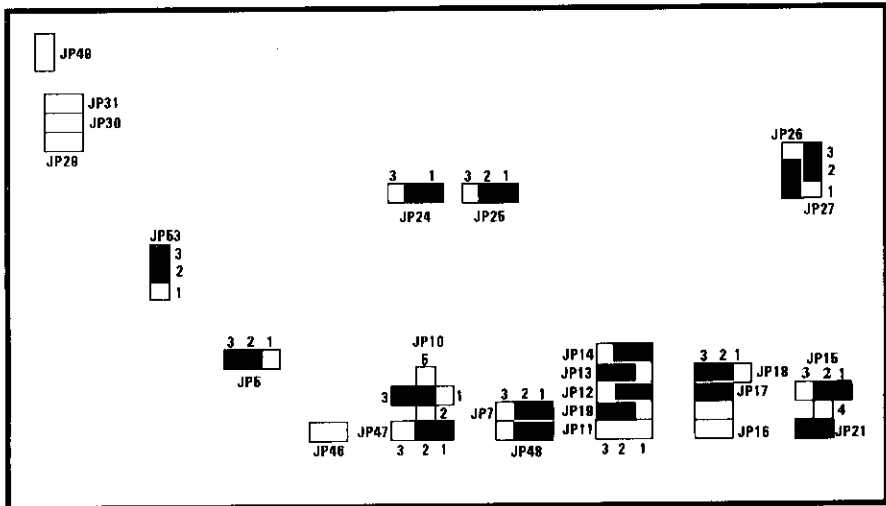
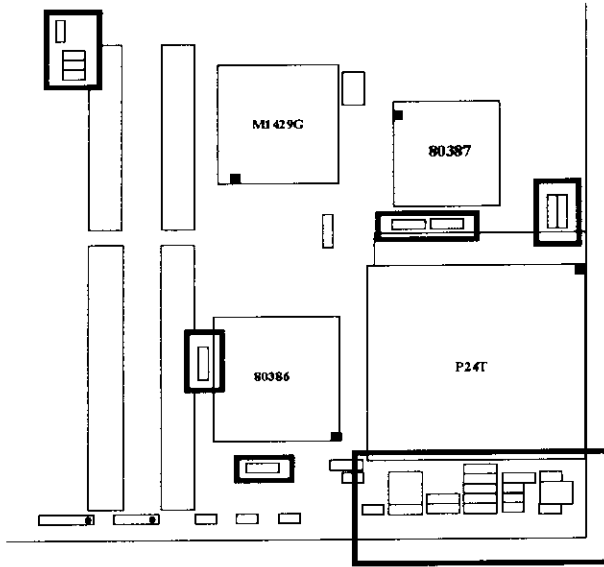
CYRIX 486DX CPU TYPE



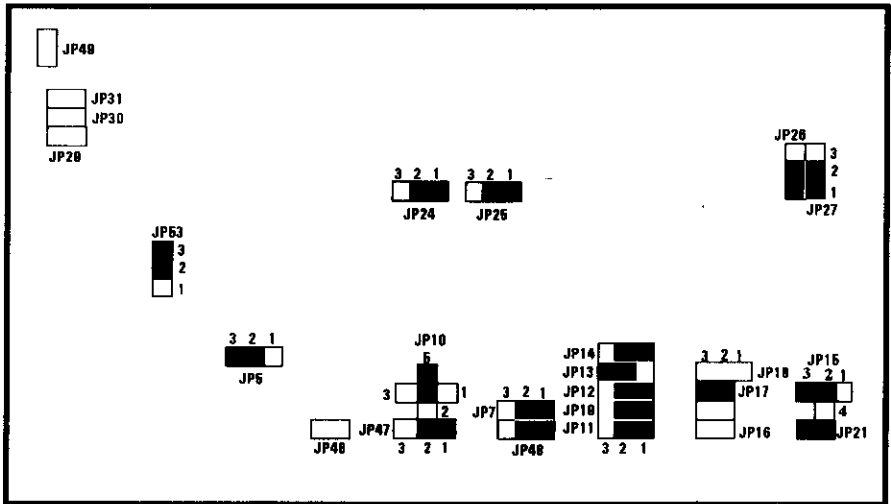
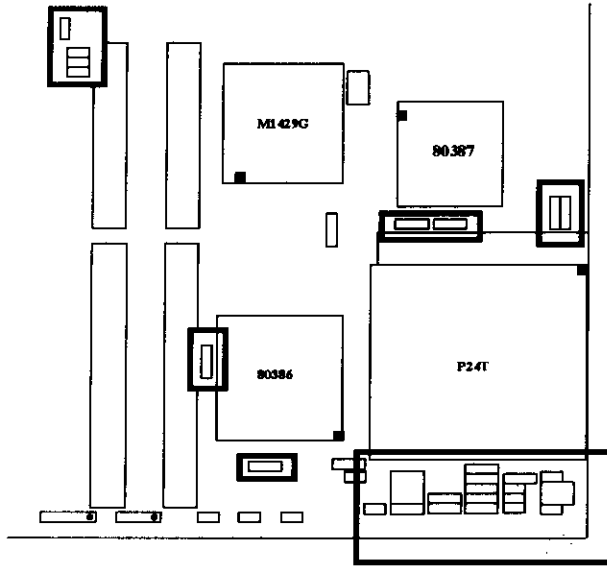
P24T CPU TYPE



