

TF-486

Mainboard

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CHAPTER 1.

INTRODUCTION

The TF-486 is ideal for a broad range of industrial applications utilizing the popular 486 class of processors. It supports up to eight expansion cards, all of which can be full length ISA cards or one can be PCI that is shared, on an industry standard Baby AT format motherboard. Its compact size, high reliability and large number of expansion slots makes it an ideal alternative to expensive passive backplane system architectures.

One of the most important qualities of the TF-486 is that it is produced under strict revision control guidelines to provide a long and stable product life cycle. This makes it ideal for computer telephony, industrial control, medical instrumentation and other application environments where extensive testing or certification of the system is required.

ESA's revision controlled motherboards reduce your long term costs for system testing, documentation, certification and maintenance.

1.1 SPECIFICATIONS

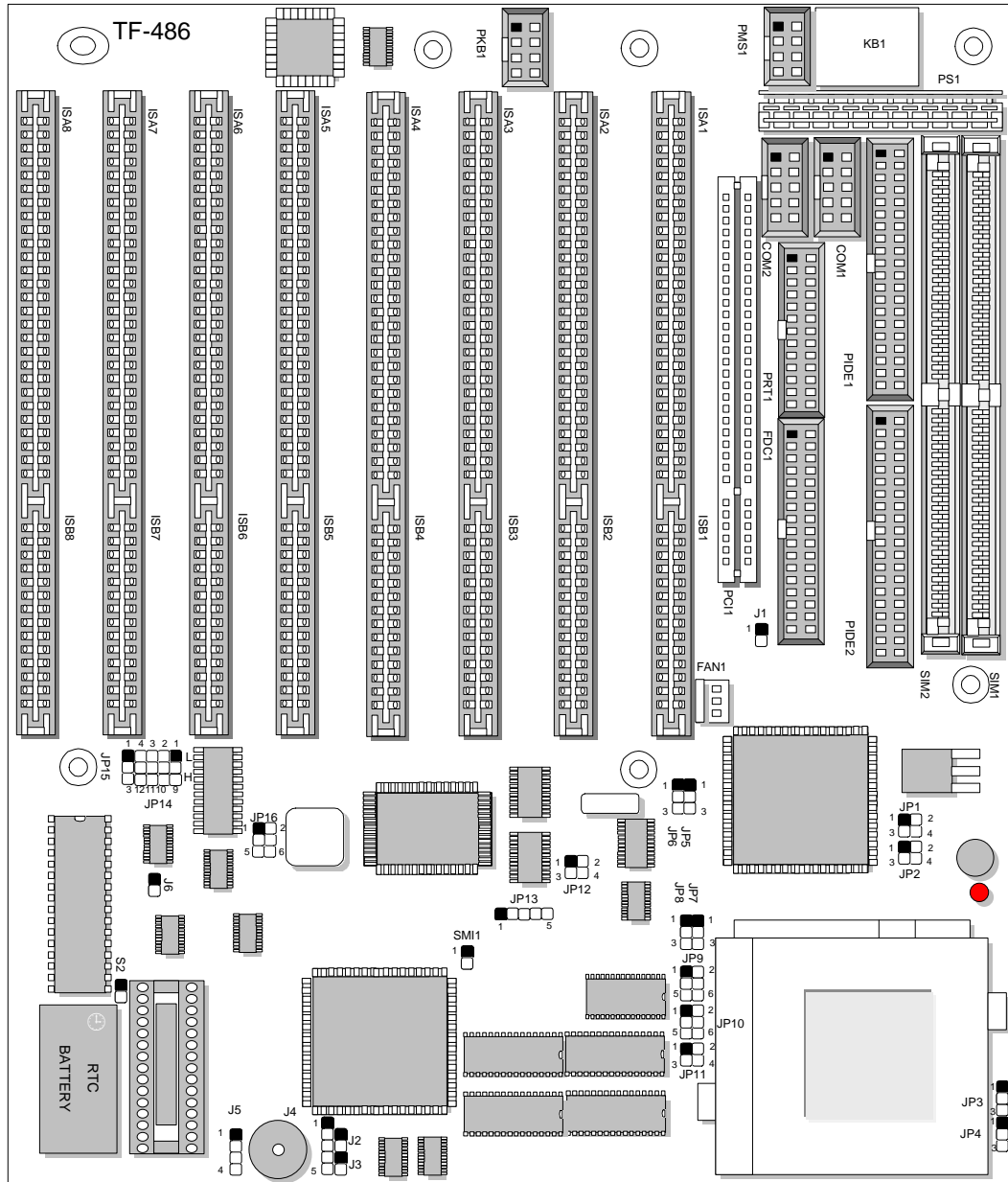
- ❑ Processor : PGA socket for Intel® 80486 series, AMD® 486 series
SGS 486 series, and AMD® & Cyrix® 5x86 series
- ❑ Chipset : ALi M1487 / M1489
- ❑ Bus Clock : 20MHz, 25MHz, 33MHz, 40MHz and 50M Hz
- ❑ System Memory : Two 72-pin SIMM sockets up to 64MB EDO/FPM
DRAM
- ❑ L2 Cache Memory : 0K cache, supports up to 512KB
- ❑ BIOS : 128KB Award License BIOS
- ❑ Flash Memory Disk : Reserved one socket for Disk-On-Chip from M-Systems
support up to 144 MB Flash memory Disk-on-Chip
- ❑ IDE Drive Interface : Two Fast PCI bus IDE ports that support up to four IDE
devices
- ❑ Floppy Drive Interface : One FDD port that supports up to two floppy devices
- ❑ Serial Port : Two 16550 compatible FIFO RS-232 serial ports (Box
Header on board) with ESD clamping
- ❑ Parallel Port : One multi-mode parallel port (ECP/SPP/EPP) (Box
Header on board) with ESD clamping
- ❑ RTC Battery : Dallas RTC battery or compatible
- ❑ Mouse Connector : On-board 8-pin PS/2 Mouse header
- ❑ Keyboard Connector : On-board 8-pin Keyboard header
- ❑ Expansion Slot : Eight ISA and one PCI expansion slots
- ❑ Watchdog Timer : 10 level time-out intervals
(0.5/1/2/4/8/16/32/64/128/256 sec)
- ❑ IR Interface : Support one IrDA header
- ❑ Operating Temperature : 0°C~55°C (32°F~132°F)
- ❑ Humidity : 10% ~ 90% RH
- ❑ Dimensions : 257 mm X 222 mm

CHAPTER 2.

JUMPER SETTINGS AND CONNECTORS

The Figure below shows the jumpers and connectors location on the TF-486

2.1 BOARD OUTLINE OF TF-486



2.2 CPU INSTALLING AND UPGRADING

To upgrade to a higher power CPU, simply remove the old CPU and install the new one; be sure to set the jumpers for the new CPU type and speed.

WARNING!



Disconnect the power cord from your system when you intend to work on it or you plan to open the chassis of your IPC. Do not make connections when the power is turned on, the sensitive electronic components could be damaged by the sudden rush of power. Please only allow experienced electronics technicians to do this job.

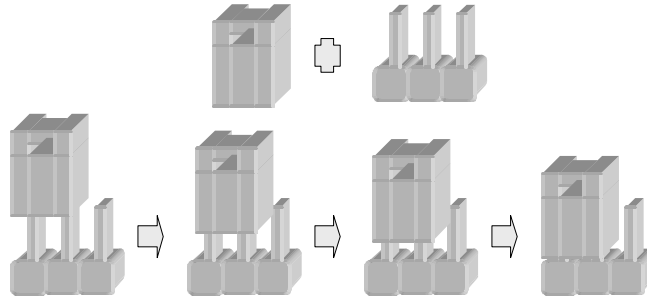


STATIC ELECTRICITY PRECAUTION!

Caution! Computer components are very sensitive to damage from static electric discharge. Always ground yourself to remove static charge build-up before touching the boards in the computer. Use a grounding wrist strap at all times. Place all electronic components on the anti-static pad for static dissipation or in a static-shielded bag when they are not in the chassis.

