AP-545V

**Single Board Computer with VGA
for ZIF Socket 7 Processor**

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TRADEMARKS

Ver. No.   1.1

LEI-UM-AP545V0-002

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CHAPTER 1.

INTRODUCTION

The AP-545V is a half-size ISA single board computer for Socket 7 processor that is using the SIS's BGA chipset SiS5598 that support the Ultra DMA-33 for faster hard drive, VGA and USB function. For boosting operation, this motivated card also supports sockets for a Flash Disk and one DIMM memory module.   It offers the function of an industrial computer on a single board with on-board 2nd level cache RAM of 512KB for maximum performance.

The AP-545V is built with patent PCI piggyback expansion bus that is simply upgraded by changing one card from another without replacing the whole system. It provides the primarily elements for building an IBM PC/AT compatible computer for a wide variety of applications with system integration. The AP-545V is fully compatible with the IBM PC/AT which means virtually all the software written for the IBM PC/AT will run on the AP-545V SBC.

Other on-board features include two serial ports (one each of RS-232 and RS-232/422/485), one multi-mode parallel (ECP/EPP/SPP) port, a floppy drive controller and a keyboard interface and a PS/2 mouse interface. The built-in one high speed PCI IDE controller supports both PIO and bus master modes.   Up to two IDE devices can be connected, including large hard disks, CD-ROM drives, tape backup drives and other IDE devices. Its 6-layer printed circuit board combines with noise-tolerant and low power consumption CMOS technology applied on the board makes AP-545V able to withstand any harsh industrial environments very well.

1.1 SPECIFICATIONS

- Processor : For ZIF Socket 7 Processor
  Intel Pentium+ & MMX, AMD K5 & K6, Cyrix 6x86 &
  M2 CPU
- Chipset : SiS 5598 Chipset, Winbond I/O chipset compatible
- System Memory : One 168-pin DIMM socket up to 128MB SDRAM
- Cache Memory : On-board 512KB Pipelined Burst Synchronous cache
- BIOS : 256KB AMI License BIOS
- Flash Memory Disk : Reserved socket for DiskOnChip from M-System
  support up to 72 MB Flash Memory Disk
- VGA Controller : VGA on chipset SiS 5598, on-board 2MB shared
  memory
- IDE Drive Interface : One PCI IDE port, support up to two IDE devices and
  Ultra DMA-33
- Floppy Drive Interface : One FDD port, support up to two floppy devices
- Serial Port : Two COM ports, one RS-232 and one RS-
  232/422/485 serial ports
- Parallel Port : One multi-mode parallel port (SPP/EPP/ECP)
- Bus Interface : Optional ISA bus
- RTC Battery : Dallas RTC battery or compatible
- DMA : 8 DMA channels
- Interrupts : 16 levels of hardware interrupts
- PS/2 Mouse Connector : On-board 6-pin Mini-Din PS/2 Mouse connector
- Keyboard Connector : On-board 5-pin header and 6-pin Mini-Din connectors
- Expansion Bus : On-board patent PCI piggyback expansion bus
- Watchdog Timer : 8 level time-out intervals (0.5/1/2/4/8/16/32/64 sec.)
- Universal Serial Bus : Support 2 USB ports
- IR Interface : Support one IrDA header
- Operating Temperature : 0°C~55°C (32°F~132°F)
- Humidity : 10 ~90 RH
- Dimensions : 185 mm X 122 mm ($7^1/_4$" X $4^5/_6$" inches)
- Net weight : 250 g (0.517 pounds)

1.2 PACKING CHECK LIST

Before you begin to install your card, please make sure that you received the following materials as listed below:

Item	Qty	Remark
AP-545V Single Board Computer	1 pc.	
Keyboard adapter cable	1 set	6-pin AT keyboard connector to 5-pin PS/2 keyboard connector
IDE/Floppy cable	1 pc.	40-pin standard header to 40-pin standard header 34-pin standard header to 34-pin standard header
Printer port cable	1 set	26-pin female flat connector t header to 25-pin male D-Sub connector
User' s manual	1 pc.	AP-545V

CHAPTER 2.

JUMPER SETTINGS AND CONNECTORS

2.1 BOARD OUTLINE OF AP-545V

The Figure below shows the jumpers and connectors location on the AP-545V:
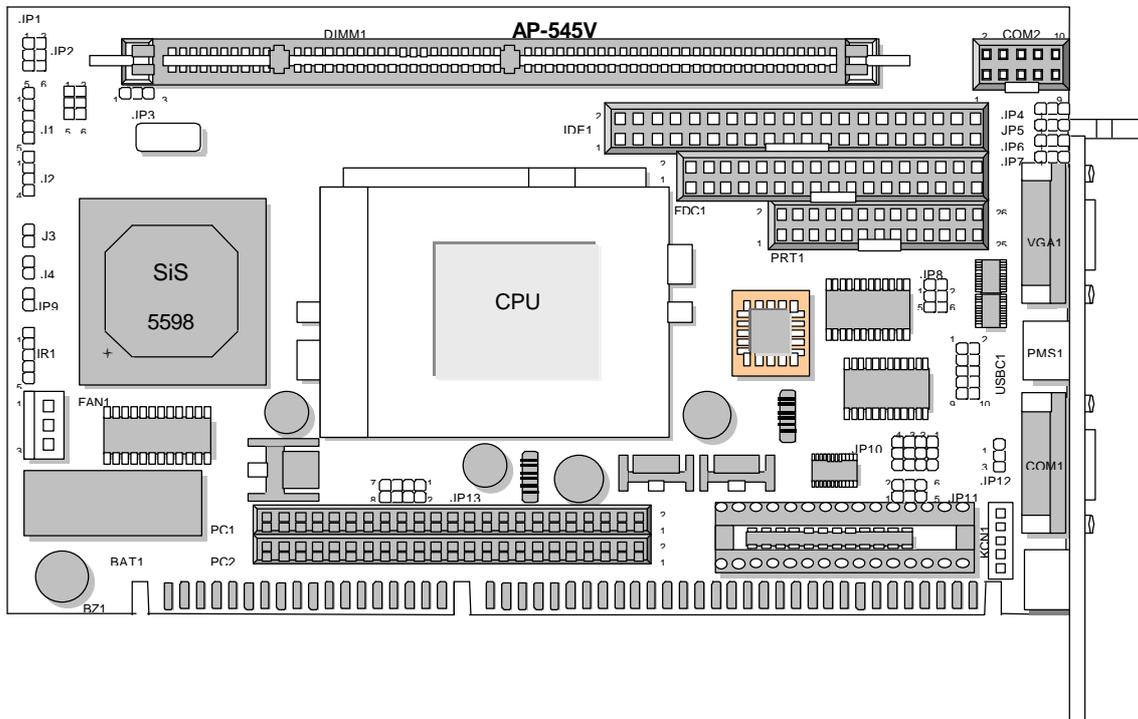
2.2 CPU INSTALLING AND UPGRADING

To upgrade to a higher power Pentium CPU, simply remove the old CPU and install to a 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 as sensitive electronic components can 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 time. 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 SBC to match the need of your application. To set a jumper, a black 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:
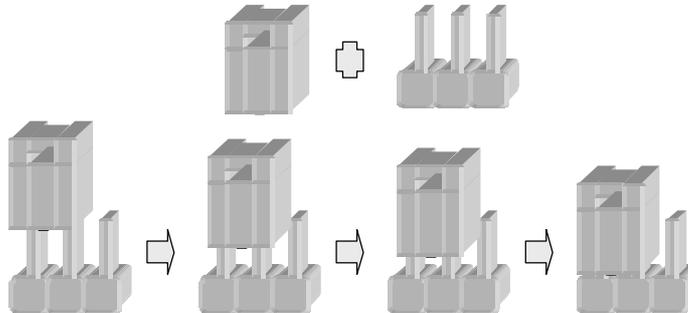
A pair of needle-nose pliers is recommended when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local sales representative before you make any changes. In general, you simply need a standard cable to make most connections.

2.4 JUMPER LOCATION FOR AP-545V

AP-545V

.IP1
.IP2
5 6
5 6
.IP3
.IP4
JP5
.IP6
JP7
CPU
.IP8
1 2
5 6
JP10
1 2
5 6
.IP11
1
2
JP12
7 1
8 2
.IP13
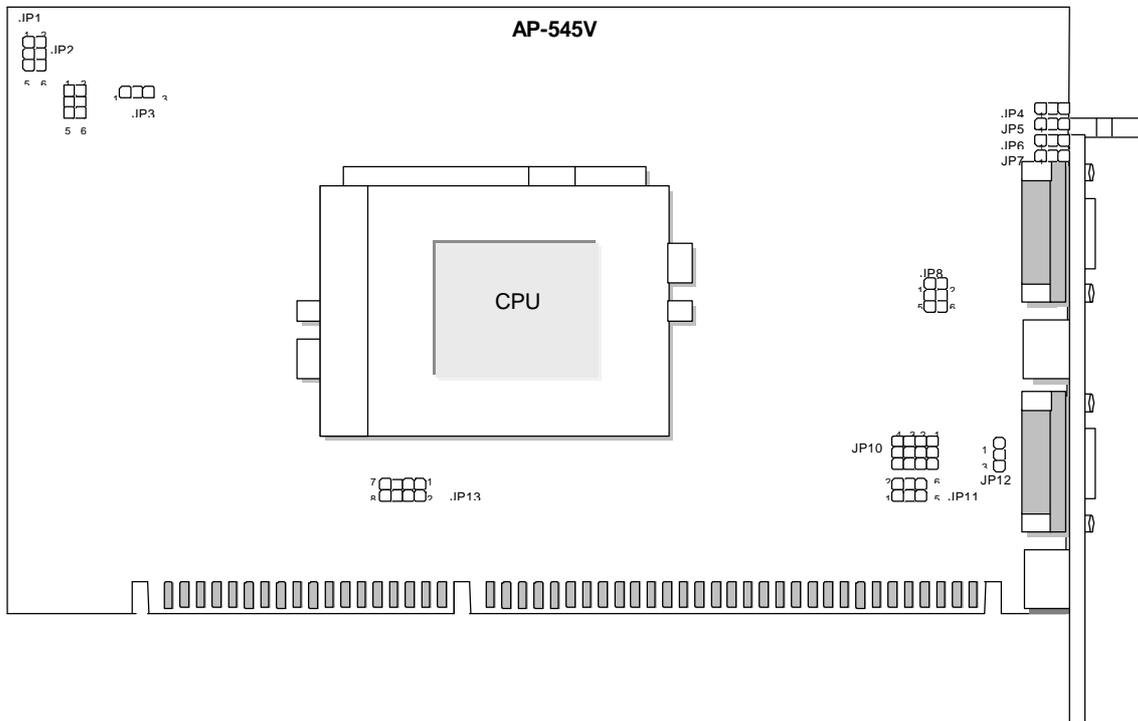
2.5 JUMPER SETTINGS SUMMARY FOR AP-545V

JUMPERS	
LOCATION	**FUNCTION**
JP1	Select Internal CPU Clock Ratio
JP2	Select External CPU Clock
JP3	Select External VGA Function
JP4 ~ JP8	Select Serial Port#2 Type
JP10	Select Watch-Dog Time Out Period
JP11	M-System Address
JP12	Select Watch-Dog Function
JP13	Select Vcore Voltage

2.6 JUMPER SETTINGS FOR AP-545V

CPU Speed Reference Table									
CPU Speed (MHz)	75	90	100	120	133	150	166	200	233
Clock setting	50	60	66.6	60	66.6	60	66.6	66.6	66.6
Frequency ratio	1.5	1.5	1.5	2	2	2.5	2.5	3	3.5