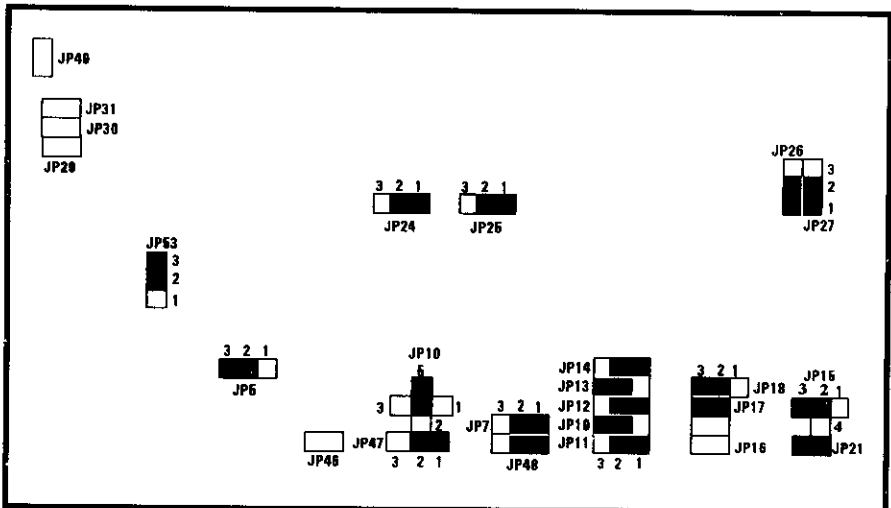
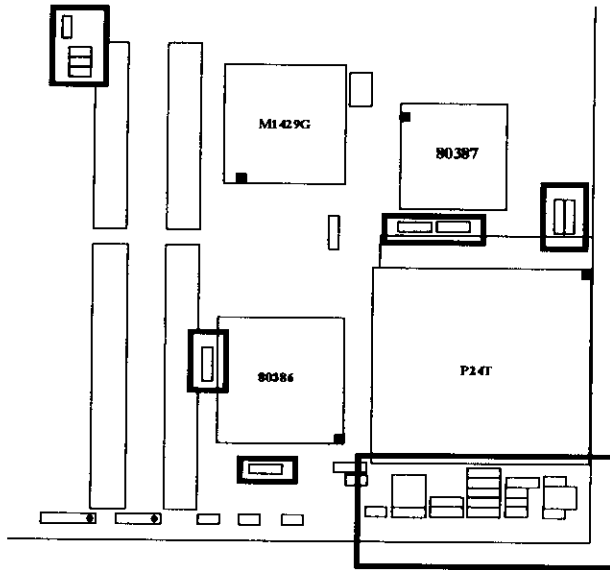
AMD 486DXL CPU TYPE