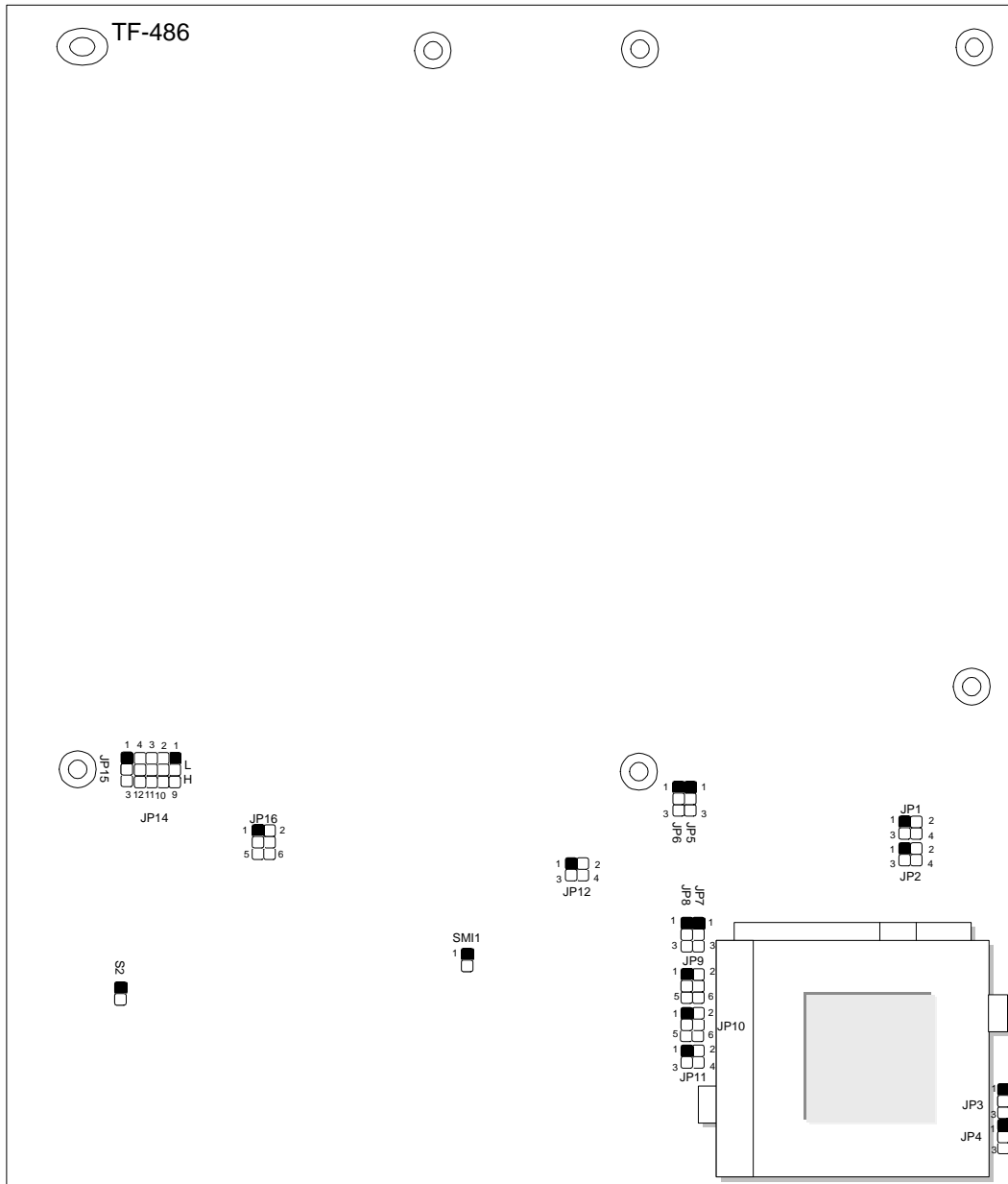
2.3 JUMPER SETTING OVERVIEW

In order to select the operation modes of your system, configure and set the jumpers on the your MB to match the need of your application. To set a jumper, a plastic cap containing metal contacts is placed over the jumper pins as designated by the required configuration as listed in this section. A jumper is said to be “ on ” or “ 1-2 ” when the black cap has been placed on two of its pins, as show in the figure below:



A pair of needle-nose pliers is recommended when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local sales representative before you make any changes. In general, you simply need a standard cable or jumper to make most connections.

2.4 JUMPER LOCATION BOARD LAYOUT FOR TF-486



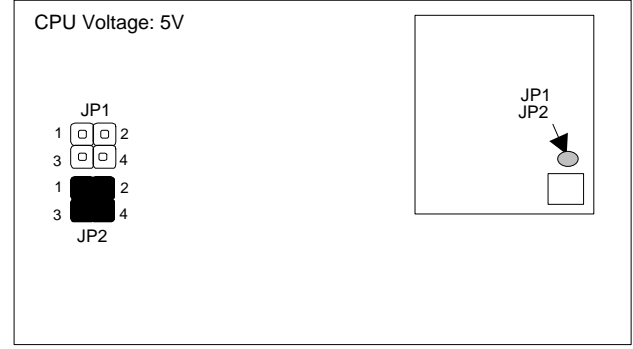
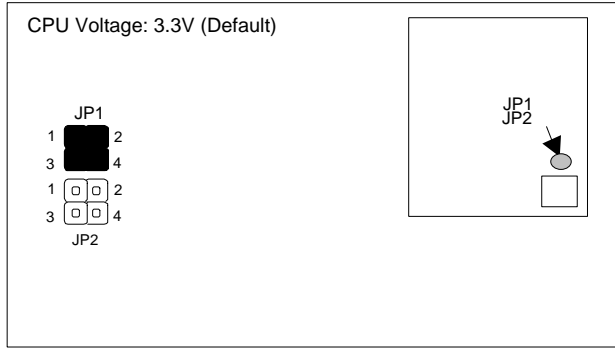
2.5 JUMPER SETTINGS SUMMARY FOR TF-486

JUMPERS	
LOCATION	FUNCTION
JP1 ~ JP2	Select CPU Voltage
JP3,JP4,JP9 ~ JP11	Select CPU Type
JP5, JP6, JP12	Select CPU Clock
JP7, JP8	Select L2 Cache Size
JP14, JP15	Select Watch-Dog Timer
JP16	Select M-System Address
S2	Clear CMOS Jumper
SMI1	External SMI Function Switch

2.6 JUMPER SETTINGS FOR TF-486

- **JP1, JP2 : Select CPU Voltage**

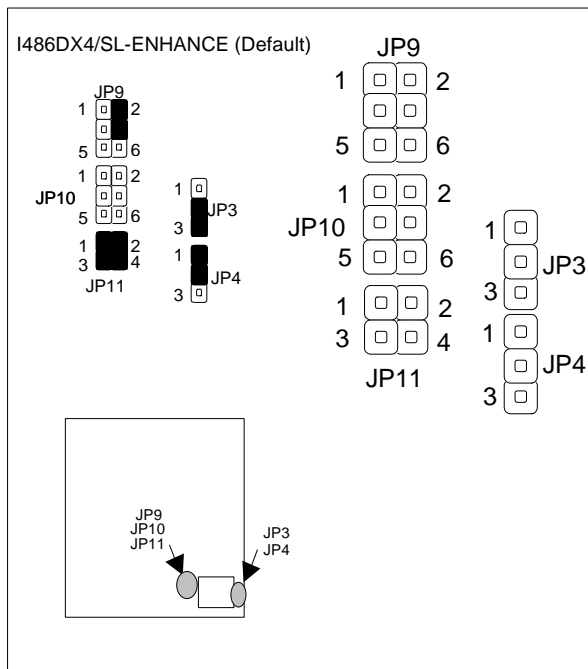
CPU Voltage	JP1	JP2
3.3V (Default)	1-2, 3-4	OFF
5V	OFF	1-2, 3-4