✦ **JP1 : Select Internal CPU Clock Ratio**

Clock Ratio	JP1
1.5 X	OFF
2.0 X	1-2
2.5 X (Default)	1-2 , 3-4
3.0 X	3-4
3.5 X	OFF
4.0 X	1-2 , 5-6
4.5 X	1-2 , 3-4 , 5-6
5.0 X	3-4 , 5-6
5.5 X	5-6
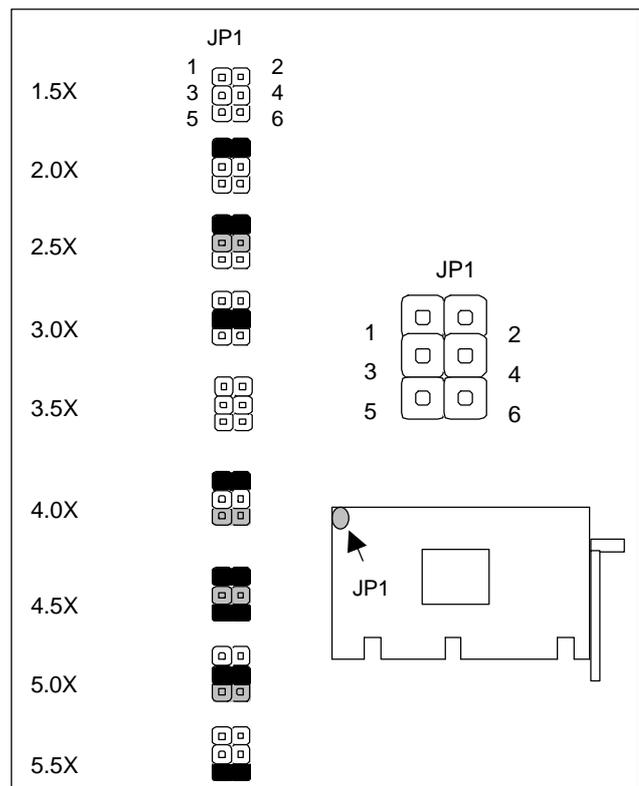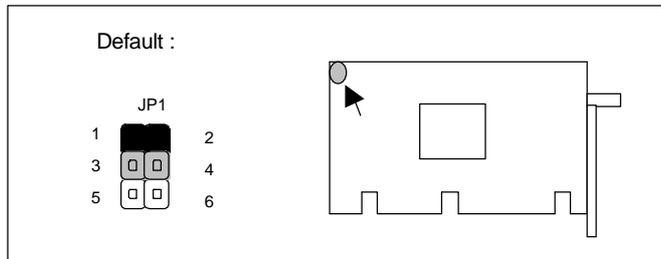
✦ **JP2 : Select External CPU Clock**

External CPU Clock	JP2
50 MHz	1-2 , 3-4 , 5-6
60 MHz	1-2
66.6 MHz (Default)	OFF
75 MHz	3-4 , 5-6
83.3 MHz	1-2 , 3-4
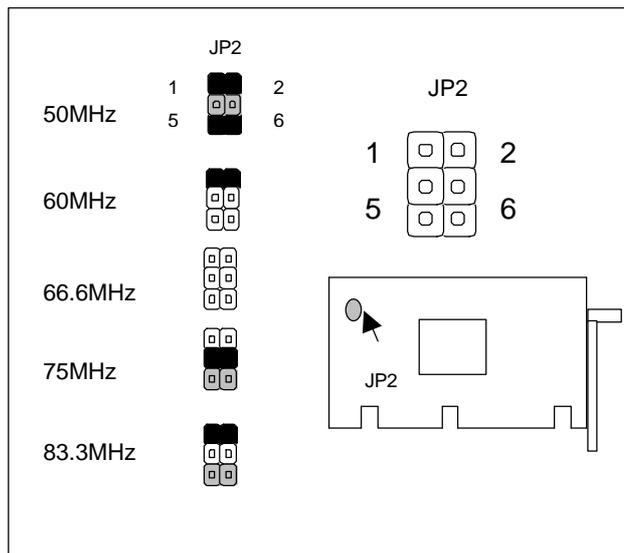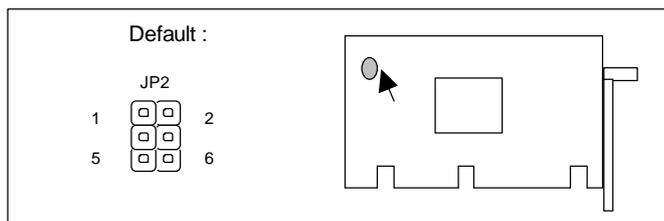
✦ **JP3 : Select Internal VGA Function**

VGA Chips	JP3
Disable	1-2
Enable (Default)	2-3
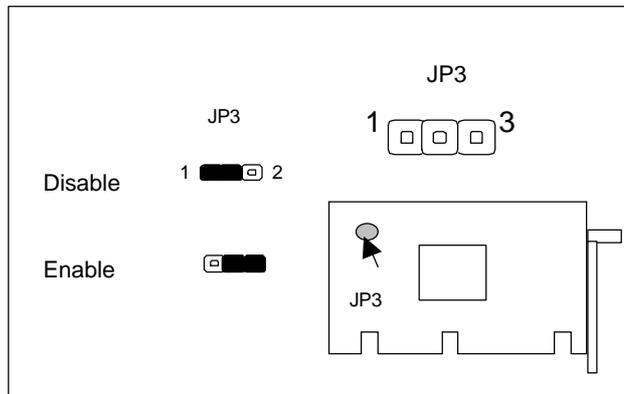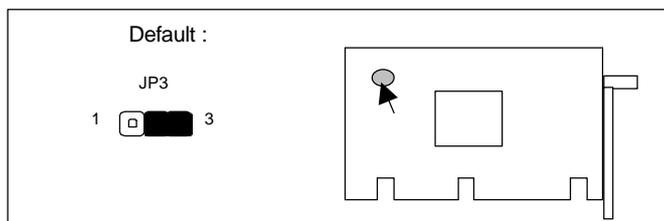
✦ JP4~JP8 : Select Serial Port#2 Type

COM2 Type	JP4	JP5	JP6	JP7	JP8
RS-232 (Default)	1-2	1-2	1-2	1-2	1-2
RS-422	2-3	2-3	2-3	2-3	3-4
RS-485	2-3	2-3	2-3	2-3	5-6
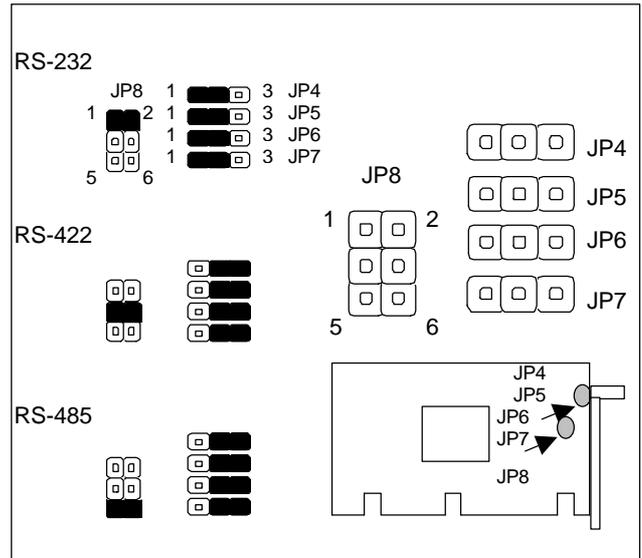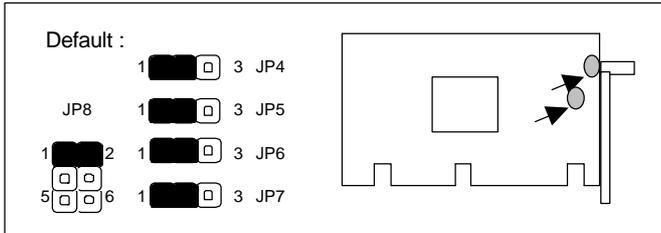
✦ JP10 : Select Watch-Dog Time Out Period

Time Out Period	JP10
0.5 sec	1L
1 sec	2L
2 sec	3L
4 sec (Default)	4L
8 sec	4H
16 sec	3H
32 sec	2H
64 sec	1H

4 3 2 1

0.5 SEC

1 SEC

2 SEC

4 SEC

8 SEC

16 SEC

32 SEC

64 SEC

JP10

JP10

4 3 2 1

L

H

JP10

Default :

L

H

JP10
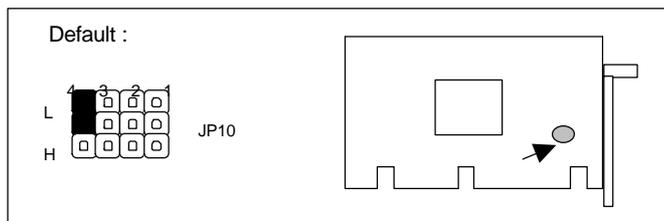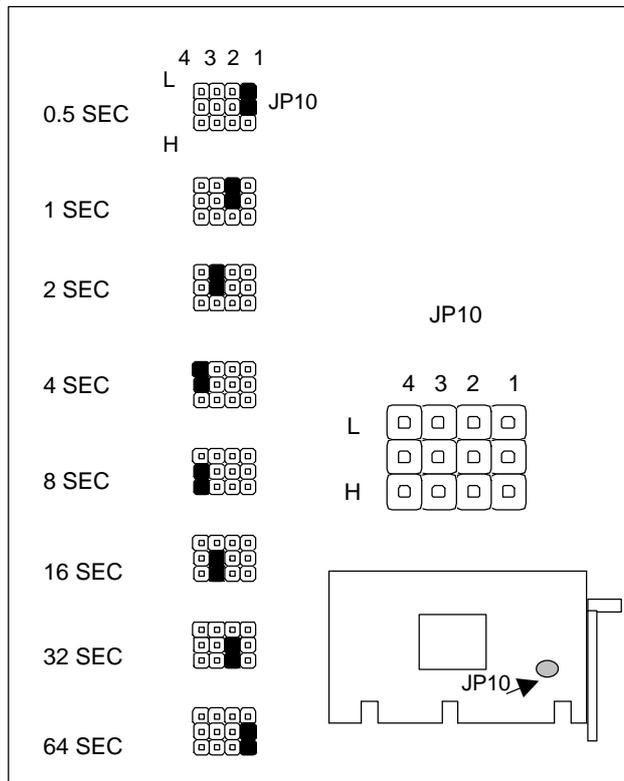
✦ JP11 : M-System Address

M-System Address	JP11
C8000~CFFFF	1-2
D0000~D7FFF	3-4
D8000~DFFFF	5-6

Note : Spare Jumper at 2-4   M-System address

C8000 is already occupied by VGA BIOS

therefore only D0000 and D8000

addresses are free.