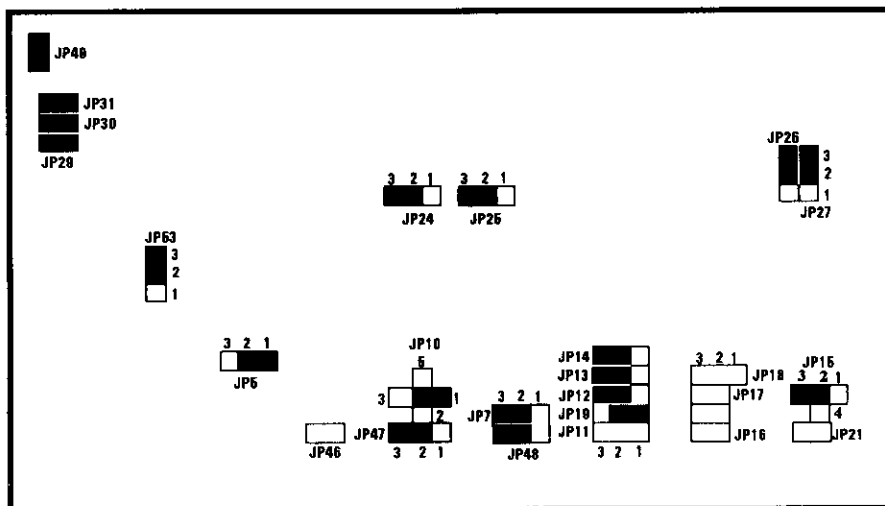
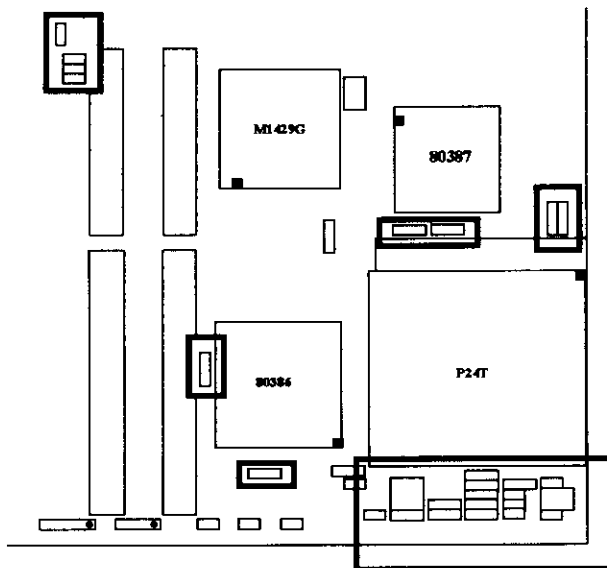
INTEL 486SX ENHANCED CPU TYPE



INTEL 486DX/DX2 ENHANCED CPU TYPE



TI 486SXL /SXL2 CPU TYPE (168 PIN PGA PACKAGE)