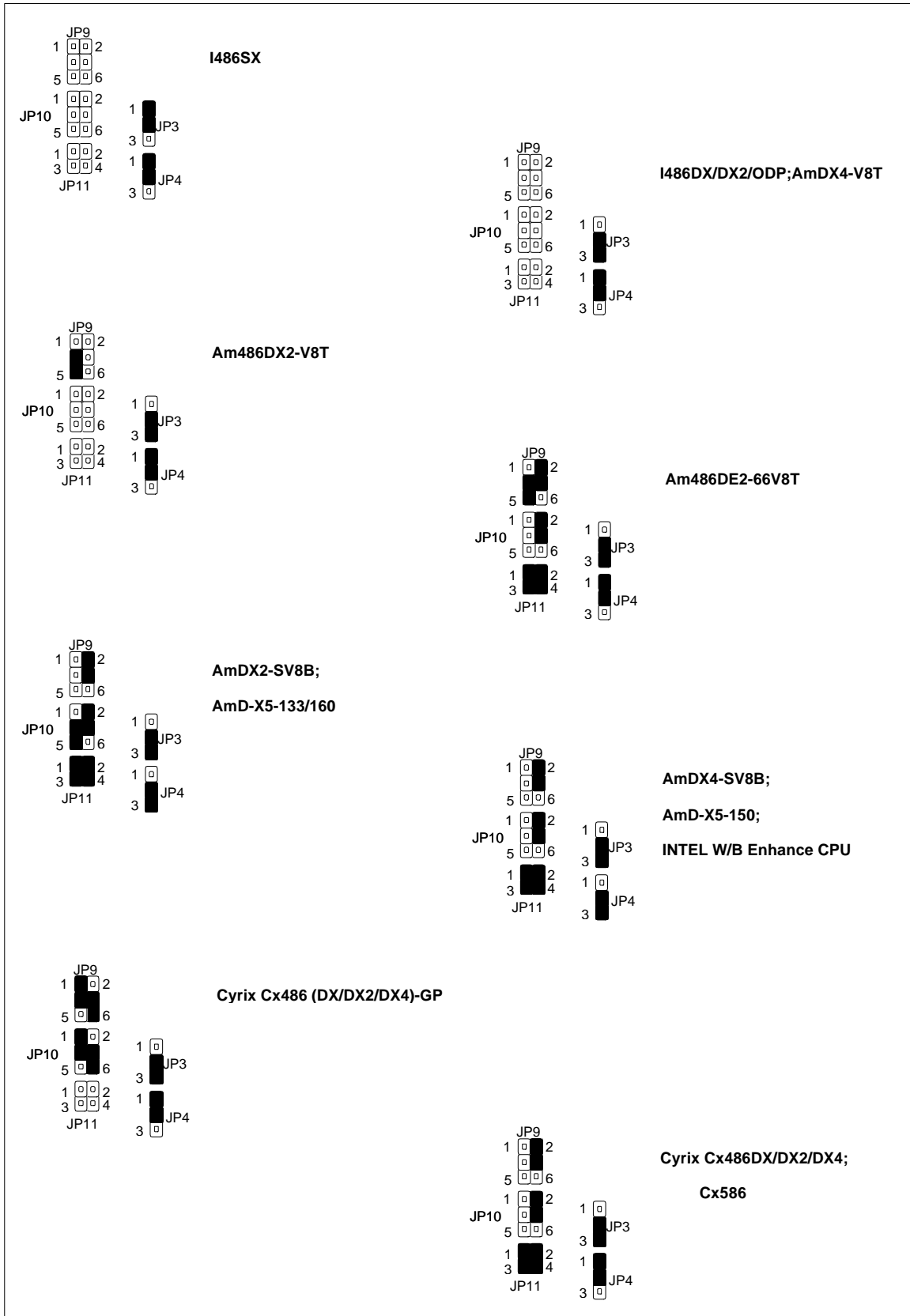


● **JP3, JP4, JP9 ~ JP11 : Select CPU Type**

CPU Type	JP3	JP4	JP9	JP10	JP11
I486SX	1-2	1-2	OFF	OFF	OFF
I486DX/DX2/ODP;AmDX4-V8T	2-3	1-2	OFF	OFF	OFF
I486DX4/SL-ENHANCE	2-3	1-2	2-4	OFF	1-2, 3-4
Am486DX2-V8T	2-3	1-2	3-5	OFF	OFF
Am486DE2-66V8T	2-3	1-2	2-4, 3-5	2-4	1-2, 3-4
Write Back Enhance CPU AMD+Am486DX2/DX4-SV8B AMD+Am5x86-P75	2-3	2-3	2-4	2-4, 3-5: AmDX2-SV8B; AmD-X5-133/160 2-4: AmDX4-SV8B; AmD-X5-150; Intel W/B Enhance CPU	1-2, 3-4
Cyrix Cx486 (DX/DX2/DX4)-GP	2-3	1-2	1-3, 4-6	1-3, 4-6 L1 W/B	OFF
Cyrix Cx486DX/DX2/DX4 Cx5x86	2-3	1-2	2-4	2-4 L1-W/B	1-2, 3-4

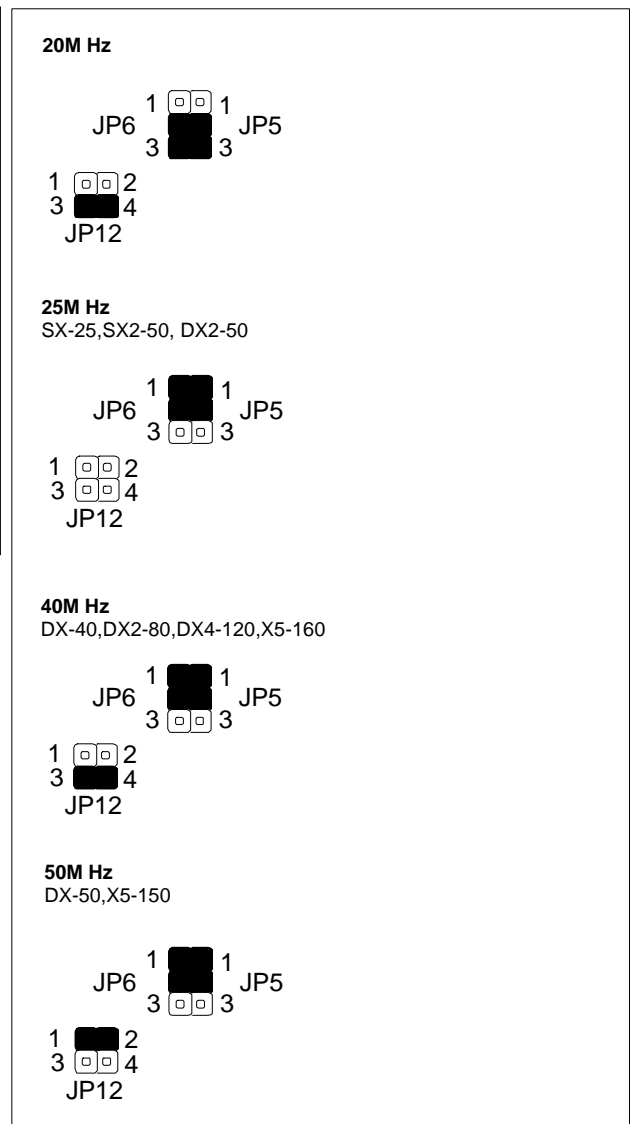
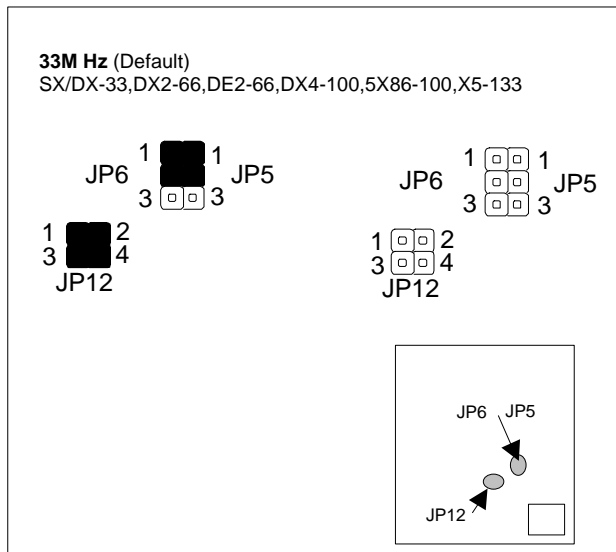
Note: AMD+ = Enhance SV8B (Internal W/B Cache)
CX486 = TI, ST or SGS, IBM 486; (ST or SGS DX4= Intel DX4)





JP5, JP6, JP12 : Select CPU Clock

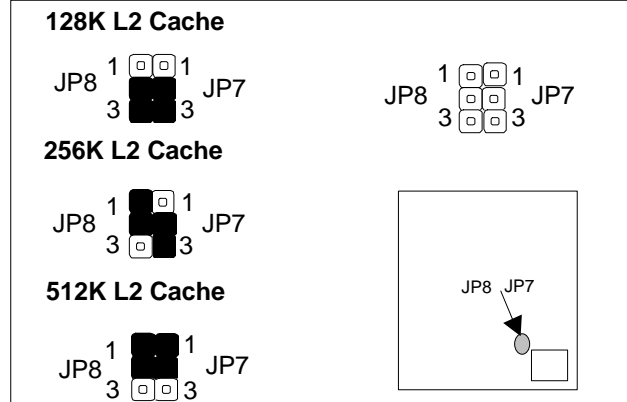
CPU Bus Clock	JP5	JP6	JP12	CPU Core Clock
20M Hz	2-3	2-3	3-4	
25M Hz	1-2	1-2	OFF	SX-25, SX2-50, DX2-50
33M Hz	1-2	1-2	3-4, 1-2	SX/DX-33, DX2-66, DE2-66,DX4-100,5X86-100,X5-133
40M Hz	1-2	1-2	3-4	DX-40, DX2-80, DX4-120, X5-160
50M Hz	1-2	1-2	1-2	DX-50, X5-150



JUMPER SETTINGS AND CONNECTORS

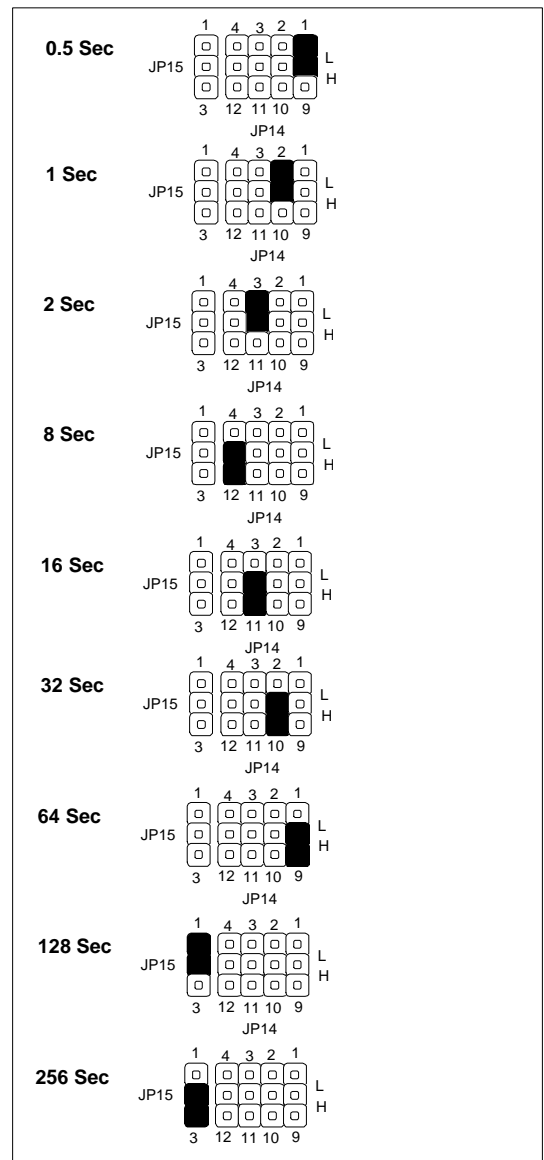
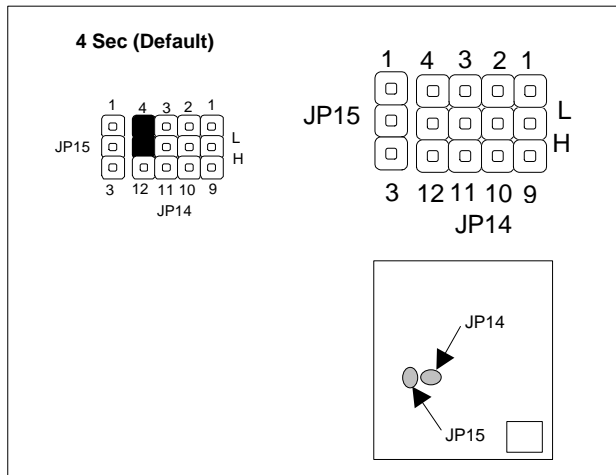
● JP7, JP8 : Select L2 Cache Size