C8000~CFFFF

2   6

1   5

JP11

D0000~D7FFF

D8000~DFFFF

JP11

2   6

1   5

Default :

2   6

1   5

JP11

JP11
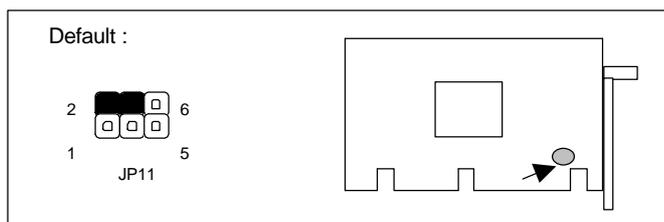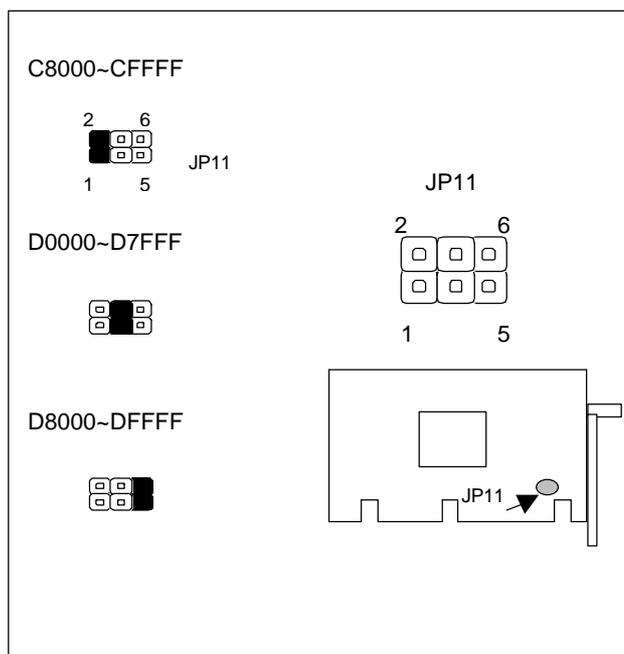
✦ JP12 : Select Watch-Dog Function

Function	JP12
Active By Reset System (Default)	1-2
Active By NMI System	2-3
Disable Watch-Dog	OFF

Default :

JP12

1
3

JP12

Active By Reset
System

JP12

1

3

Active By NMI
System

Disable
Watch-Dog

JP12
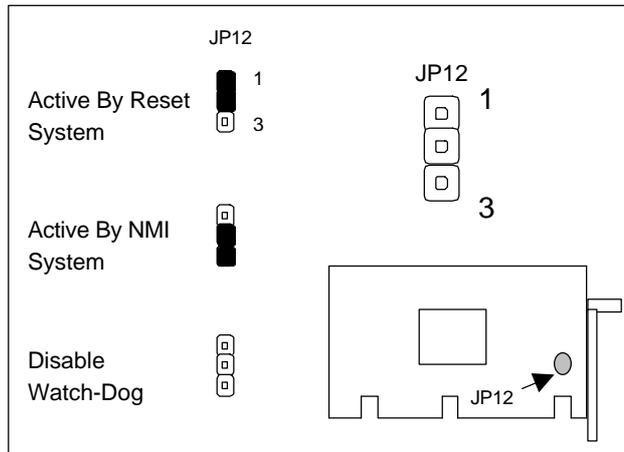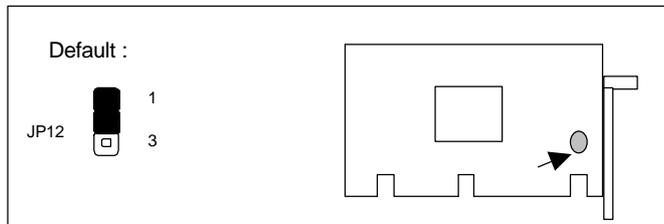
✦ JP13 : Select Vcore Voltage

Vcore Voltage	JP13
2.0 V	OFF
2.1 V	1-2
2.2 V	3-4
2.3 V	1-2 , 3-4
2.4 V	5-6
2.5 V	1-2 , 5-6
2.6 V	3-4 , 5-6
2.7 V	1-2 , 3-4 , 5-6
2.8 V (Default)	7-8
2.9 V	1-2 , 7-8
3.0 V	3-4 , 7-8
3.1 V	1-2 , 3-4 , 7-8
3.2 V	5-6 , 7-8
3.3 V	1-2 , 5-6 , 7-8
3.4 V	3-4 , 5-6 , 7-8
3.5 V	1-2 , 3-4 , 5-6 , 7-8

Default :

JP13
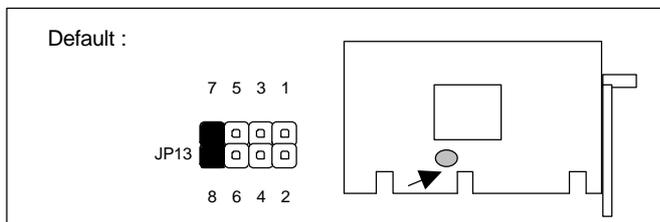
Note : Spare Jumper at 2-4
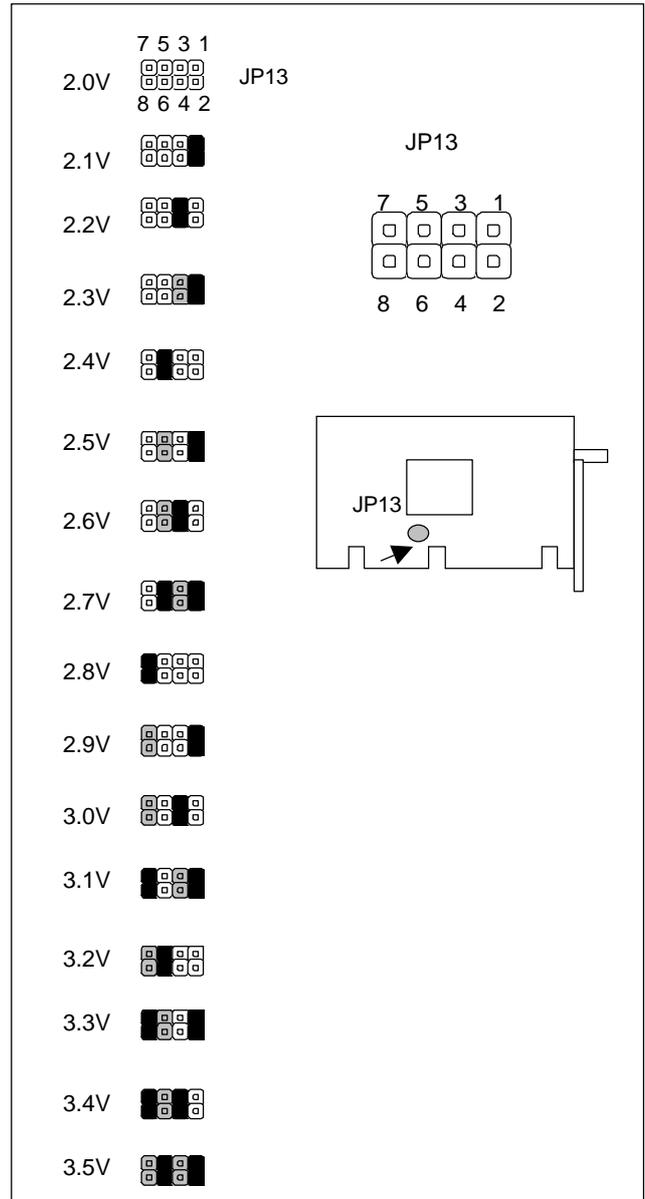
AP-545V/13

2.7 I/O CONNECTOR LOCATION FOR AP-545V
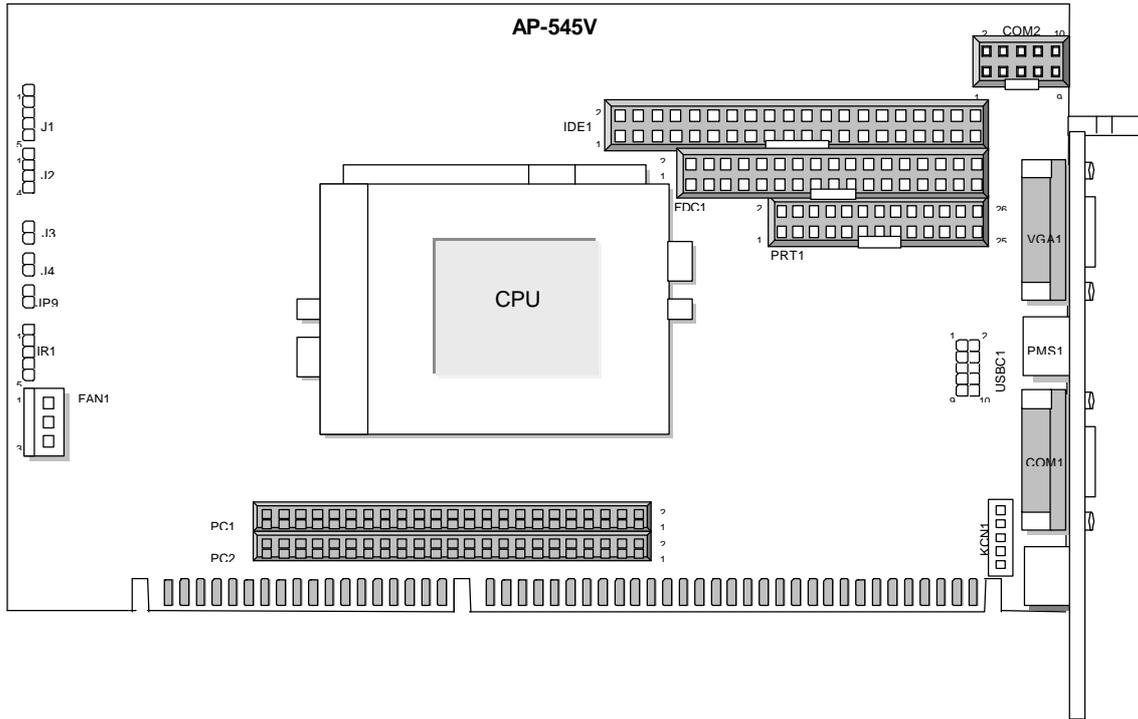
2.8 I/O Connector Summary for AP-545V

CONNECTOR	FUNCTION
JP9	ACPI LED
J1	Power LED & Keyboard Lock Connector
J2	Ext. Speaker Connector
J3	IDE Active LED Connector
J4	Reset Connector
FAN1	FAN Connector
VGA1	VGA Monitor Connector
IDE1	PCI IDE Interface Connector
IR1	IrDA Connector
KCN1	5 Pin Keyboard Connector (Header)
PKB1	PS/2 Keyboard Connector (Mini-Din)
PMS1	PS/2 Mouse Connector (Mini-Din)
USBC1	USB#1 USB#2 Interface Connector
COM1	Serial Part #1 Connector (D-Sub)
COM2	Serial Part #2 Connector
PRT1	Parallel Port Connector
FDC1	Floppy Interface Connector
PC1 PC2	PCI Bus Connector

2.9 SYSTEM STATUS INDICATE AND CONTROL CONNECTORS

CONNECTOR	PIN NO.	DESCRIPTION
JP9 : ACPI LED	1	VCC3
	2	ACPI Signal
J1 : Power LED & Keyboard Connector	1	Power LED VCC
	2	NC
	3	GND
	4	Keyboard Lock Signal
	5	GND
J2 : Ext. Speaker Connector	1	Speak Out Signal
	2	NC
	3	NC
	4	VCC
J3 : IDE Active LED Connector	1	VCC
	2	IDE Active Signal
J4 : Reset Connector	1	Reset Input Signal
	2	GND

2.10 I/O CONNECTORS DESCRIPTION

✦ **FAN1 : FAN Connector**

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

FAN1
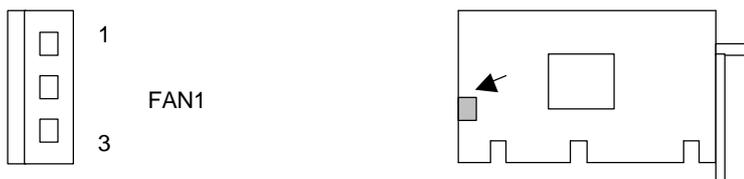
✦ **VGA1 : VGA Monitor Connector**

PIN NO.	DESCRIPTION
1	Red Color Signal
2	Green Color Signal
3	Blue Color Signal
4	NC
5	Ground
6	Ground
7	Ground
8	Ground
9	VCC
10	Ground
11	NC
12	DDC-Data
13	H-Sync.
14	V-Sync.
15	DDC-Clock