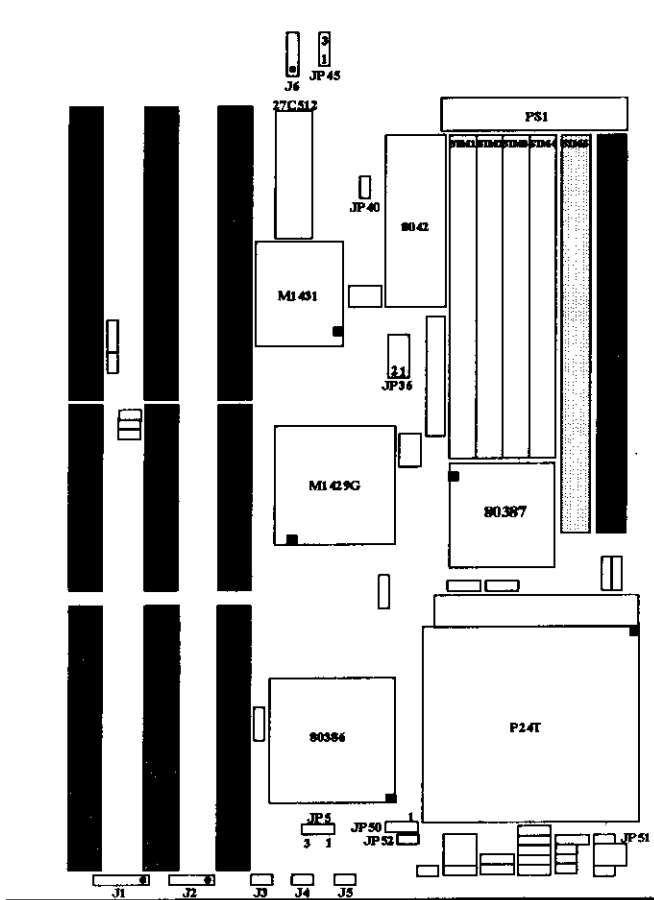


FREQUENCY SETTING







JUMPER	386DX-33MHz	386DX-40MHz TI 486 SXL- 40MHz	TI 486 SXL2-50	486SX-25/DX2-50MHz 486DX-25/DX2-50MHz
JP39				
JP38				
JP23				

JUMPER	DX4-100 MHz 486DX-33/DX2-66MHz	486DX-40MHz	486DX-50MHz	486DX2-80MHz
JP39				
JP38				
JP23				

2.4 OTHER JUMPER INSTALLATION








CPU POWER VOLTAGE

JUMPER	3.3V FOR DX4	5V FOR NORMAL
JP50		
JP51		
JP52		

 **Default Setting**

OTHER JUMPER DESCRIPTION

JUMPER	DESCRIPTION
JP6	 EXTERNAL BATTERY CONNECTOR
JP36	HARDWARE POWER SAVING CONNECTOR (When you press this button once, it will get into sleep mode. When you press this button again it will be awake.)
JP40	 MONO  COLOR
JP45	 LITHIUM  NI-CD

CONNECTOR DESCRIPTION

CONNECTOR	PIN OUT	SIGNAL NAME
J1: KEY LOCK	1	LED POWER
	2	NOT USED
	3	GROUND
	4	KEYBOARD INHIBITOR
	5	GROUND
J2: SPK	1	DATA OUT
	2	NOT USED
	3	GROUND
	4	+ 5V DC
J3: RESET	1	GROUND
	2	RESET IN
J4: TB-LED	1	+ ANODE
	2	- CATHODE
J5: TB-SW	1	GROUND
	2	SELECT PIN
<input type="checkbox"/> TURBO SPEED* <input type="checkbox"/> NORMAL SPEED		
KB1: KEYBOARD CONNECTOR	1	KEYBOARD CLOCK
	2	KEYBOARD DATA
	3	SPACE
	4	GROUND
	5	+ 5V
PS1: POWER CONNECTOR	1	POWER GOOD
	2	+ 5V DC
	3	+ 12V DC
	4	- 12V DC
	5, 6, 7, 8	GROUND
	9	- 5V DC
	10, 11, 12	+ 5V DC

CHAPTER 3

SYSTEM BIOS SETUP

Use the *Nu*BIOS for EXP4349 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 on or off.

To start the *Nu*BIOS for EXP4349 Setup program, take the following steps:

1. Turn on or reboot your system. The *Nu*BIOS for *EXP4349* displays this message:

Press to enter SETUP

2. The Main Menu which looks like this appears:

MAIN MENU		
<ul style="list-style-type: none">• System Setup• Fixed Disk Setup• Advanced System Setup• Boot Options• Security and Anti-Virus• Green PC Options		
Load ROM Default Values		
Load Values from CMOS		
Save Values to CMOS		
↑↓ Move F1 Help	Enter Select ESC Exit	F10 Save & Exit

3. Select an option by moving the highlight with your up-and-down arrow keys and pressing <Enter> .

4. After making your changes, select **Save Values to CMOS** to make them operative. Press **<Esc>** to exit the setup program. The following pages describe each one of these selections.