L2 Cache	JP7	JP8
128K	2-3	2-3
256K	2-3	1-2
512K	1-2	1-2



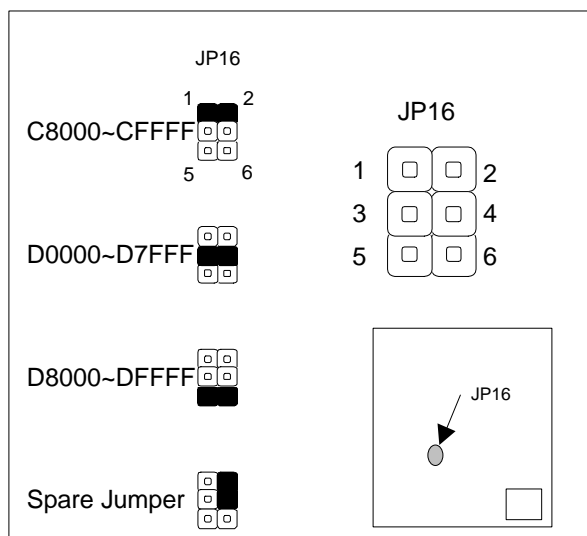
● JP14, JP15 : Select Watch-Dog Timer

Time Out Period	JP14	JP15
0.5 sec	1-5	OFF
1 sec	2-6	OFF
2 sec	3-7	OFF
4 sec (Default)	4-8	OFF
8 sec	8-12	OFF
16 sec	7-11	OFF
32 sec	6-10	OFF
64 sec	5-9	OFF
128 sec	OFF	1-2
256 sec	OFF	2-3



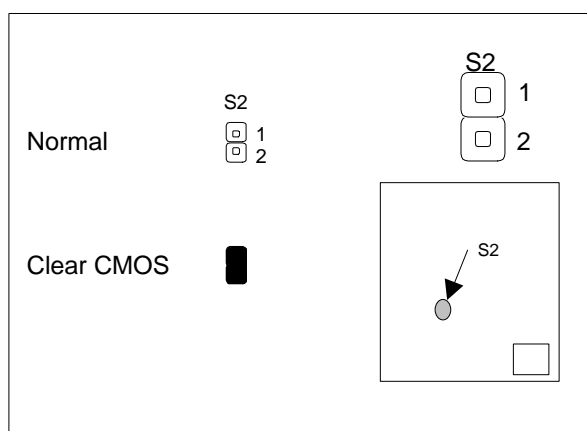
JP16 : Select Disk On Chip (Flash Disk) Address

Flash Disk Address	JP16
C8000~CFFFF	1-2
D0000~D7FFF	3-4
D8000~DFFFF	5-6
Default	2-4



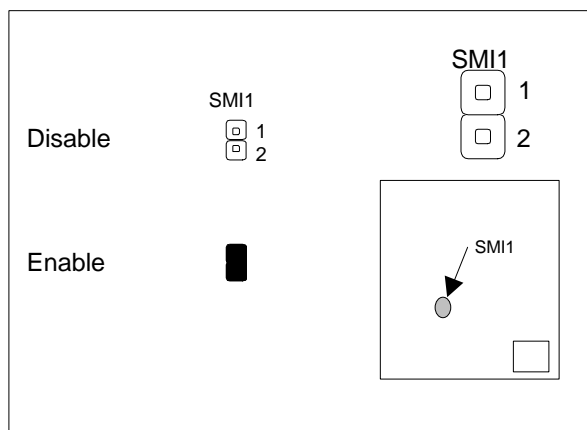
● **S2 : Clear CMOS Jumper**

Clear CMOS Jumper	S2
Normal (Default)	OFF
Clear CMOS	1-2

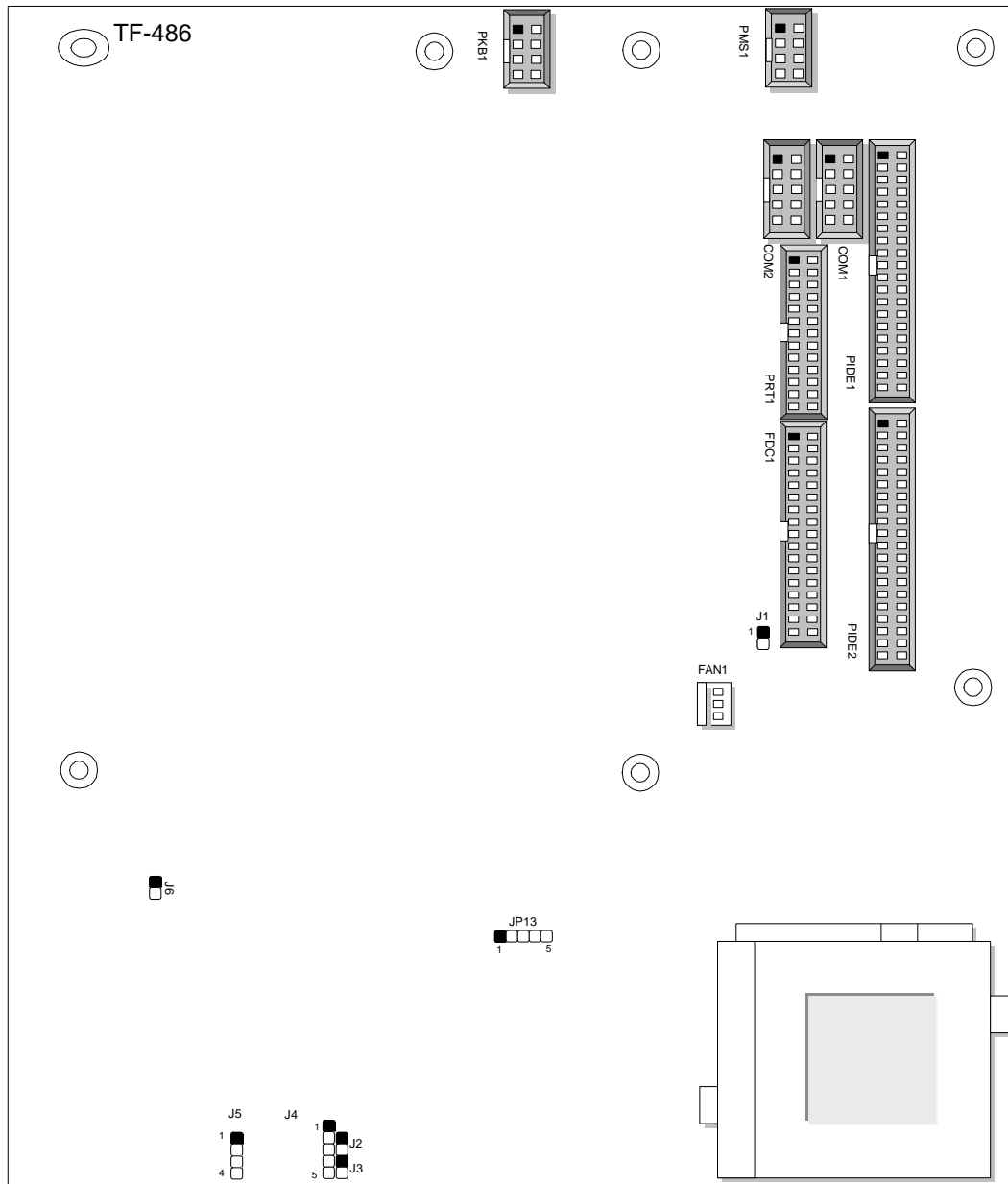


● **SMI1 : External SMI Function Switch**

SMI Function	SMI1
Disable	OFF
Enable	ON



2.7 I/O CONNECTOR LOCATION FOR TF-486

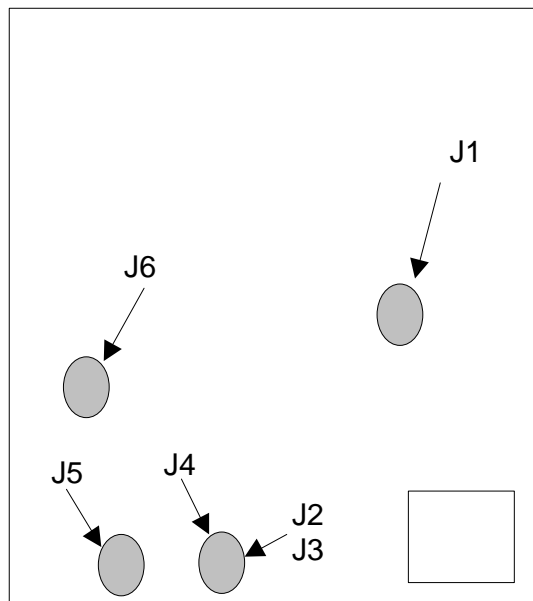


2.8 I/O CONNECTOR SUMMARY FOR TF-486

CONNECTOR	FUNCTION
J1	HDD LED
J2	Turbo Switch
J3	Turbo LED
J4	Power LED & Key Lock
J5	Speaker Connector
J6	Reset Switch
COM1	COM1 Connector (Header)
COM2	COM2 Connector (Header)
FAN1	FAN Power Connector
JP13	Alternate IrDA Connector
PKB1	External Keyboard Connector (Header)
PMS1	External PS/2 Mouse Connector (Header)
PIDE1/PIDE2	EIDE Interface Connector (Header)
FDC1	Floppy Interface Connector (Header)
PRT1	Parallel Port Connector (Header)