VGA1

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✦ IDE1 : PCI IDE Interface Connector

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	DMA REQ#	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Ground
29	DMA ACK#	30	Ground
31	IRQ#	32	Ground
33	SA1	34	NC
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD Active	40	Ground

IDE1
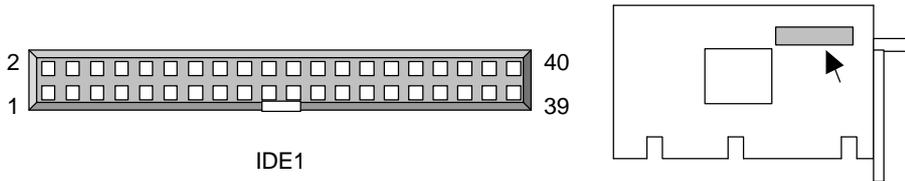
✦ IR1 : IrDa Connector

PIN NO.	DESCRIPTION
1	VCC
2	NC
3	IR_RX
4	Ground
5	IR_TX
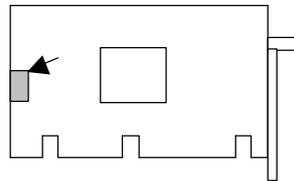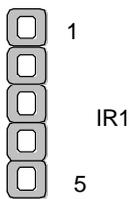
✦ KCN1 : 5 PIN Keyboard Connector (Header)

PIN NO.	DESCRIPTION
1	Keyboard Clock
2	Keyboard Data
3	NC
4	Ground
5	VCC
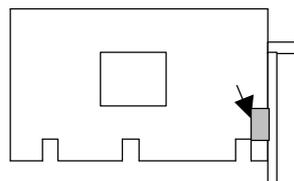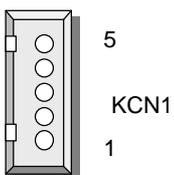
✦ **PKB1 : PS/2 Keyboard Connector (Mini Din)**

PIN NO.	DESCRIPTION
1	PS/2 Keyboard Data
2	NC
3	Ground
4	VCC
5	PS/2 Keyboard Clock
6	NC
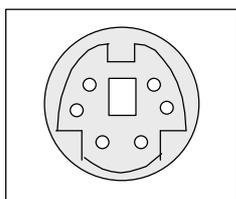
PKB1
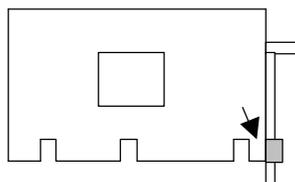
✦ **PMS1 : PS/2 Mouse Connector (Mini Din)**

PIN NO.	DESCRIPTION
1	PS/2 Mouse Data
2	NC
3	Ground
4	VCC
5	PS/2 Mouse Clock
6	NC
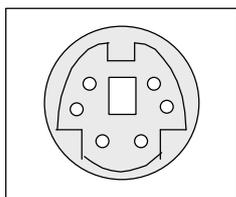
PMS1
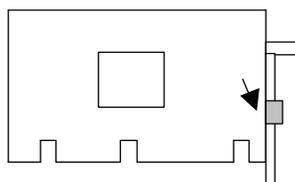
✦ USBC1 : USB#1　#2 Interface Connector

PIN NO.	DESCRIPTION
1	VCC
2	USB D0-
3	USB D0+
4	Ground
5	Ground
6	VCC
7	USB D1-
8	USB D1+
9	Ground
10	Ground

USBC1

✦ COM1 : Serial Port#1 Connector (D-Sub)

PIN NO.	DESCRIPTION
1	Data Carrier Detect (DCD#)
2	Receive Data (RXD)
3	Transmit Data (TXD)
4	Data Terminal Ready (DTR#)
5	Ground (GND)
6	Data Set Ready (DSR#)
7	Request To Send (RTS#)
8	Clear To Send (CTS#)
9	Ring Indicator (RI#)

COM1

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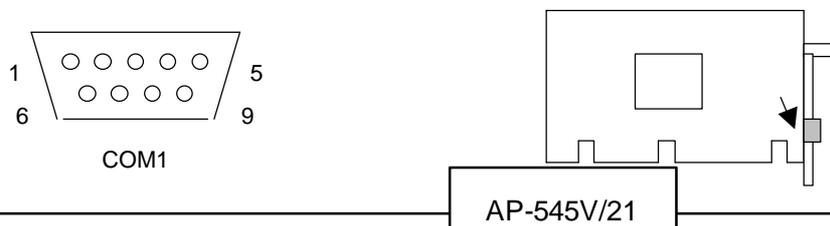
✦ COM2 : Serial Port #2 Connector (Header)

PIN NO.	DESCRIPTION		
	RS-232	RS-422	RS-485
1	Data Carrier Detect (DCDB #)	Transmit Data– (TXD-)	Data -
2	Receive Data (RXDB)	Transmit Data+ (TXD+)	Data +
3	Transmit Data (TXDB)	Receive Data+ (RXD+)	NC
4	Data Terminal Ready (DTRB #)	Receive Data- (RXD-)	NC
5	Ground	NC	NC
6	Data Set Ready (DSRB #)	NC	NC
7	Request To Send (RTSB #)	NC	NC
8	Clear To Send (CTSB #)	NC	NC
9	Ring Indicator (RIB #)	NC	NC
10	NC	NC	NC

COM2
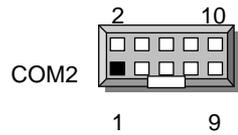
✦ PRT1 : Parallel Port Connector

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

PRT1

AP-545V/22
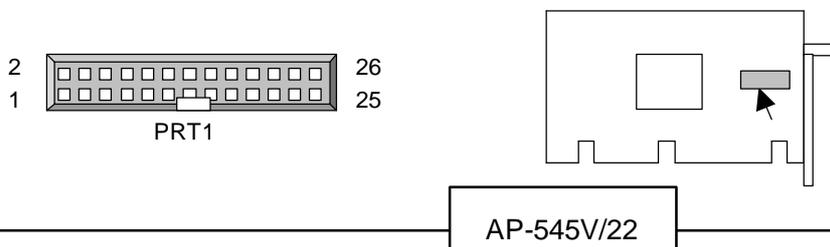
✦ **FDC1 : Floppy Interface Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Ground	2	Density Select
3	Ground	4	NC
5	Ground	6	NC
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 #

FDC1
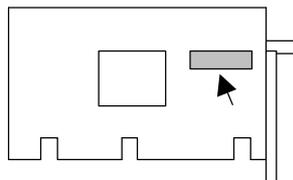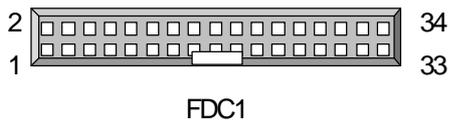
✦ **PC1 , PC2 : PCI Bus Connector**

PIN NO.	DESCRIPTION			
	PC1		PC2	
	A	**B**	**A**	**B**
1	NC	-12V	STOP#	C/BE2#
2	+12V	NC	SDONE	IRDY#
3	PGNT1#	Ground	VCC	DEVSEL#
4	VCC	PREQ1#	SBO#	Ground
5	PINT0#	VCC	Ground	PLOCK#
6	PINT2#	VCC	PAR	PERR#
7	VCC	PINT1#	AD15	SERR#
8	PCIRST#	PINT3#	AD13	C/BE1#
9	VCC	PREQ2#	Ground	AD14
10	PGNT0#	Ground	AD11	Ground
11	Ground	Clock1	AD9	AD12
12	PGNT2#	Ground	C/BE0#	AD10
13	AD30	PREQ3#	VCC	VCC
14	AD28	PREQ0#	AD6	AD8
15	AD26	VCC	AD4	AD7
16	AD24	AD31	Ground	Ground
17	PGNT3#	AD29	Ground	AD5
18	Ground	Ground	AD2	AD3
19	AD22	AD27	AD0	Ground
20	AD20	AD25	VCC	AD1
21	AD18	C/BE3#	REQ64#	VCC
22	AD16	AD23	NC	ACK64#
23	FRAME#	AD21	NC	VCC
24	Ground	Ground	Ground	NC
25	TRDY#	AD19	Clock2	Ground
26	Clock0	AD17	Ground	Clock3
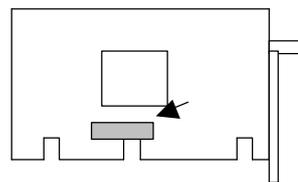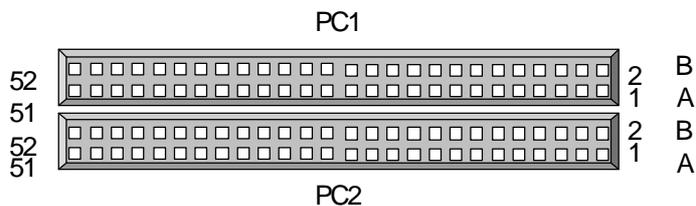
CHAPTER 3.

AMI BIOS SETUP

The AMI' 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 these 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.   AMI is a registered trademark of the American Megatrends, Inc.

3.1 RUNNING AMI 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, 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 bootup 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 <Del> 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 AMI BIOS HIFLEX Sᴇᴛᴜᴘ Uᴛɪʟɪᴛʏ

To access the AMI BIOS HIFLEX SETUP UTILITY program, press the <DEL> key. The screen display will appears as:

Main Program Screen

```
         AMI BIOS HIFLEX SETUP UTILITY – VERSION 1.20
         ©1998 American Megatrends, Inc.    All Rights Reserved

                       Standard CMOS Setup
                       Advanced CMOS Setup
                      Advanced Chipset Setup
                     Power Management Setup
                      PCI / Plug and Play Setup
                         Peripheral Setup
                      Auto-Detect Hard Disks
                      Change User Password
                    Change Supervisor Password
                     Change Language Setting
                Auto Configuration with Optimal Settings
                Auto Configuration with Fail Safe Settings
                       Save Settings and Exit
                        Exit Without Saving

     Standard CMOS setup for changing time, date, hard disk type, etc.
       ESC : Exit    ⌨♫ : Sel    F2/F3 : Color    F10 : Save & Exit
```

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

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

<ESC>   **:** Exit the utility.

ARROW KEYS **:** Use arrow keys ⇕ ⇔ to move cursor to your desired selection.

<F10>   **:** Saves all changes made to Setup and exits program.

<F2> / <F3>   **:** 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 appears as:

Standard CMOS Setup Screen

```
┌──────────────────────────────────────────────────────────────────────────┐
│               AMI BIOS SETUP – STANDARD CMOS SETUP                         │
│            ©1998 American Megatrends, Inc.    All Rights Reserved          │
├──────────────────────────────────────────────────────────────────────────┤
│ Date (mm/dd/yyyy)     : Thu Jun 23, 1998          Base Memory    : 640 KB  │
│ Time (hh/mm/ss)       : 14:40:32                  Extd Memory    : 62 MB   │
│                                                                            │
│ Floppy Drive A :      1.44 MB   3$\frac{1}{2}$                             │
│ Floppy Drive B :      Not Installed                                        │
│                                                   LBA   Blk   PIO   32 Bit │
│            Type            Size Cyln Head WPcom Sec Mode Mode Mode   Mode  │
│ Pri Master   : Auto                                                  Off   │
│ Pri Slave    : Auto                                                  Off   │
│                                                                            │
│                                                                            │
│ Boot Sector Virus Protection      Disable                                  │
├──────────────────────────────────────────────────────────────────────────┤
│ Month   :  Jan   - Dec                            ESC:Exit   ↕ : Sel       │
│  Day    :   01   - 31                             PgUp/PgDn: Modify        │
│  Year   : 1901   - 2099                           F2/F3:Color             │
│                                                                            │
└──────────────────────────────────────────────────────────────────────────┘
```

Standard CMOS Setup options are displayed by choosing the Standard field from the AMIBIOS HIFLEX SETUP menu.   All Standard Setup options are described below.