THE SYSTEM SETUP MENU

Selecting "System Setup" on the Main Menu displays this menu:

SYSTEM SETUP			
System Time:			[15:16:56]
System Date:			[05/17/1993]
Daylight Savings:			[Disabled]
Video System:			[Monochrome]
System Memory:			640 KB
Extended Memory:			3072 KB
Diskette Drive A:			[2.88 MB, 3½"1]
Diskette Drive B:			[Not Installed]
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

Use the keys listed on the bottom to make your selections and exit to the Main Menu. The following chart describes these and other keys:

KEY	FUNCTION
↑↓ arrow keys	Move cursor up and down
< Tab > and < Shift-Tab >	Cycle cursor up and down
< Home >	Move cursor to top of Menu
< End >	Move cursor to bottom of Menu
< F1 > or < Alt-H >	Help for the highlighted feature
PgUp or < - >	Select the Previous Configuration
PgDn or < + > or < Space >	Select the Default Configuration
< F5 >	Load the Previous Configuration values for this menu
< F6 >	Load the Default Configuration values for this menu
< Enter >	Select
< Alt-R >	Refresh screen
< Esc > or F10	Exit this menu

Use the following chart to configure your system:

FEATURE	OPTIONS	DESCRIPTION
System Time	HH:MM:SS	Enter current time to set system clock
System Date	MM/DD/YYYY	Enter current date to set system clock
Daylight Savings	Enabled Disabled	Enabling automatically adjusts for Daylight Savings time in April and October.
System Memory	N/A	Displays amount of conventional memory detected during bootup
Extended Memory	N/A	Displays the amount of extended memory detected during bootup
Video System	Monochrome EGA/VGA, CGA 40x25, CGA 80x25,	Selects default video device
Diskette Drive A: and B:	360KB, 5 1/4" 1.2MB, 5 1/4" 720KB, 3 1/2" 1.44M, 3 1/2" 2.88MB, 3 1/2" Not installed	Selects type of diskette drive

Fixed Disk Setup

Selecting "Fixed Disk Setup" on the Main Menu displays this menu:

FIXED DISK SETUP		
Fixed Disk 0	Control	
Fixed Disk 1	Control	
↑↓ Move	Enter Select	F10 Save & Exit
F1 Help	ESC Exit	

Selecting either option and pressing <Enter> displays a menu like this:

FIXED DISK 0 CONTROL	
Autotype Fixed Disk:	[Press Enter]
Type:	[User] 90MB
Cylinders:	[667]
Heads:	[8]
Sectors/Track:	[33]
Landing Zone:	[667]
Write Precomp:	[None]
↑↓ Move	Enter Select
F1 Help	ESC Exit
	F10 Save & Exit

Use the keys listed on 23 to make your selections and exit to the Main Menu. Use the following chart to configure the fixed disk.

FEATURE	OPTIONS	DESCRIPTION
Autotype Fixed Disk	N/A	Pressing <Enter> causes the system to attempt to detect the type of fixed disk. If successful, it fills in the remaining fields on this menu.
Type	1 to 45 User	1 to 45 fills in remaining fields with values for predefined disk type. "User" allows user to fill in remaining fields.
Cylinders	1 to 2048	Number of cylinders.
Heads	1 to 16	Number of read/write heads.
Sectors/Track	1 to 64	Number of sectors per track
Landing Zone	1 to 2048	Number of the cylinder specified as the landing zone for the read/write heads.
Write Precomp	1 to 2048 None	Number of the cylinder at which to change the write timing.

NOTE: Incorrect settings can cause your system to malfunction.

ADVANCED SYSTEM SETUP

Selecting "Advanced System Setup" from the Main Menu displays the following menu::

ADVANCED SYSTEM SETUP			
Warning! Items on this menu, if set incorrectly, could cause your system to malfunction			
<ul style="list-style-type: none">• System Timing• Memory Shadow• Advanced Chipset Control			
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

Choose an option and press <Enter> . See the following pages for a description of each feature and its options.

SYSTEM TIMING

Selecting "Memory Cache" from the Advanced Setup menu displays a menu like the one shown here. The actual features displayed depend on the capabilities of your system's hardware.