2.9 SYSTEM STATUS INDICATE AND CONTROL CONNECTORS

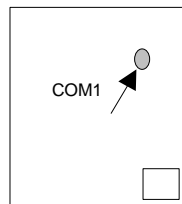
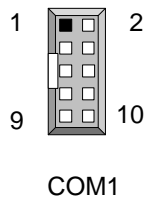
CONNECTOR	PIN NO.	DESCRIPTION
J1 : HDD LED	1	V _{CC}
	2	Ground
J2 : Turbo Switch		
J3 : Turbo Switch	1	V _{CC}
	2	Ground
J4 : Power LED & Key Lock	1	Power LED V _{CC}
	2	NC
	3	Power LED Ground
	4	Key Lock Signal
	5	Ground
J5 : Speaker Connector	1	V _{CC}
	2	NC
	3	NC
	4	Signal
J6 : Reset Switch		



2.10 I/O CONNECTORS DESCRIPTION

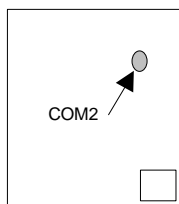
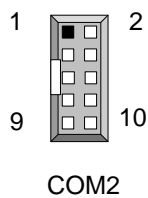
- **COM1 : Connector (Header)**

PIN NO.	DESCRIPTION
1	DCD1#
2	SIN1
3	SOUT1
4	DTR1#
5	Ground
6	DSR1#
7	RTS1#
8	CTS1#
9	RI1#
10	NC



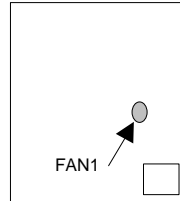
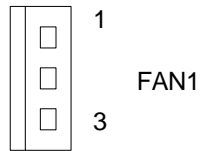
- **COM2 : Connector (Header)**

PIN NO.	DESCRIPTION
1	DCD2#
2	SIN2
3	SOUT2
4	DTR2#
5	Ground
6	DSR2#
7	RTS2#
8	CTS2#
9	RI2#
10	NC



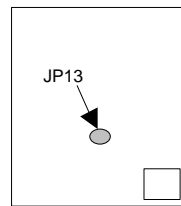
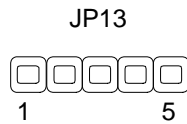
● **FAN1 : FAN Connector**

PIN NO.	DESCRIPTION
1	Ground
2	+12V
3	NC



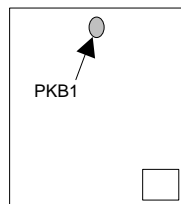
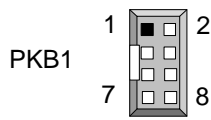
● **JP13 : Alternate IrDA Connector**

PIN NO.	DESCRIPTION
1	VCC
2	NC
3	IR_RX
4	Ground
5	IR_TX



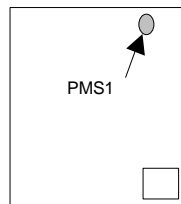
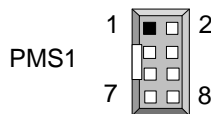
● **PKB1 : Keyboard Connector**

PIN NO.	DESCRIPTION
1	Keyboard Clock
2	Ground
3	NC
4	Keyboard Data
5	NC
6	NC
7	NC
8	Vcc



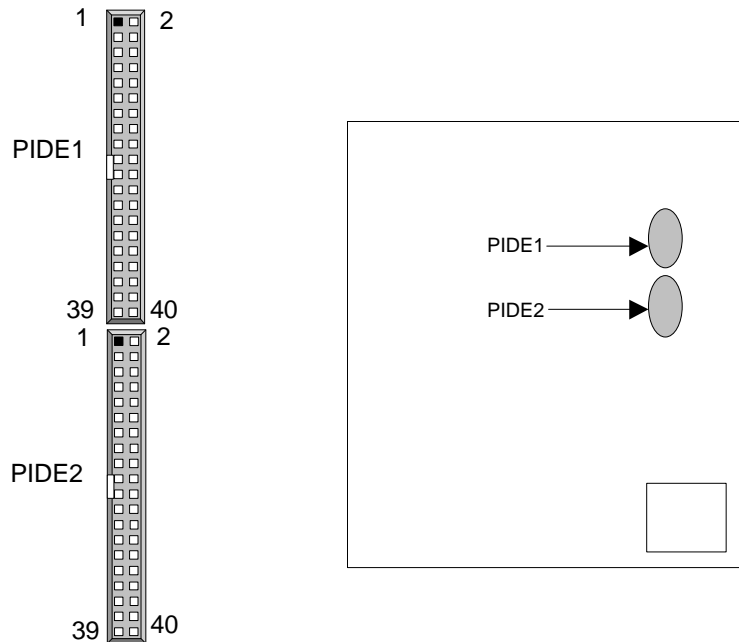
● **PMS1 : PS/2 Mouse Connector (Header)**

PIN NO.	DESCRIPTION
1	PS/2 Mouse Clock
2	Ground
3	NC
4	PS/2 Mouse Data
5	NC
6	NC
7	NC
8	Vcc



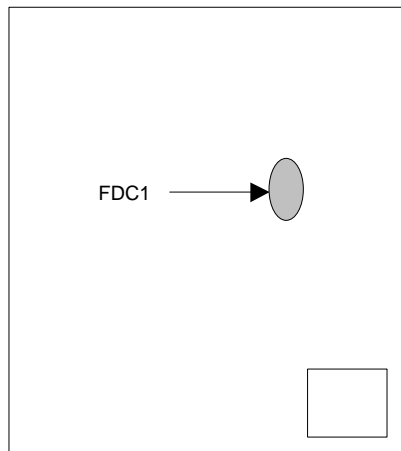
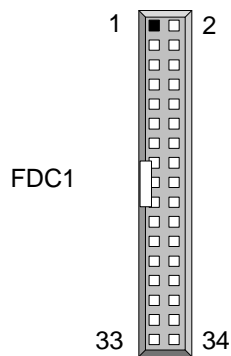
PIDE1 / PIDE2 : EIDE Interface Connector (Header)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Reset #	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	NC
21	NC	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	NC
29	NC	30	Ground
31	Interrupt	32	HDIO16J
33	SA1	34	NC
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active	40	Ground



FDC1 : Floppy Interface Connector (Header)

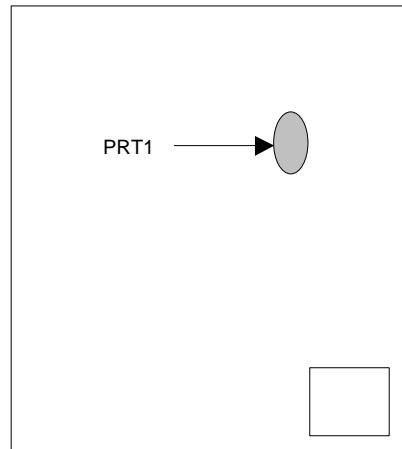
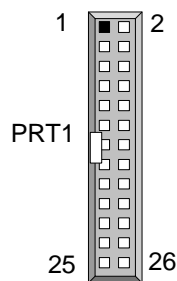
PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Ground	2	Density Select
3	Ground	4	NC
5	Ground	6	DS1
7	Ground	8	Index #
9	Ground	10	Motor Enable A#
11	Ground	12	Drive Select B#
13	Ground	14	Drive Select A#
15	Ground	16	Motor Enable B#
17	Ground	18	Direction #
19	Ground	20	Step #
21	Ground	22	Write Data #
23	Ground	24	Write Gate #
25	Ground	26	Track 0#
27	Ground	28	Write Protect
29	NC	30	Read Data #
31	Ground	32	Head Side Select #
33	NC	34	Disk Change #



JUMPER SETTINGS AND CONNECTORS

PRT1 : Parallel Port Connector (Header)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Strobe #	2	Auto Form Feed
3	Data 0	4	Error #
5	Data 1	6	Initialize #
7	Data 2	8	Printer Select IN #
9	Data 3	10	Ground
11	Data 4	12	Ground
13	Data 5	14	Ground
15	Data 6	16	Ground
17	Data 7	18	Ground
19	Acknowledge #	20	Ground
21	Busy	22	Ground
23	Paper Empty	24	Ground
25	Printer Select	26	NC



CHAPTER 3.