Date/Time : Select the Date/Time option to change the date or time.   The current date and time are displayed.   Enter new values through the displayed window.   The time format is based on the 24-hour military-time clock.   For example, 1 p.m. is 13:00:00.   Press the ↕ or ↨ arrow key to move to the desired field.   Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Floppy Drive A, B : Choose the Floppy Drive A or B field to specify the floppy drive type.   The settings are 360 KB 5$\frac{1}{4}$", 1.2 MB 5$\frac{1}{4}$", 720 KB 3$\frac{1}{2}$", 1.44 MB 3$\frac{1}{2}$", or 2.88 MB 3$\frac{1}{2}$".

Pri Master, Pri Slave : Choose these fields to configure the hard disk drive named in each option. When you click on the option, the following parameters are listed as: Type, LBA/Large Mode, Block Mode, 32Bit Mode, and PIO Mode.   All parameters are related to IDE drives except **Type**.

Configuring an MFM Drive : If configuring an old MFM hard disk drive, you must know the drive

parameters (number of heads, number of cylinders, number of sectors, the starting write precompensation cylinder, and drive capacity). Choose **Type** and the appropriate hard disk drive type (1-46).   The old MFM hard drive types are listed on pages 26~27. If the drive parameters of the MFM drive do not match any drive type listed on pages 26~27, select *User* in the **Type** field and enter the drive parameters on the screen that appears.

User-Defined Drive : If you are configuring a SCSI drive or an MFM, RLL, ARLL, or ESDI drive with the drive parameters that do not match drive types 1-46, you can select the *User* in the **Type** field.   You must then enter the drive parameters on the screen that appears.   The drive parameters include:

 ✦ Cylinder (number of cylinders),
 ✦ Head (number of heads)
 ✦ WPcom (starting write precompensation cylinder),
 ✦ Sec (number of sectors)
 ✦ Size (drive capacity)

Parameter	Description
Type	The number for a drive with a certain identification Parameters.
Size (Hard Disk Drive Capacity)	The formatted capacity of the drive is (Number of heads) x (Number of cylinders) x (Number of sectors per track) x (512 bytes per sector)
Cylinder (Number of Cylinders)	The number of cylinders in the disk drive.
Head (Number of Heads)	The number of heads.
Wpcom (Write Precompensation)	The size of sector gets progressively smaller as the track Diameter diminishes. Yet each sector must still hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner tracks. This parameter is the track number where write precompensation begins.
Landing Zone	This number is the cylinder location where the heads will Normally park when the system is shut down.
Sectors (Number of Sectors)	The number of sectors per track. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drives have more sectors per track.

Configuring IDE Drives : If the hard disk drive to be configured is an IDE drive, select the appropriate drive icon (Pri Master, Pri Slave).   Select the IDE Detect icon to automatically detect all

drive parameters.

AMIBIOS automatically detects the IDE drive parameters (including ATAPI CD ROM drives) and displays them. Click on the OK button to accept these parameters or you can set the parameters manually if you are absolutely certain that you know the correct IDE drive parameters.

Click on **LBA/Large Mode** and choose *On* to enable support for IDE drives with capacities greater than 528 MB.

Click on **Block Mode** and choose *On* to support IDE drives that use Block Mode.

Click on **32Bit Mode** and click on *On* to support for IDE drive that permit 32-bit accesses.

Click on **PIO Mode** to select the IDE Programmed I/O mode. PIO programming also works with ATAPI CD-ROM drives. The settings are *Auto, 0, 1, 2, 3, 4,* or *5*. Click on *Auto* to allow AMIBIOS to automatically find the PIO mode that the IDE drive being configured uses. If you select *0-5* you must make absolutely certain that you are selecting the PIO mode supported by the IDE drive being configured

Configuring a CD-ROM Drive : Select the appropriate drive icon (Pri Master, Pri Slave). Choose the **Type** parameter and select CDROM. You can boot the computer from a CD-ROM drive. You can also choose *Auto* and let AMIBIOS automatically set the correct drive parameters.

Hard Disk Drive Types

Type	Cylinders	Heads	Write Pre-Compensation	Landing Zone	Sectors	Capacity
1	306	4	128	305	17	10 MB
2	615	4	300	615	17	20 MB
3	615	6	300	615	17	31 MB
4	940	8	512	940	17	62 MB
5	940	6	512	940	17	47 MB
6	615	4	65535	615	17	20 MB
7	462	8	36	511	17	31 MB
8	733	5	65535	733	17	30 MB
9	900	15	65535	901	17	112 MB
10	820	3	65535	820	17	20 MB
11	855	5	65535	855	17	35 MB
12	855	7	65535	855	17	50 MB
13	306	8	128	319	17	20 MB
14	733	7	65535	733	17	43 MB
16	612	4	0	663	17	20- MB
17	977	5	300	977	17	41 MB
18	977	7	65535	977	17	57 MB
19	1024	7	512	1023	17	60 MB
20	733	5	300	732	17	30 MB
21	733	7	300	732	17	43 MB
22	733	5	300	733	17	30 MB
23	306	4	0	336	17	10 MB
24	925	7	0	925	17	54 MB
25	925	9	65535	925	17	69 MB
26	754	7	754	754	17	44 MB
27	754	11	65535	754	17	69 MB
28	699	7	256	699	17	41 MB
29	823	10	65535	823	17	68 MB
30	918	7	918	918	17	53 MB
31	1024	11	65535	1024	17	94 MB
32	1024	15	65535	1024	17	128 MB
33	1024	5	1024	1024	17	43 MB
34	612	2	128	612	17	10 MB
35	1024	9	65535	1024	17	77MB
36	1024	8	512	1024	17	68 MB
37	615	8	128	615	17	41 MB
38	987	3	987	987	17	25 MB
39	987	7	987	987	17	57 MB
40	820	6	830	820	17	41 MB
41	977	5	977	977	17	41 MB
42	981	5	981	981	17	41 MB
43	830	7	512	830	17	48 MB
44	830	10	65535	830	17	69 MB
45	917	15	65535	918	17	114 MB
46	1224	15	65535	1223	17	152 MB
	USER-DEFINED HARD DRIVE Enter user-supplied parameters					

3.4 ADVANCED CMOS SETUP

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

Advanced CMOS Setup Screen

```
┌─────────────────────────────────────────────────────────────────────────┐
│              AMIBIOS SETUP – ADVANCED CMOS SETUP                          │
│         0©1998 American Megatrends, Inc.    All Rights Reserved           │
├─────────────────────────────────────────┬───────────────────────────────┤
│                                          │                               │
│  1st   Boot Device         FLOPPY        │   Available Options    :      │
│  2nd   Boot Device         IDE-0         │   Disabled                    │
│  3rd   Boot Device         CDROM         │   IDE-0                        │
│  4th   Boot Device         ARMD-FDD      │   IDE-1                        │
│  Boot From Card BIOS       Yes           │   IDE-2                        │
│  Try Other Boot Devices    Yes           │   IDE-3                        │
│  S.M.A.R.T. for Hard Disks Enabled       │ ‣ Floppy                      │
│  Quick Boot                Enabled       │   ARMD-FDD                     │
│  BootUp CPU Speed          High          │   ARMD-HDD                     │
│  BootUp Num-Lock           On            │   CDROM                        │
│  Floppy Drive Swap         Disabled      │   SCSI                         │
│  Floppy Access Control     Normal        │   NETWORK                      │
│  HDD Access Control        Normal        │                               │
│  PS/2 Mouse Support        Enabled       │                               │
│  System Keyboard           Present       │                               │
│  Primary Display           VGA/EGA       │                               │
│  Password Check            Setup         │                               │
│  Parity Check              Disabled      │   ESC : Exit       ⌨♪ : Sel   │
│  Boot To OS/2, DRAM 64MB or Above  No    │   PgUp/PgDn :    Modify        │
│  Wait For 'F1' If Error    Enabled       │   F2/F3 : Color                │
└─────────────────────────────────────────┴───────────────────────────────┘
```

Note : The above page of the Advanced CMOS Setup only shows part of the related options. To proceed to the next options, please move your cursor downwards.

Advanced Setup options are displayed by choosing the Advanced icon from the WINBIOS Setup main menu.   All Advanced Setup options are described in this section.

Boot Device : 1st ~ 4th Boot Devices are the options that set the sequence of boot drives (FLOPPY, IDE-0, CDROM, or LS-120) that the AMIBIOS attempts to boot from after AMIBIOS POST completes.   To select the devices, please refer to Available options.

Available Options : Choose your desired devices from the selection here – Disabled, IDE-0, IDE-1, IDE-2, IDE-3, FLOPPY, LS-120, CDROM and SCSI.

Boot From Card BIOS : This option is predefined by the system board designer. The default setting is *Yes*.

Try Other Boot Devices : This option is predefined by the system board designer. The default setting is *Yes*.

S.M.A.R.T. for Hard Disks : This option is predefined by the system board designer. The default setting is *Enabled*.

Quick Boot : Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaced the old **Above 1 MB Memory Test** Advanced Setup option. The settings are:

Setting	Description
Disabled	AMIBIOS test all system memory. AMIBIOS waits up to 40 seconds for READY signal from the IDE hard disk drive. AMIBIOS waits for 0.5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. AMIBIOS checks for a <Del> key press and runs WINBIOS Setup if the key has been pressed.
Enabled	AMIBIOS does not test system memory above 1MB. AMIBIOS does not wait up to 40 seconds for a READY signal from the IDE hard disk drive. If a READY signal is not received immediately from the IDE drive, AMIBIOS does not configure that drive. AMIBIOS does not wait for 0.5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. You cannot run WINBIOS Setup at system boot, because there is no delay for the *Hit <DEL> to run Setup* message.

The Optimal and Fail-Safe default settings are *Enabled*.

BootUp Num-Lock : Set this option to *Off* to turn the Num Lock key off when the computer is booted so you can use the arrow keys on both the numeric keypad and the keyboard. The settings are *On* or *Off*. The default settings are *On*.

Floppy Drive Swap : Set this option to *Enabled* to permit drives A: and B: to be swapped. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*.

Floppy Drive Seek : Set this option to *Enabled* to specify that floppy drive A: will perform a Seek operation at system boot. The settings are *Disabled* or *Enabled*. The Optimal and Fail-safe default settings are *Disabled*.