ADVANCED SYSTEM SETUP			
Auto Configuration	[Enabled]		
	SRAM Read	[1ws]	
	SRAM Write	[0ws]	
	DRAM Read	[Normal]	
	DRAM Write	[Normal]	
	Cache Cycle Check		[Fast]
	ATCLK	[7.19MHz]	
	Polling Clock	[14.318MHz]	
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

Use the keys listed on 23 to make your selections and exit to the Advanced System Setup menu. Use the chart on the following page to configure the system timing.

NOTE: Incorrect settings can cause your system to malfunction.

FEATURE	OPTIONS	DESCRIPTION
SRAM Read	0 1	The number of wait states added on reads to cache memory. Fewer wait states improve performance.
Auto Configuration	Enabled Disabled.	When disabled, this parameter allows the values for other parameters to be changed. When enabled, you cannot change the other parameters.
SRAM Write	0 1	The number of wait states added on writes to cache memory. Fewer wait states improve performance.
DRAM Read	Normal Fast Slow	The number of wait states added on reads to dynamic memory. Fewer wait states improve performance.
DRAM Write	Normal Fast Slow	The number of wait states added on writes to dynamic memory. Fewer wait states improve performance.
Cache Cycle Check	Fast Normal Slow	
ATCLK Selection	7.19MHz	AT Bus clock
Polling clock	14.318MHz	

MEMORY SHADOW

Selecting "Memory Shadow" from the Advanced Setup menu displays a menu like the one shown here. The actual features displayed depend on the capabilities of your system's hardware.

MEMORY SHADOW			
System Shadow:			[Enabled]
Video Shadow:			[Disabled]
System Shadow Regions:			
	C800 - CBFF		[Disabled]
	CC00 - CFFF		[Disabled]
	D000 - D3FF		[Disabled]
	D400 - D7FF		[Disabled]
	D800 - DBFF		[Disabled]
	DC00 - DFFF		[Disabled]
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

Use the keys listed on 23 to make your selections and exit to the Advanced System Setup menu. Use the following chart to configure the memory shadow.

NOTE: Incorrect settings can cause your system to malfunction.

FEATURE	OPTIONS	DESCRIPTION
System shadow	Enabled	Shadows system BIOS and improves performance. It is always enabled.
Video shadow	Enabled Disabled	Shadows video BIOS and improves performance.
Shadow Memory Regions	Enabled Disabled	Shadows option ROM located in the specified blocks of memory and can improve performance. NOTE: Some option ROMs do not work properly when shadowed.

ADVANCED CHIPSET CONTROL

Selecting "Advanced Chipset Control" from the Advanced Setup menu displays a menu like the one shown here.

Technicians use this menu to change the values in the chipset registers and optimize your system's performance.

ADVANCED CHIPSET CONTROL			
Internal Cache Features	[Write through]		
External Cache	[Enable]		
	External cache features		[Write Back]
	Shadow cache		[Disable]
0 Hz control	[Disable]		
Hidden refresh	[Disabled]		
Parity check	[Disabled]		
HITMJ timing	[6t]		
RAS to CAS delay	[4t]		
VESA master cycle	[Delay ADSJ]		
I/O recovery	[Enabled]		
On-chip I/O recovery	[Disabled]		
ISA write insert w/s	[Disabled]		
ISA I/O wait state	[Normal]		
ISA memory wait state	[Normal]		
Refresh period	[15]		
W/S in 32-bit ISA1[8t]			
Local device Syn mode	[Syn]		
Delay internal ADSJ	[Disable]		
Delay ISA/LDEVJ check in CLK2			[3]
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

Use the keys listed on 23 to make your selections and exit to the Advanced System Setup menu.

NOTE: The contents of this menu depends on the chipset installed on your motherboard, and chipsets vary widely. Consult your dealer or the <F1> help screens before changing the items on this menu. Incorrect settings can cause your system to malfunction.

BOOT OPTIONS

Selecting "Boot Options" from the Main Menu displays this menu:

BOOT OPTIONS				
Disk Boot Drive Sequence:		[C; then A:]		
Floppy Seek:	[Enabled]			
System summary screen at boot:q		[Enabled]		
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration	
F1 Help		PgDn Next Value	F6 Default Configuration	

Use the keys listed on 23 to make your selections and exit to the Main Menu. Use the following chart to configure the boot options.