AWARD BIOS SETUP

The Basic Input / Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in the system board. Award's ROM BIOS provides a built-in Setup program that allows user to modify the basic system configuration and settings. The modified data will be stored in a battery-backed CMOS RAM so that the data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless there is configuration change in the system, such as hard drive replacement or new equipment is installed.

3.1 RUNNING AWARD BIOS

The Setup Utility is stored in the BIOS ROM. When the power of the computer system is turned on, a screen message appears to give you an opportunity to call up the Setup Utility; while the BIOS will enter the Power On Self Test (POST) routines. The POST routines perform various diagnostic checks while initializing the board hardware. If the routines encounter an error during the tests, the error will be reported in either of the two different ways, you may hear a series of short beeps or see an error message on the screen display. There are two kinds of error: fatal or non-fatal. The system can usually continue to boot up sequence with the non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

“ Press <F1> to RESUME ”

Write down the message and press the F1 key to continue the boot up sequence. After the POST routines are completed, the following message appears:

“ Press DEL to enter SETUP ”

Entering Setup

Turn on the power of the computer system and press immediately. If you don't have the chance to respond, reset the system by simultaneously typing the <Ctrl>, <Alt> and <Delete> keys, or by pushing the ' Reset ' button on the system cabinet. You can also restart by turning the system OFF then ON.

3.2 CMOS SETUP UTILITY

To access the AWARD BIOS SETUP program, press the key. The screen display will appear as :

Main Program Screen

ROM PCI / ISA BIOS (2A4KDL7F) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PCI CONFIGURATION SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

This screen provides access to the utility's various functions.

Listed below are explanations of the keys displayed at the bottom of the screen:

- <ESC>** : Exit the utility.
- ↑ ↓ → : Use arrow keys ↑ ↓ → to move cursor to your desired selection.
- <F10>** : Saves all changes made to Setup and exits program.
- <Shift><F2>** : Changes background and foreground colors.

3.3 STANDARD CMOS SETUP

When you select the "STANDARD CMOS SETUP" on the main program, the screen display will appear as :

Standard CMOS Setup Screen

ROM PCI / ISA BIOS(2A4KDL7F) STANDARD CMOS SETUP AWARD SOFTWARE, INC.									
Date (mm : dd : yy) : Fri, May 21 1999									
Time (hh : mm : ss) : 10 : 20 : 10									
<u>HARD DISKS</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS.</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>	
Primary Master	: Auto	0M	0	0	0	0	0	AUTO	
Primary Slave	: Auto	0M	0	0	0	0	0	AUTO	
Secondary Master	: Auto	0M	0	0	0	0	0	AUTO	
Secondary Slave	: Auto	0M	0	0	0	0	0	AUTO	
Drive A	: 1.44M, 3.5 in.								
Drive B	: None								
Floppy 3	Mode Support : Disabled								
LCD&CRT	: Auto								
Halt On	: All Errors								
					Base Memory : 640K Extended Memory : 64512K <u>Other Memory : 384K</u> Total Memory : 65536K				
ESC : Quit			↑ ↓ → : Select Item			PU / PD / + / - : Modify			
F1 : Help			(Shift) F2 : Change Color						

The Standard CMOS Setup utility is used to configure the following components such as date, time, hard disk drive, floppy drive, display, and memory. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

Set Date : Month, Date, Year.

Set Time : Hour, Minute and Second. Use 24 Hour clock format (for p.m. time, add 12 to the hour number, you would enter 4:30p.m. as 16:30).

Hard Disks : There are four hard disks listed: “Primary Master”, “Primary Slave”, “Secondary Master” and “Secondary Slave”. For each IDE channel, the first device is the “Master” and the second device is “Slave”. Hard disk types from 1 to 45 are the standard ones. To select or change the configuration, move the cursor to the desired position and press <Page Up> or <Page Down> to change the option : (1) Press “Auto” for IDE HDD auto detection, (2) Press “User” for user definable, and Press “None” for not installed (e.g. SCSI). There are six categories of information that you must enter for a HDD: “CYLS.” for (number of cylinders), “HEADS” for (number of heads), “PRECOMP” for (write pre-compensation), “LANDZ” for (landing zone), “SECTOR” for (number of sectors) and “MODE” for (Normal, LBA, LARGE and AUTO). The hard disk vendor’s or system manufacturer’s documentation should provide you with the drive specifications. For an IDE hard drive, you can set “TYPE” to “Auto” or use the “IDE HDD AUTO DETECTION” utility in the main program screen to enter the drive specifications.

Here is a brief explanation of drive specifications:

- **Type** : The BIOS contains a table of pre-defined drive types. Each defined drive type has specified number of cylinders, number of heads, write compensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.
- **Size** : Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
- **Cyls** : Number of cylinders.
- **Head** : Number of heads.
- **Precomp** : Write pre-compensation cylinder
- **Landz** : Landing zone.
- **Sector** : Number of sectors.
- **Mode** : Auto, Normal, Large, or LBA.
 - Auto: The BIOS automatically determines the optimal mode.
 - Normal: Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.
 - Large: For drives that do not support LBA and have more than 1024 cylinders.
 - LBA (Logical Block Addressing): During drive accesses, the IDE controller transforms that data address described by sector, head, and cylinder number into physical block address, significantly improving data transfer rates. For drives that greater 1024 cylinders.

There are four hard disks listed: "Primary Master", "Primary Slave", "Secondary Master" and "Secondary Slave". For each IDE channel, the first device is the "Master" and the second device is "Slave". Hard disk types from 1 to 45 are the standard one. To select or change the configuration, move the cursor to the desired position and press <Page Up> or <Page Down> to change the option.

The AWARD BIOS supports three HDD modes: NORMAL, LBA and LARGE.

NORMAL mode : This is a Generic Access mode in which neither the BIOS nor the IDE controller will make any transformation during the accession. The maximum HDD size is supported by the NORMAL mode that is 528 Megabytes.

LBA mode : This is a Logical Block Addressing mode which is a HDD accessing method to overcome the 528 Megabytes restriction. The number of cylinders, heads and sectors that are shown in setup may not be the physical number contained in the HDD.

During the HDD accessing, the IDE controller will transform the logical address that is described by the cylinder, head and sector numbers into its own physical address as contained inside the HDD. The maximum HDD size that is supported by the LBA mode is 8.4 Gigabytes.

LARGE mode : Some IDE HDD contains more than 1024 cylinders without the LBA support. This access mode tricks DOS (or other OS) with the number of cylinders that is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13H in order to access to the right HDD address. The maximum HDD size that is supported by the LARGE mode is 1 Gigabytes.

- Note :
1. To support LBA or LARGE mode, there are softwares located in the AWARD HD Service Routine "INT13H". It may fail to access a HDD with LBA or LARGE modes selected if you are running under an Operating System that replaces the whole INT13H service routine.
 2. Entering incorrect drive specifications will result in a hard disk drive that will function improperly or no function at all.

BIOS SETUP

Drive A and Drive B : Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5in	3 1-2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3 1-2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3 1-2 inch double-sided drive; 2.88 megabyte capacity

Note : 1. Not Installed could be used as an option for diskless workstations..

2. Highlight the listing after each drive name and select the appropriate entry.

LCD&CRT : Select display type.

Auto	Automatic detects display type
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapter

Halt On : During the power-on-self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors POST and continue the boot-up process. These are the selections:

No errors	Whenever the BIOS detects a non-fatal error the system will not be stopped and you will be prompted
All errors	The system boot will be stopped for any error that may be detected.
All, But Keyboard	The system boot will not stop for a keyboard error ; it will stop for all Other errors.
All, But Diskette	The system boot will not stop for a disk error ; it will stop for all other Errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error ; it will stop for all other errors.

Memory : You cannot change any values in the Memory fields; they are only for your information. The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64MB, 128MB, or more.

- **Base Memory** : Typically 640KB. Also called conventional memory. The DOS operating system and conventional applications use this area.
- **Extended Memory** : Above the 1-MB boundary. Early IBM personal computers could not use memory above 1MB, but current PCs and their software can use extended memory.
- **Other Memory** : Between 640KB and 1MB; called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your CONFIG.SYS file that start with LOADHIGH load programs into high memory.

3.4 BIOS Features Setup

When you select the “BIOS FEATURES SETUP” on the main program, the screen display will appear as:

BIOS Features Setup Screen

ROM PCI / ISA BIOS (2A4KDL7F)	
BIOS FEATURES SETUP	
AWARD SOFTWARE, INC	
Virus Warning	:Disabled
CPU Internal Cache	:Enabled
External Cache	:Enabled
Quick Power On Self Test	:Enabled
Boot Sequence	:A,C,SCSI
Swap Floppy Drive	:Disabled
Boot Up Floppy Seek	:Disabled
Boot Up NumLock Status	:On
Boot Up System Speed	:High
Gate A20 Option	:Fast
Typematic Rate Setting	:Disabled
Typematic Rate (Chars/Sec)	:6
Typematic Delay (Msec)	:250
Security Option	:Setup
PCI/VGA Palette Snoop	:Disabled
OS Select For DRAM >64MB	:Non-OS2
Video BIOS Shadow	: Enabled
C8000-CFFFF Shadow	: Disabled
D0000-D7FFF Shadow	: Disabled
D8000-DFFFF Shadow	: Disabled
ESC	: Quit ↑↓→ : Select Item
F1	: Help PU /PD +/- : Modify
F5	: Old Values (Shift) F2 : Color
F6	: Load BIOS Defaults
F7	: Load Setup Defaults

The following explains the options for each of the features as listed in the above menu:

Virus Warning : The default setting of the Virus Warning is “Disabled”. When it is enabled, any attempt to write the boot sector and partition table will halt the system and cause a warning message to appear. If this happens, you can use an anti-virus utility on a virus free, bootable floppy diskette to reboot, to clean and to investigate your system.