To continue the 'Advanced CMOS Setup', please move your cursor downwards to seek for other options.

```
┌─────────────────────────────────────────────────────────────────────────┐
│              AMI BIOS SETUP – ADVANCED CMOS SETUP                         │
│         ©1998 American Megatrends, Inc.   All Rights Reserved             │
├───────────────────────────────────────────┬─────────────────────────────┤
│                                           │                             │
│  Floppy Access Control         Normal     │   Available Options    :    │
│  HDD Access Control            Normal     │  ‣ Disabled                 │
│  PS/2 Mouse Support            Enabled    │    Enabled                  │
│  System Keyboard               Present    │    Cached                   │
│  Primary Display               VGA/EGA    │                             │
│  Password Check                Setup      │                             │
│  Parity Check                  Disabled   │                             │
│  Boot To OS/2, DRAM 64MB or Above  No     │                             │
│  Wait For 'F1' If Error        Enabled    │                             │
│  Internal Cache                WriteBack  │                             │
│  External Cache                WriteBack  │                             │
│  System BIOS Cacheable         Enabled    │                             │
│  C000, 16k Shadow              Disabled   │                             │
│  C400, 16k Shadow              Disabled   │                             │
│  C800, 16k Shadow              Disabled   │                             │
│  CC00, 16k Shadow              Disabled   │                             │
│  D000, 16k Shadow              Disabled   │                             │
│  D400, 16k Shadow              Disabled   │   ESC : Exit      ⬚♪ : Sel  │
│  D800, 16k Shadow              Disabled   │   PgUp/PgDn :    Modify     │
│  DC00, 16k Shadow              Disabled   │   F2/F3 : Color             │
│                                           │                             │
└───────────────────────────────────────────┴─────────────────────────────┘
```

Floppy Access Control : Predefined setting is *Normal.*

HDD Access Control : Predefined setting is *Normal.*

PS/2 Mouse Support : When this option is set to *Enabled*, AMIBIOS supports a PS/2-type mouse. The settings are *Enabled* or *Disabled*. The default settings are *Disabled*. System Boot Up Sequence.

Primary Display : This option specifies the type of display monitor and adapter in the computer. The settings are *Mono*, *CGA40*, *CGA80*, *VGA/EGA*, or *Absent*. The Optimal and Fail-Safe default settings are *VGA/EGA*.

Password Check : This option enables password checking every time the computer is powered on or every time WINBIOS Setup is executed. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if WINBIOS is executed. The Optimal and Power-On defaults are *Setup*.

Parity Check : Set this option to *Enabled* to check the parity of all system memory. The setting are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Boot To OS/2 : Set this option to *Yes* to permit AMIBIOS to run with IBM OS/2. The settings are *Yes* or *No*. The default settings are *No*.

Wait For 'F1' if Error : AMIBIOS POST error messages are followed by :

Press <F1> to continue

If this option is set to *Disabled*, AMIBIOS does not wait for you to press the <F1> key after an error message. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Internal Cache : This option specifies the caching algorithm used for L1 internal cache memory. The settings are:

Setting	Description
Disabled	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
WriteBack (default)	Use the write-back caching algorithm.
WriteThru	Use the write-through caching algorithm.

External Cache : This option specifies the caching algorithm used for L2 secondary (external) cache memory. The settings are:

Setting	Description

Disabled	Neither L1 internal cache memory on the CPU or L2 secondary cache memory is enabled.
WriteBack (default)	Use the write-back caching algorithm.
WriteThru	Use the write-through caching algorithm.

System BIOS Shadow Cacheable : When this option is set to Enabled, the contents of the F0000h system memory segment can be read from or written to L2 secondary cache memory. The contents of the F0000h memory segment are always copied from the BIOS ROM to system RAM for faster execution.

The settings are *Enabled* or *Disabled*. The Optimal default setting is *Enabled*. The Fail-Safe default setting is *Disabled*.

C000,16K Shadow	**D000,16K Shadow**
C400,16K Shadow	**D400,16K Shadow**
C800,16K Shadow	**D800,16K Shadow**
CC00,16K Shadow	**C000,16K Shadow**

These options control the location of the contents of the 16KB of ROM beginning at the specified memory location. If no adaptor ROM is using the named ROM area, this area is made available to the local bus. The settings are:

Setting	Description
Shadow	The contents of C0000h - C3FFFh are written to the same address in system memory (RAM) for faster execution.
Cache	The contents of the named ROM area are written to the same address in system memory (RAM) for faster execution, if an adaptor ROM will be using the named ROM area. Also, the contents of the RAM area can be read from and written to cache memory.
Disabled	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

The default setting is Cache.

In the AMIBIOS for the Intel Triton chipset, the E000h page is used as ROM during POST, but shadowing is disabled and the ROM CS# signal is disabled to make the E000h page available on the local bus.

3.5 ADVANCED CHIPSET SETUP

When you select the "ADVANCED CHIPSET SETUP" on the main program, the screen display will appears as:

Advanced Chipset Setup Screen

```
┌─────────────────────────────────────────────────────────────────────────────┐
│               AMI BIOS SETUP – ADVANCED CHIPSET SETUP                        │
│            ©1997 American Megatrends, Inc.    All Rights Reserved            │
├──────────────────────────────────────────────┬──────────────────────────────┤
│  DRAM Automatic Configuration      Enabled    │  Available Options           │
│    SDRAM Access Time               10 ns      │     Disabled                 │
│    EDO Dram Access Time            None Used   │   ‣ Enabled                  │
│    FP Dram Access Time             None Used   │                              │
│     Write Merge Enable             Disabled    │                              │
│     Refresh Cycle Time             12          │                              │
│     RAS Pulse Width When Refresh   6T          │                              │
│     DRAM Read Leadoff Time         1T          │                              │
│  RAMW# Assertion Timing            3T          │                              │
│  CAS# Pulse Width for FP           2T          │                              │
│  CAS Precharge Time for FPM        2T-Burst 1T │                              │
│  CAS# Pulse Width for EDO          1T          │                              │
│  CAS Precharge Time for EDO        2T-Burst 1T │                              │
│     ISA Bus Clock Frequency        7.159MHZ    │                              │
│  SDRAM Write Retire Rate           X-2-2-2     │                              │
│  CAS Latency                       3T          │                              │
│  MDLE Delay                        Delay 3 ns  │                              │
│  NA# Enable                        Enabled     │  ESC : Exit        ⌨♪ : Sel │
│  Write NA# Disable                 Enabled     │  PgUp/PgDn :    Modify       │
│  Pipeline SRAM back to back timing1 Bank L2    │  F2/F3 : Color               │
└──────────────────────────────────────────────┴──────────────────────────────┘
```

In the ' Advanced Chipset Setup' page, all options are predefined by the system board designer. Any attempt to change the parameter of the fields are not recommended.

To continue this page, please move your cursor downwards to seek for other options.

```
┌─────────────────────────────────────────────────────────────────────────┐
│            AMI BIOS SETUP – ADVANCED CHIPSET SETUP                         │
│            ©1997 American Megatrends, Inc.    All Rights Reserved          │
├───────────────────────────────────────────────┬───────────────────────────┤
│                                                │                           │
│  CAS Precharge Time for EDO      2T-Burst 1T   │   Available Options:      │
│     ISA Bus Clock Frequency      7.159MHZ      │      40 Mhz               │
│  SDRAM Write Retire Rate         X-2-2-2       │      45 Mhz               │
│  CAS Latency                     3T            │    ▸ 50 Mhz               │
│  MDLE Delay                      Delay 3 ns    │      55 Mhz               │
│  NA# Enable                      Enabled       │      60 Mhz               │
│  Write NA# Disable               Enabled       │      65 Mhz               │
│  Pipeline SRAM back to back timing1 Bank L2    │      70 Mhz               │
│  Single Read Allocation          Disabled      │                           │
│  Read FIFO                       Disabled      │                           │
│  PCI Enhanced Memory Write       Enabled       │                           │
│  PCU Prefetch of Memory Read     Enabled       │                           │
│  CPU to PCI Post Write           3T            │                           │
│  CPU to PCI Burst Write          Enabled       │                           │
│  MEMORY HOLE at 15M – 16M        Disabled      │                           │
│  USB Function                    Disabled      │                           │
│  USD Keyboard/Mouse Legacy Support  Disabled   │                           │
│  On Chip VGA                     Enabled       │   ESC : Exit     ⌨♪ : Sel │
│     VGA Shard Memory Size        1   M         │   PgUp/PgDn :    Modify   │
│     VGA Frequency                50 Mhz        │   F2/F3 : Color           │
│                                                │                           │
└───────────────────────────────────────────────┴───────────────────────────┘
```

3.6 POWER MANAGEMENT SETUP

The "Power Management Setup" controls the CPU card's "Green" features. When you select the "POWER MANAGEMENT SETUP" on the main program, the screen display will appears as:

Power Management Setup Screen

```
                 AMI BIOS SETUP – POWER MANAGEMENT SETUP
                ©1997 American Megatrends, Inc.    All Rights Reserved

  Power Management / APM            Disabled              Available Options
      Green PC Monitor Power State  Off            ‣   Disabled
      Video Power Down Mode         Suspend            Enabled
      Hard Disk Power Down Mode     Suspend
      Standby Time Out (Minute)     Disabled
      Suspend Time Out (Minute)     Disabled
      Slow Clock Ratio              1 : 8
      Ring Active                   Disabled
      IRQ 3 (COM2/COM4)             Monitor
      IRQ 4 (COM1/COM3)             Monitor
      IRQ 5 (LPT2)                  Ignore
      IRQ 7 (LPT1)                  Ignore
      IRQ 9                         Ignore
      IRQ10                         Ignore
      IRQ11                         Ignore
      IRQ12 (PS2 Mouse)            Monitor
      IRQ13 (Math Coprocessor)     Ignore         ESC : Exit      ▨♪ : Sel
      IRQ14                        Monitor         PgUp/PgDn :    Modify
      IRQ15                        Monitor         F2/F3 : Color
```

Power Management Setup options are displayed by choosing the Power Management field from the WINBIOS Setup main menu.   All Power Management Setup options are described in this section.

ACPI Function : Set this option to Enabled to enable the power management and ACPI (Advanced C P I) features.

Power Management / APM : Set this option to Enabled to enable the power management and APM (Advanced Power Management) features.
The settings are *Enabled* or *Disabled*.   The default setting is *Disabled*.
Instant ON Support : Set this option to *Enabled* to allow the computer to go to full power on

mode when leaving a power-conserving state. This option is only available if supported by the computer hardware. AMIBIOS uses the RTC Alarm function to wake the computer at a prespecified time. The settings are Enabled or Disabled. The default settings are *Disabled*.

Green PC Monitor Power State : This option specifies the power management state that the Green PC-compliant video monitor enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Off*, *Standby*, or *Suspend*. The default settings are *Disabled*.

Video Power Down Mode : This option specifies the power management state that the video subsystem enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*. The default settings are *Disabled*.

Hard Disk Power Down Mode : This option specifies the power management state that the hard disk drive enters after the specified period of display inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*. The default settings are *Disabled*.

Standby Time Out (Minute) : This option specifies the length of the period of system inactivity when the computer is in Full-On mode before the computer is placed in Standby mode. In Standby mode, some power use is curtailed. The settings are *Disabled, 1 Min, 2 Min, and all one minute* intervals up to and including 15 Min. The default settings are *Disabled*. This mode is a coverage of the length of period for the system inactivity, from period of Full-On to Standby, and from Standby to Suspend mode.

Suspend Time Out (Minute) : This option specifies the length of the period of system inactivity when the computer is already in Standby mode before the computer is placed in Suspend mode. In Suspend mode, nearly all power use is curtailed. The settings are *Disabled, 1 Min, 2 Min, and all one minute* intervals up to and including 15 Min. The default settings are *Disabled*.

Slow Clock Ratio : This option specifies the speed at which the system clock runs in power saving modes. The settings are expressed as a ratio between the normal clock speed and the power down clock speed. The settings are 1:1, 1:2 (half as fast as normal), 1:4 (the normal clock speed), 1:8, 1:16, 1:32, 1:64, or 1:128. The default setting is 1:1.