FEATURE	OPTIONS	DESCRIPTION
Disk drive boot sequence	A: then C; C: then A; C: only	The BIOS attempts to load the operating system from the disk drives in the sequence selected here.
Floppy seek	Enabled Disabled	Seeks diskette drives during bootup. Disabling speeds boot time.
System summary screen at boot	Enabled Disabled	Displays system summary screen during bootup. .

SECURITY AND ANTI-VIRUS

Selecting "Security and Anti-Virus" from the Main Menu displays a menu like this:

SECURITY AND ANTI-VIRUS			
Supervisor Password is:	Disabled		
User Password is	Disabled		
Set Supervisor Password	[Press Enter]		
Set User Password	[Press Enter]		
Password on Boot	[Disabled]		
Diskette Access:	[Supervisor]		
Fixed Disk Boot Sector	[Normal]		
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

Use the keys listed 23 to make your selections and exit to the Main Menu.

"Supervisor Password is:" shows whether supervisor password is set or not. "User Password is:" shows whether user password is set or not. Setting Supervisor Password requires a password on entering Setup. The passwords are not case sensitive. Pressing <Enter> at either Set Supervisor Password or Set User Password displays a dialog box like this:

Set Supervisor Password
Enter New Password -
Re-enter New Password -

Type the password and press <Enter> . Repeat.

Use the following chart to configure the system security and anti-virus options.

FEATURE	OPTIONS	DESCRIPTION
Set Supervisor Password	Up to seven alphanumeric characters	Pressing < Enter > displays dialog box for entering the supervisor password. This password gives full access to SETUP menus.
Set User Password	Up to seven alphanumeric characters	Pressing < Enter > displays the dialog box for entering the user password. This password gives restricted access to SETUP menus. Requires setting Supervisor password.
Password on boot	Enabled Disabled.	Enabled requires a password on boot. Requires setting the Supervisor password. If supervisor password is set and this option disabled, BIOS assumes user is booting.
Diskette Access	Supervisor User	Supervisor restricts use of floppy drives to supervisor. Requires setting the Supervisor password.
Fixed disk boot sector	Normal Write Protected.	Write protected helps preventing viruses.

GREEN PC FEATURES

Selecting Green PC Features on the main menu displays an information window like this:

GREEN PC FEATURES			
Power Saving Mode	[Enabled]		
	System Doze Timer		[10 sec]
	System Standby Timer		[10 sec]
	System Suspend Timer		[10 sec]
	WakeUp System during: (hour)		[0 hr]
	WakeUp Sytem during: (min:)		[0 min]
	Hard Disk Standby Timer		[Disabled]
Video Standby Timer	[Enabled]		
	VGA w/ Power Down Features		Standard
Advanced Power Management Setup			
System enters power down/wake up modes by:			
VGA access event:			
IRQ1 (Keyboard)	[On]		
...			
↑↓ Move	ESC Exit	PgUp Previous Value	F5 Previous Configuration
F1 Help		PgDn Next Value	F6 Default Configuration

The information in this window is for display only. Press <Esc> to exit to the Main Menu.

Use the following chart to configure the green PC feature options.

FEATURE	OPTIONS	DESCRIPTION
System Doze Timer	10/20/30/90 sec 1/2 mins Disabled	Sets the time interval after system inactive when the system enters DOZE mode.
System Standby Timer	10/30 sec 1/2/3/5/8/10/15/ 30 mins Disabled	Sets the time interval after system inactive when the system enters STANDBY mode.
System Suspend Timer	10/30 sec 1/5/10/30/40/ 50 sec 1/2 hrs Disabled	Sets the time interval after system inactive when the system enters SUSPEND mode.
Hard Disk Standby Timer	1 ~ 15 mins Disabled	Sets the time interval after inactive when the hard disk enters STANDBY mode .
Video Standby Timer	1 ~ 15 mins Disabled	Sets the time interval after inactive when the VGA chip enters SLEEP mode.
VGA w/power down feature	None Standard Cirrus 5426 S3 805 (VESA DPMS)	Sets the method by which the VGA chip enters SLEEP mode.