CPU Internal Cache : The default setting is "Enabled". This setting enables the CPU internal cache.

External Cache : The default setting is "Enabled". This setting enables the external cache.

Quick Power On Self Test : The default setting is "Enabled". This speeds up the Power On Self Test (POST) by skipping some items that are normally checked during the full POST. If your system is functioning normally, you can choose this feature to speed the booting process.

Boot Sequence : The default setting is "A:,C SCSI"; the other options are "C,A,SCSI"; "C,CDROM,A"; "CDROM,C,A"; "D,A,SCSI"; "E,A,SCSI"; "F,A,SCSI"; "SCSI,A,C"; "SCSI,C,A"; "C only"; and "LS/ZIP,C". This setting determines where the computer looks first for an operating system, the hard disk, or the floppy disk, ...or other. The BIOS will load the operating system from the disk drives in the sequence as selected here.

Swap Floppy Drive : The default setting is "Disabled". This setting gives you an option to swap A and B floppy disks. Normally, the floppy drive A is the one at the end of the cable and drive B is at the other end. If you set this option to "Enabled", the Drive A will function as Drive B, and vice-versa under the DOS.

Boot Up Floppy Seek : The default setting is "Disabled". When enabled, the BIOS will check whether there is a floppy disk drive installed.

Boot Up Numlock Status : The default setting is "On". If set "Off", the cursor controls will function on the numeric keypad.

Boot Up System Speed : The default setting is "High". This sets the CPU speed at boot up.

Gate A20 Option : The default setting is "Fast". This is the optimal setting for the CPU card. The other option is "Normal".

Typematic Rate Setting : The default setting is "Disabled". If enabled, you can set the typematic rate and typematic delay.

Typematic Rate (Chars/Sec) : This setting controls the speed at which the system registers the repeated keystrokes. The choices range from 6 to 30 Chars/Sec. The default setting is “6” Chars/Sec.

Typematic Delay (Msec) : This setting controls the time between the display of the first and second characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms. The default setting is “250” ms.

Security Option : This setting controls the password in the main screen. The options are “Setup” and “System”. Select “Setup” and it will protect the Setup Utility settings from being tampered with. Select “System” if you want to use password feature every time the system boots up. The default setting is “Setup”. You can create your password by using the “SUPERVISOR/USER PASSWORD” utility on the main program screen.

PCI/VGA Palette Snoop : The default setting is “Disabled”. Set to “Enable” if any ISA adapter card installed requires VGA palette snooping.

OS Select For DRAM > 64MB : The default setting is “Non-OS2”. Set to “OS2” if the system memory size is greater than 64MB and the operating system is OS/2.

Video BIOS Shadow : The default setting is “Enabled” which will copy the VGA display card BIOS into system DRAM to improve performance.

C8000-CFFFF Shadow to D8000-DFFFF Shadow : The default setting for the shadow feature is “Disabled”. When enabled, the ROM with the specific address is copied into system DRAM. It will also reduce the size of memory available to the system. After you have made your selection in the BIOS FEATURES SETUP, press the <ESC> key to go back to the main program screen.

3.5 CHIPSET FEATURES SETUP

When you select the “CHIPSET FEATURES SETUP” on the main program, the screen display will appear as:

Chipset Features Setup Screen

ROM PCI / ISA BIOS (2A4KDL7F) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.			
AUTO Configuration	: Enabled	Special Functions Port	: Disable
		Touch Controller IRQ	: Disable
AT-BUS Clock	: CLK/4		
DRAM Read Timing	: Normal		
DRAM Write Timing	: Normal		
SRAM Read Timing	: 3-1-1-1		
SRAM Write Timing	: 0 Wait		
Hidden Refresh	: Disable		
Memory Hole (15M – 16M)	: Disable		
ISA I/O Recovery	: Enable		
Fast-Back-to-Back	: Enable		
		ESC : Quit	↑↓→: Select Item
		F1 : Help	PU /PD +/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

This section describes features of the board's chipset. All the entries on the screen are automatically configured. However, you can change it according to your operating environment.

Auto Configuration : The default setting is “Enabled” which will optimize DRAM timing automatically depending on whether the DRAM used is either 70ns or 60ns. The other option is “Disabled” which allows you to change DRAM timing manually.

AT-BUS Clock : You can set the speed of the AT bus in terms of the CPU clock speed, or at the fixed speeds of 7.16M Hz.

DRAM Read / Write Timing : Timing that the system uses when reading from and writing to DRAM. Do not reset from the manufacturer default value.

SRAM Reading Timing : These SRAM timing numbers are the pattern of cycles the CPU uses to read data from the cache. Do not reset this option from its default.

SRAM Writing Timing : If necessary, you can insert a wait state in the SRAM write cycle.

Hidden Refresh : When Disabled, DRAM is refreshed by IBM AT methodology, using a CPU cycles for each refresh. When hidden refresh is Enabled, the DRAM controller seeks the most opportune moment for a refresh, regardless of CPU cycles, with least disruption of system activity and least performance penalty. Hidden refresh is faster and more efficient, and it also allows the CPU to maintain the status of the DRAM even if the system goes into a power management “suspend” mode.

Memory Holes (15M-16M) : The default setting is “Disable”. Set to “Enable” means that when the system memory size is equal to or greater than 16M bytes, the physical memory address from 15M to 16M will be passed to PCI or ISA and there will be 1M Bytes hole in your system memory. This option is designed for some OS with special add-on cards which need 15M-16M memory space.

ISA I/O Recovery : The CPU and local bus are much faster than industry standard architecture (ISA) input / output (I/O) bus. Select Enabled to allow additional time for I/O devices to respond to the system. Otherwise, data could be lost. If all your I/O devices are capable of fast I/O, selecting Disabled can speed up processing.

Fast-Back-to-Back : When Enable, consecutive write cycles targeted to the same slave become fast back-to-back on the PCI bus.

Special Functions Port : Select Touch Screen I/O ports address.

Touch Controller IRQ : Select Touch Screen IRQ.

Video Off Method : This setting controls the Video off method in power saving mode. The default setting is “ V/H SYNC+Blank ”. This setting disables V/H SYNC signals and blanks the screen in power saving mode. Other options are “ Blank Screen ” and “ DPMS ”.

Doze Mode : Options are from “ 1 Minute ” to “ 1 Hour ” and “ Disable ”. The system speed will change from turbo to slow if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

Standby Mode : Options are from “ 1 Minute ” to “ 1 Hour ” and “ Disable ”. The system speed will change from turbo to slow and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

Suspend Mode : Option are from “ 1 Minute ” to “ 1 Hour ” and “ Disable ”. The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Wake-Up event is detected.

HDD Power Down : Options are from “ 1 Minute ” to “ 15 Minutes ” and “ Disable ”. The IDE hard drive will spin down if it is not accessed within a specified length of time.

Wake-Up Events : When a hardware event is enabled, the occurrence of a corresponding event will return the system to full speed.

Power Down/Resume Events : When a hardware event is enabled, the occurrence of a corresponding event will prevent the system form entering any PM mode.

After you have made your selection in the POWER MANAGEMENT SETUP, press the <ESC> key to go back to the main program screen.

3.7 PCI Configuration

Both the ISA and PCI use on the CPU card use system IRQs & DMAs. You must set up the IRQ and DMA assignments correctly through the PCI Configuration Setup utility, otherwise the CPU Card will not work properly.

Selecting “PCI CONFIGURATION” and the Screen appears as ...

ROM PCI / ISA BIOS (2A4KDL7F) PCI CONFIGURATION SETUP AWARD SOFTWARE, INC.	
PnP BIOS Auto-Config. : Enable	CPU to PCI Write Buffer : Enabled
Slot 1 Using INT# : Auto	CPU to PCI Byte Merge : Enabled
Slot 2 Using INT# : Auto	PCI to DRAM Buffer : Enabled
Slot 3 Using INT# : Auto	
Slot 4 Using INT# : Auto	
PCI IRQ Activated By : Level	
PCI IDE 2nd Channel : Enable	
PCI IDE IRQ Map To : PCI-AUTO	
Primary IDE INT# : A	ESC : Quit ↑↓→ : Select Item
Secondary IDE INT# : B	F1 : Help PU /PD/+/- : Modify
	F5 : Old Values (Shift) F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Slot X Using INT# : Some PCI devices use interrupts to signal that they need to use the PCI bus. Other devices, notably most graphics adapters, do not need interrupt service at all. Each PCI slot can activate up to four interrupts, INT#A, INT#B, INT#C and INT#D. By default, a PCI slot is allowed INT#A. Assigning INT#B has no meaning unless the device in the slot requires two interrupt services rather than just one. Likewise, using INT#C can only mean the device requires three interrupts; and using INT#D, four interrupts. The default, AUTO, allows the PCI controller to automatically allocate the interrupts.