The following options stated below enable event monitoring. When the computer is in a power saving mode, activity on the named interrupt request line is monitored by AMIBIOS. When any activity occurs, the computer enters Full On mode. Each of these options can be set to *Monitor* or *Ignore*. The default setting for all options is *Ignore*.

✦ **IRQ3 (COM2/COM4)** **:** Monitor

✦ **IRQ4 (COM1/COM3)** **:** Monitor

✦ **IRQ5 (LPT2)** **:** Ignore

✦ **IRQ7 (LPT1)** **:** Ignore

✦ **IRQ9** **:** Ignore

✦ **IRQ10** **:** Ignore

✦ **IRQ11** **:** Ignore

✦ **IRQ12 (PS2 Mouse)** **:** Ignore

✦ **IRQ13 (Math Coprocessor)** **:** Ignore

✦ **IRQ14** **:** Monitor

✦ **IRQ15** **:** Monitor

3.7 PCI Plug and Play Setup

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

When you select the "PCI / PLUG AND PLAY SETUP" on the main program, the screen display will appears as:

PCI / Plug and Play Setup Screen

```
          AMI BIOS SETUP – PCI   /   PLUG AND PLAY SETUP
             ©1997 American Megatrends, Inc.    All Rights Reserved

  Plug and Play Aware O/S              No           Available Options
  Clear NVRAM                          No           ‣   No
  PCI Latency Timer (PCI Clocks)       64               Yes
  PCI VGA Palette Snoop                Disabled
  PCI IDE BusMaster                    Disabled
  OffBoard PCI IDE Card                Auto
  OffBoard PCI IDE Primary IRQ         Disabled
  OffBoard PCI IDE Secondary IRQ       Disabled
  Assign IRQ to PCI VGA Card           Yes
  PCI Slot1 IRQ Priority               Auto
  PCI Slot2 IRQ Priority               Auto
  PCI Slot3 IRQ Priority               Auto         Available Options
  PCI Slot4 IRQ Priority               Auto         ‣ Disabled
  DMA Channel 0                        PnP              16k
  DMA Channel 1                        PnP              32k
  DMA Channel 3                        PnP              64k
  DMA Channel 5                        PnP
  DMA Channel 6                        PnP           ESC : Exit      ▦♪ : Sel
  DMA Channel 7                        PnP           PgUp/PgDn :    Modify
  IRQ3                                 ISA/EISA      F2/F3 : Color
```

PCI/PnP Setup options are displayed by choosing the PCI/PnP Setup icon from the WINBIOS Setup main menu. All PCI/PnP Setup options are described in this section.

Plug and Play Aware OS : Set this option to *Yes* if the operating system installed in the computer is Plug and Play-aware. AMIBIOS only detects and enables PnP ISA adapter cards that are required for system boot. The Windows 95 operating system detects and enables all other PnP-aware adapter cards. Windows 95 is PnP-aware. Set this option to *No* if the operating system (such as DOS,

OS/2, Windows 3.x) does not use PnP. *You must set this option correctly or PnP-aware adapter cards installed in your computer will not be configured properly.* The settings are *No* or *Yes*. The Optimal and Fail-Safe default settings are *No*.

PCI Latency Timer (PCI Clocks) : This option sets latency of all PCI devices on the PCI bus. The settings are in units equal to PCI clocks. The settings are *32, 64, 96, 128, 160, 192, 224,* or *248*. The Optimal and Fail-Safe default settings are *64*.

PCI VGA Palette Snoop : This option must be set to *Enabled* if any ISA adapter card installed in the computer requires VGA palette snooping. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

PCI IDE Bus Master : Set this option to *Enabled* to specify that the IDE controller on the PCI local bus has bus mastering capability. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Offboard PCI IDE Card : This option specifies if an offboard PCI IDE controller adapter card is used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the onboard IDE controller on the motherboard is automatically disabled. The settings are *Disabled, Auto, Slot1, Slot2, Slot3, or Slot4*.

If *Auto* is selected, AMIBIOS automatically determines the correct setting for this option. The Optimal and Fail-Safe default settings are *Auto*.

In the AMIBIOS for the Intel Triton chipset, this option forces IRQ 14 and 15 to a PCI slot on the PCI local bus. This is necessary to support non-compliant PCI IDE adapter cards.

Offboard PCI IDE Primary IRQ : This option specifies the PCI interrupt used by the primary IDE channel on the offboard PCI IDE controller. The settings are *Disabled, INTA, INTB, INTC,* or *INTD*. The Optimal and Fail-Safe default settings are *Disabled*.

Offboard PCI IDE Secondary IRQ : This option specifies the PCI interrupt used by the secondary IDE channel on the offboard PCI IDE controller. The settings are *Disabled, INTA, INTB, INTC,* or *INTD*. The Optimal and Fail-Safe default settings are *Disabled*.

IRQ 3	IRQ 7	IRQ 11	IRQ 14
IRQ 4	IRQ 9	IRQ 12	IRQ 15

IRQ 5   IRQ 10

These options specify the bus that the named interrupt request lines (IRQs) are used on. These options allow you to specify IRQs for use by legacy ISA adapter cards.

Assign IRQ to PCI VGA Card : This setting specify the requirement of IRQ dedicated for PCI VGA Card.   The default setting is *Yes*.

To continue the 'Advanced CMOS Setup', please move your cursor downwards to seek for other options.

```
┌─────────────────────────────────────────────────────────────────────────┐
│              AMI BIOS SETUP – PCI   /   PLUG AND PLAY SETUP                │
│              ©1997 American Megatrends, Inc.    All Rights Reserved        │
├───────────────────────────────────────────────┬───────────────────────────┤
│                                                │                           │
│  PCI Slot3 IRQ Priority          Auto          │  Available Options         │
│  PCI Slot4 IRQ Priority          Auto          │  ▸ Disabled                │
│  DMA Channel 0                   PnP           │    16k                     │
│  DMA Channel 1                   PnP           │    32k                     │
│  DMA Channel 3                   PnP           │    64k                     │
│  DMA Channel 5                   PnP           │                           │
│  DMA Channel 6                   PnP           │                           │
│  DMA Channel 7                   PnP           │                           │
│  IRQ3                            ISA/EISA       │                           │
│  IRQ4                            ISA/EISA       │                           │
│  IRQ5                            PCI/PnP        │                           │
│  IRQ7                            ISA/EISA       │                           │
│  IRQ9                            PCI/PnP        │                           │
│  IRQ10                           PCI/PnP        │                           │
│  IRQ11                           PCI/PnP        │                           │
│  IRQ12                           PCI/PnP        │                           │
│  IRQ14                           PCI/PnP        │                           │
│  IRQ15                           PCI/PnP        │  ESC : Exit     ⌨♪ : Sel  │
│  Reserved Memory Size            Disabled      │  PgUp/PgDn :    Modify     │
│  Reserved Memory Address         C8000         │  F2/F3 : Color             │
│                                                │                           │
└───────────────────────────────────────────────┴───────────────────────────┘
```

PCI Slot1 / Slot2 / Slot3 / Slot4 IRQ Priority : Without prior definition from the system board designer, the default settings of these fields are *Auto*.   These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to BIOS configurable devices. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these PCI/PnP Setup options to remove the IRQ by assigning the option to the *ISA/EISA* setting. Onboard I/O is configurable by AMIBIOS. The IRQs used by onboard I/O are configured as *PCI/PnP*.

The settings are *PCI/PnP* or *ISA/EISA*. The Optimal and Fail-Safe default settings are *PCI/PnP*.

DMA Channels : This option can be used to reserve a DMA channel for use by legacy ISA adapter cards. The settings are *Disabled, DMA Ch0, DMA Ch1, DMA Ch 3, DMA Ch 5, DMA Ch 6,* or *DMA Ch 7*. The Optimal and Fail-Safe default settings are *PnP*.

Reserved Memory Size : This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are *Disabled, 16K, 32K, or 64K*. The optimal and Fail-Safe default settings are *Disabled*.

Reserved Memory Address : This option specifies the beginning address (in hex) of the reserved memory area.   The specified ROM memory area is reserved for use by legacy ISA adapter cards. The settings are *C0000, C4000, C8000, CC000, D4000, D8000,* or *DC000*. The Optimal and Fail-safe default settings are C0000.

3.8 PERIPHERAL SETUP

When you select the "PERIPHERAL SETUP" on the main program, the screen display will appears as:

Peripheral Setup Screen

```
AMI BIOS SETUP – PERIPHERAL SETUP
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OnBoard FDC                   Enabled          Available Options
   Floppy Drive Swap          Disabled           Auto
OnBoard Serial PortA          3F8h/COM1          Disabled
OnBoard Serial PortB          2F8h/COM2       ▸  Enabled
IR I/O pin Location Select    SINB/SOUTB
   Serial PortB Mode          Normal
      IrDA Protocol           N/A
IR Port Support               N/A
   IR Mode Select             N/A
   IR IRQ Select              Auto
   IR DMA Select              N/A
OnBoard Parallel Port         378h
   Parallel Port Mode         Bi-Dir
   EPP Version                N/A
   Parallel Port IRQ          7
   Parallel Port DMA Channel  N/A
OnBoard PCI IDE               Enabled
   Primary Master Prefetch    Enabled           ESC : Exit      🖱♫ : Sel
   Primary Slave Prefetch     Enabled           PgUp/PgDn :     Modify
                                                F2/F3 : Color
```

Peripheral Setup options are displayed by choosing the Peripheral Setup icon from the WINBIOS Setup main menu. All Peripheral Setup options are described in this section.

Onboard FDC : This option enables the floppy drive controller on the motherboard. The settings are *Enabled* or *Disabled*. The Optimal default setting is *Enabled*. The Fail-Safe default setting is *Disabled.*

Onboard Serial PortA : This option enables serial port A on the motherboard and specifies the base I/O port address for serial port A. The settings are *3F8h, 3E8h*, or *Disabled*. The Optimal default setting is *3F8h*. The Fail-Safe default setting is *Disabled*.

Onboard Serial PortB : This option enables serial port B on the motherboard and specifies the base I/O port address for serial port B.   The settings are *2F8h, 2E8h,* or *Disabled*. The Optimal default setting is *2F8h*. The Fail-Safe default setting is *Disabled*.

IR Port Support : This option is predefined by the system board designer.   The default setting is *Disabled*.   All the related fields -- **IR Mode Select, IR Base Address Select, IR IRQ Select,** and **IR DMA Select** are factory settings.

Onboard Parallel Port : This option enables the parallel port on the motherboard and specifies the parallel port base I/O port address. The settings are 378h, 278h, or Disabled.   The Optimal default setting is 378h. The Fail-Safe default setting is Disabled.