PCI IRQ Activated by : Leave the IRQ trigger set at Level unless the PCI device assigned to the interrupt specifies Edge-triggered interrupts.

PCI IDE 2nd Channel : You can use this selection to enable or disable the second IDE channel.

PCI IDE IRQ Map to : The PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary and secondary IDE INT# fields default to values appropriate for two IDE channels, with the primary PCI IDE channel having a lower interrupt than the secondary.

CPU to PCI Write Buffer : When Enable, the CPU can write up to four dwords of data to the PCI write buffer before the CPU must wait for the PCI bus cycles to finish. When Disabled, the CPU must wait after each write cycle until the PCI bus signals that it is ready to receive more data.

CPU to PCI Byte Merge : Byte merging permits merging of the data in consecutive CPU-to-PCI byte / word writes with the same dword address, into the same posted write buffer location. The merged collection of bytes is then sent over the PCI Bus as a single dword. Byte merging is performed in the compatible VGA range only (0A0000-0BFFFF)

PCI to DRAM Buffer : The system supports buffered writes from the PCI bus to DRAM for greater efficiency.

3.8 Load BIOS Defaults

The BIOS defaults have been set by the manufacturer and represent settings which provide the minimum requirements for your system to operate.

3.9 Load Setup Defaults

“LOAD SETUP DEFAULTS” loads optimal setting which are stored in BIOS ROM.

The defaults loaded only affect the BIOS Features Setup, Chipset Features Setup, Power Management Setup, PCI configuration setup and Integrated Peripherals Setup. There is no effect on the Standard CMOS Setup. To use this feature, highlight on the main screen and press <Enter>. A line will appear on the screen asking if you want to load the Setup default values. Press the <Y> key and then press the <Enter> key if you want to load the Setup defaults. Press <N> if you don't want to proceed.

3.10 Integrated Peripherals

When you select the “INTEGRATED PERIPHERALS” on the main program, the screen display will appear as:

ROM PCI / ISA BIOS (2A4KDL7F) INTERGRATED PERIPHERALS AWARD SOFTWARE, INC.	
On-Chip Local Bus IDE	: Enabled
IDE Buffer for DOS & Win	: Enabled
The 2nd channel IDE	: Enabled
IDE HDD Block Mode	: Enabled
IDE Primary Master PIO	: Auto
IDE Primary Slave PIO	: Auto
IDE Secondary Master PIO	: Auto
IDE Secondary Salve PIO	: Auto
Onboard FDC Controller	: Enabled
Onboard Serial Port 1	: 3F8/IRQ4
Onboard Serial Port 2	: 2F8/IRQ3
Onboard Parallel Port	: 378/IRQ7
Parallel Port Mode	: SPP
ESC : Quit ↑↓→ : Select Item F1 : Help PU /PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	

On-Chip Local Bus IDE : The integrated peripheral controller contains a IDE interface with support for two IDE channels. Select Enabled to active the IDE interface.

IDE Buffer for DOS & Win : Select Enabled to increase throughput to and from IDE devices by using the on-chip read-ahead and posted-write IDE buffers. Note that use of the buffers may cause some slow IDE devices to be even slower. When in doubt, experiment with this setting for optimal performance and data integrity.

The 2nd channel IDE : You may separately disable the second IDE channel on the integrated peripherals controller.

IDE HDD Block Mode : Block mode is also called block transfer, multiple commands, or multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enable for automatic detection of the optimal number of block read/writes per sector the drive can support.

IDE Primary / Secondary Master / Slave PIO : The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode of each device.

Onboard FDC Controller : The default setting is "Enabled". This option enables the onboard FDD controller.

Onboard Parallel Mode : There are four options "Normal" (default), "ECP", "ECP/EPP" and "EPP/SPP". Change the mode from "Normal" to the enhanced mode only if your peripheral device can support it. When set to ECP mode, the printer port always use DMA3.

3.11 Supervisor/User Password

The "SUPERVISOR/USER PASSWORD" utility sets the password. The CPU card is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive and you can use up to 8 alphanumeric characters, press <Enter> after entering the password. At the next prompt, confirm the new password by typing it and pressing <Enter> again.

To disable the password, press the <Enter> key instead of entering a new password when the "Enter Password" dialog box appears. A message will appear confirming that the password is disabled.

If you have set both supervisor and user password, only the supervisor password, only the supervisor password allows you to enter the BIOS SETUP PROGRAM.

Note:

If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt on the S1 (open pad) for 5 seconds, then removing the shunt.

3.12 IDE HDD Auto Detection

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

If the auto-detected parameters displayed do not match the ones that should be used for your hard drive, do not accept them. Press the <N>key to reject the values and enter the correct ones manually on the Standard CMOS Setup screen.

Note: If you are setting up a new hard disk drive (nothing on it) that supports LBA mode, more than one line will appear in the parameter box, choose the line that lists LBA for an LBA drive.

Do not choose Large or Normal if the hard disk drive is already fully formatted when you install it, choose the mode "HDD Low Level Format" to format it.

3.13 HDD Low Level Format

Selecting this option and pressing the <Enter> key enable you to perform low level format of hard disk drive.

3.14 Save & Exit Setup

Selecting this option and pressing the <Enter> key to save the new setting information in the CMOS memory and continue with the booting process.

The Screen appears as ...

ROM PCI / ISA BIOS (2A4KDL7F) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEN PCI CONFIGURATION SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
Load SETUP Defaults (Y/N) ? Y	
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

3.15 Exit Without Saving

Selecting this option and pressing the <Enter > key to exit the Setup Utility without recording any new values or changing old ones.

The Screen appears as ...

ROM PCI / ISA BIOS (2A4KDL7F) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PCI CONFIGURAT LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION EEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
Save to CMOS and EXIT (Y/N) ? Y	
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → : Select Item (Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

APPENDIX A

HOW TO USE WATCH-DOG TIMER

You could enable the watch-dog for when your application software monitors an unexpected or not respond event, then the hardware timer generates a reset to reboot your system. The watch-dog timer period (from enable to reset) was decided by the jumper setting of the watch-dog time out period. Please refer the chapter of jumper settings and connectors. During the period of enable to reset, you could still cancel reset bt disabling the watch-dog.

EX.1: For DOS

Execute the **DEBUG.EXE** file under DOS, Then key-in **i443**. The system will reboot automatically according to the time-out you set.

For example, if you want to Set **4 seconds** for the time-out, you should set **JP14: 4-8 ON**

Enable

```
C:\DOS> DEBUG
-i443
```

Disable

```
C:\DOS>DEBUG
-i43
```

EX.2: For assemble Language

```
Enable :
      :
```

```
MOV  DX, 443H
IN AL, DX
```

```
      :
      :
```

```
Disable :
```

```
      :
      :
IN AL, 43H
```

```
      :
      :
```

Terms and Conditions

Date:1999.07.05

Warranty Policy

1. All products are warranted against defects in materials and workmanship on a period of one years from the date of purchase by the customer.
2. The buyer will bear the return freight charges for goods that are returned for repair within the warranty period whereas manufacturer will bear the other way after repair.
3. The buyer will pay for repair (for the replaced materials plus service time) and transportation charges (both ways) for items after the expiration of the warranty period.
4. If the RMA Service Request Form does not meet the stated requirement as listed on "RMA Service " , RMA goods will be returned at the customer expense.
5. The following conditions are excluded from this warranty; G
 - A. Improper or inadequate maintenance by the customer.
 - B. Unauthorized modification or misuse.
 - C. Operation outside of the environmental specifications for the product.

RMA Service

1. **Request a RMA# :**

Complete and fax to Supplier the "RMA Request Form" to obtain a RMA number.

2. **Shipping:**

- A. The customer is requested to fill up the problem code as listed . If none of the code is selected, please write the symptom description on the remark.
- B. Ship the defective units with freight prepaid.
- C. Mark the RMA # clearly on the box.
- D. Shipping damage as a result of inadequate packing is the customer's responsibility.
- E. Use the original packing materials whenever possible .

3. **All RMA# are valid for 30 days only:**

When RMA goods are received after valid RMA# period , the goods will be rejected.

RMA Service Request Form

Date:1999.07.05

When requesting RMA service, please fill out this "RMA Service Request Form". This form needs to be shipped with your returns. Service cannot begin until we have this information.

Company:	Person to contact:
Phone No.	Purchased Date:
Fax No.:	Applied Date:
Return Shipping Address _____	

*For Supplier only	RMA No:
	Account Sales:

Model No.	Serial No.	Problem Code	Remark
			*This form could be copied for more description

***Problem Code:**

- | | | |
|------------------------|------------------------------|----------------------------|
| 01:D.O.A. | 06: HDC Fail | 11: Memory Socket Bad |
| 02: Second Time R.M.A. | 07: Bad Slot | 12: Hang Up Hardware |
| 03: No Screen | 08: BIOS Problem | 13: Hang Up Software |
| 04: CMOS Data Lost | 09: Keyboard Controller Fail | 14: Other (Pls. Specify) |
| 05: FDC Fail | 10: Cache RMA Problem | |

Request Party

Confirmed By Supplier

Authorized Signatures

Authorized Signatures