Parallel Port Mode : This option specifies the parallel port mode. ECP and EPP are both bidirectional data transfer schemes that adhere to the IEEE P1284 specifications.   The default setting is *Normal*.   The other settings are:
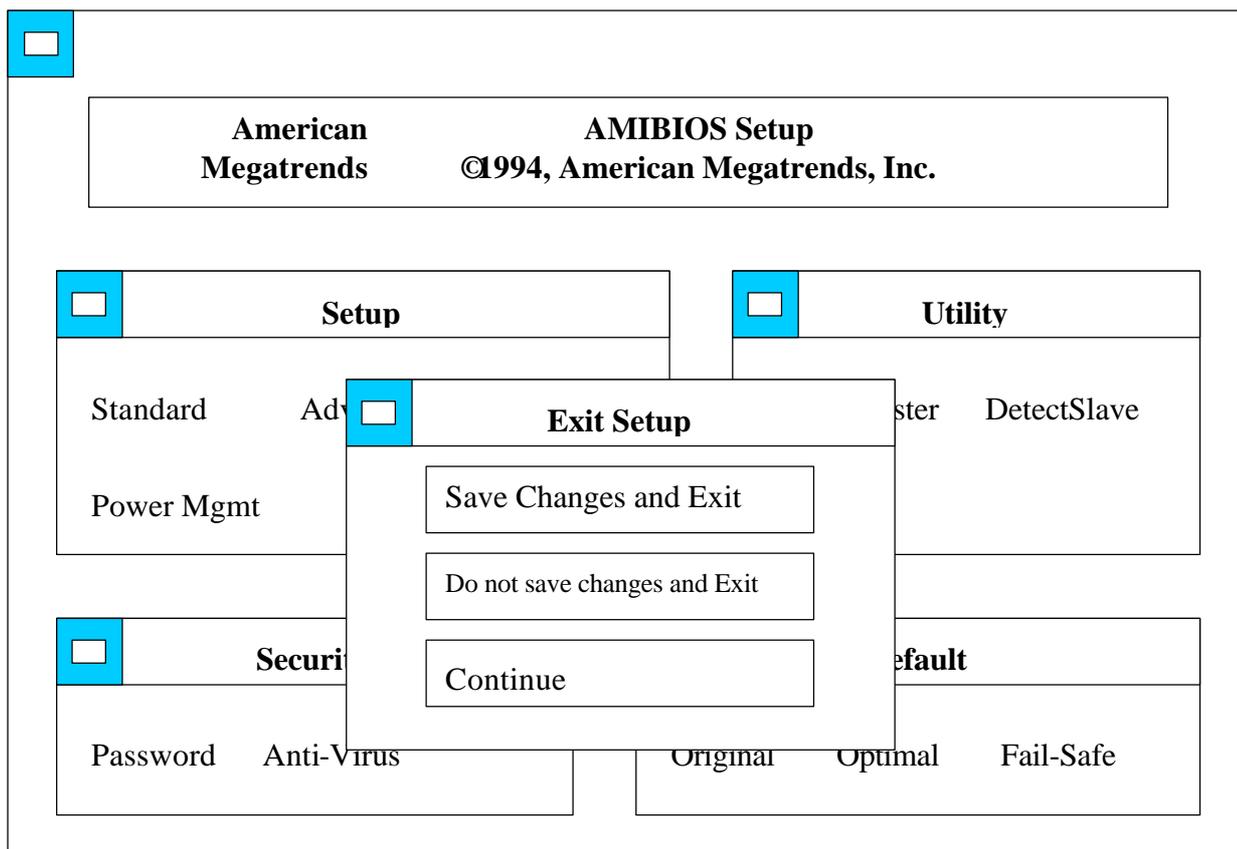
Setting	Description
Normal	Normal The normal parallel port mode is used. This is the default setting.
Cache	Bi-Dir Use this setting to support bidirectional transfers on the parallel port.
EPP	The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.
ECP	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve transfer rates of approximately 2.5 Mbs. ECP provides symmetric bidirectional communications.

Parallel Port DMA Channel : This option is only available if the setting for the **Parallel Port Mode** option is *ECP*.   The settings are *Disabled, DMA CH (channel) 0, DMA CH 1,* or *DMA CH 3*. The default setting is *N/A*.

3.9 CHANGE SUPERVISOR / USER PASSWORD

The "SECURITY" utility sets the password for *Supervisor* and *User*. The single board computer is shipped with the password disabled. When you select the "CHANGE SUPERVISOR Password" on the main program, the screen display will appears as:

Change Supervisor Password

American Megatrends	AMIBIOS Setup ©1994, American Megatrends, Inc.

Setup

Standard   Adv...   ...ster   DetectSlave

Power Mgmt

Utility

Exit Setup

Save Changes and Exit

Do not save changes and Exit

Continue

Securi...   ...efault

Password   Anti-Virus   Original   Optimal   Fail-Safe

Security : Three icons appear in this part of the WINBIOS Setup screen –

✦ Supervisor (Password)

✦ User (Password)

✦ Anti-Virus

Two Levels of Passwords : Both the Supervisor and the User icons configure password support. If you use both, the Supervisor password must be set first. The system can be configured so that all users must enter a password every time the system boots or when WINBIOS Setup is executed, using either or both the Supervisor password or User password.

AMIBIOS Password Support : The Supervisor and User icons activate two different levels of

password security.   If WINBIOS Setup has an optional password feature. The system can be configured so that all users must enter a password every time the system boots or when WINBIOS Setup is executed.

Setting a Password : The password check option is enabled in Advanced Setup (see page Error! Bookmark not defined. by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when WINBIOS is run). The password is encrypted and stored in NVRAM.

As shown on the above screen, you are prompted for a 1 - 6 character password. You can either type the password on the keyboard or select each letter of the password, one at a time, using the mouse. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain NVRAM and reconfigure.

If You Do Not Want to Use a Password : Press <Enter> when the password prompt appears.

Changing a Password : Select the *Supervisor* or *User* icon from the Security section of the WINBIOS Setup main menu. Enter the password and press <Enter>. The screen does not display the characters entered. After the new password is entered, retype the new password as prompted and press <Enter>.

If the password confirmation is incorrect, an error message appears. If the new password is entered without error, press <Esc>. The password is stored in NVRAM after WINBIOS completes. The next time the system boots, a password prompt appears if the password function is present and enabled.

Remember the Password : Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM (Non-Volatile Random Access Memory). See page Error! Bookmark not defined. for information about erasing system configuration information.   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.
Under the Security window of the WINBIOS Setup screen, you can also select the Anti-Virus Icon.

Anti-Virus : When this icon is selected from the Security section of the WINBIOS Setup main menu, AMIBIOS issues a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The settings are Enabled or Disabled. If enabled, the following appears when a write is attempted to the boot sector.   You may have to type N several times to prevent the boot sector write.   Boot Sector Write!!!   Possible VIRUS: Continue (Y/N)? _

The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard Disk Drive Service: Format!!!   Possible VIRUS: Continue (Y/N)? _

3.10 UTILITY

In the Utility, the following icons appear in this section of the WINBIOS Setup main screen --
Color Set : Color Set sets the Setup screen colors.

Language : If this feature is enabled, you can select WINBIOS Setup messages in different languages.

3.11 BIOS DEFAULTS

The icons of BIOS Defaults in this section permit you to select a group of settings for all WINBIOS Setup options. Not only can you use these icons to quickly set system configuration parameters, you can choose a group of settings that have a better chance of working when the system is having configuration-related problems.

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

Optimal : You can load the optimal default settings for the WINBIOS by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If NVRAM is corrupted, the Optimal settings are loaded automatically.

Fail-Safe BIOS Setup Settings : You can load the Fail-Safe WINBIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the WINBIOS Setup main menu.

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.

APPENDIX A.

HOW TO USE WATCH-DOG TIMER

To use the watch-dog timer :

Step 1. Enable and retrigger the Watch-Dog timer: **443H**

Step 2. Disable: **i441**

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 **JP9: 4L ON** and **JP16 : 1-2 ON** to enable watch-dog timer.

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

EX.2: For assemble Language

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

Disable :
```
            :
            :
IN AL, 441H
            :
            :
```

APPENDIX B.

TECHNICAL REFERENCE

I/O PORT ADDRESS MAP

Address	Function
000 - 01F	DMA Controller #1
020 - 03F	Interrupt Controller #1
040 - 05F	Timer Chip
043	Disable Watch-Dog Times Operation (Read)
060 - 06F	Keyboard Controller
070 - 07F	Read Time Clock/NMI Mask
080 - 09F	DMA Page Register
0A0 - 0BF	Interrupt Controller #2
0C0 - 0DF	DMA Controller #2
0F0 - 0F1	Clear/Reset Math Coprocessor
1F0 - 1F7	Hard Disk Controller
200 - 210	Game Port
278 - 27F	Parallel Port #2
2E8 - 2EF	Serial Port #4 (COM 4)
2F8 - 2FF	Serial Port #2 (COM 2)
300 - 31F	prototype Card/Streaming Tape Adapter
360 - 36F	PC Network
378 - 3FF	Parallel Port #1
380 - 38F	SDLC #2
3A0 - 3AF	SDLC #1
3B0 - 3BF	MDA Video Card (Including LPTO)
3C0 - 3CF	EGA Card
3D0 - 3DF	CGA Card
3E8 - 3EF	Serial Port #3 (COM 3)
3F0 - 3F7	Floppy Disk Controller
3F8 - 3FF	Serial Port #1 (COM 1)
443	Enable Watch-dog Timer Operation (read)

MEMORY ADDRESS MAP

Address Range (Hex)	Description
000000H - 09FFFFH	640 KB of Conventional RAM
0A0000H - 0BFFFFH	128 KB of Video RAM
0C0000H - 0EFFFFH	256 KB of I/O Expansion ROM
0F0000H - 0FFFFFH	64 KB of System BIOS ROM
0100000H - 7FFFFFFFH	1 MB ~ 128MB of User RAM

DMA CHANNELS

CHANNEL	Function
DMA 0	Reserved
DMA 1	Reserved
DMA 2	Floppy Disk Controller
DMA 3	ECP Parallel Port
DMA 4	Cascade for DMA #1
DMA 5	Reserved
DMA 6	Reserved
DMA 7	Reserved

INTERRUPT CONTROLLER

| IRQ	Function
IRQ 0	System timer output
IRQ 1	Keyboard
IRQ 2	Cascade for INTC. #2
IRQ 3	Serial port #2
IRQ 4	Serial port #1
IRQ 5	Parallel port #2
IRQ 6	Floppy disk controller
IRQ 7	Parallel port #1
IRQ 8	Real time clock
IRQ 9	Software redirected to INT 0AH (IRQ 2)
IRQ 10	Reserved
IRQ 11	Reserved
IRQ 12	PS/2 Mouse
IRQ 13	Math Coprocessor (CPU Internal)
IRQ 14	Primary Hard disk
IRQ 15	Secondary Hard Disk
NMI	Parity Check Error

APPENDIX C.

PATENT PCI PIGGYBACK MODULE INSTALLATION

There are two steps to install out patent PCI pigyback module on AP-545V Single Board Computer.

Step 1. Plug the Dual Side Male Connector into the patent PCI piggyback female connector.

Step 2. Plug the PCI module' s female connector into the AP-545V male connector.

PCI Module

PCI Female Connector

Dual-Side Male Connector
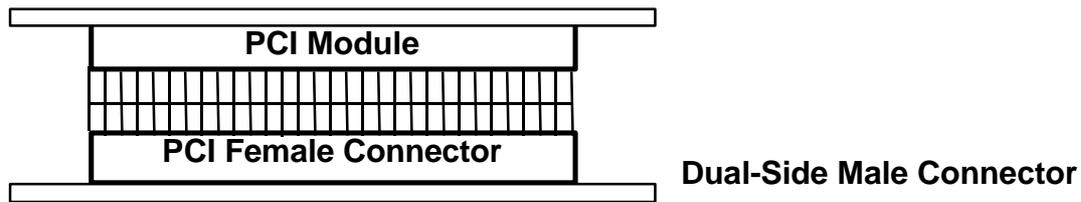
AP-545V Single Board Computer

GLOSSARY

8-Bit Bus – Data is transmitted to expansion slots and other components on the bus only along 8 parallel data line.

10Base-T – It is a 10Mbps IEEE 802.3/Ethernet standard that uses unshielded twisted pair cable specification. 10Base-T supports network configuration using the CSMA/CD access method over a twisted pair transmission system up to 100 meters in length without the use of repeater.

16-Bit Bus or ISA Bus – Data is transmitted along either 8 or 16 data lines, depending on what kind of adapter card is used in an expansion slot. ISA is the abbreviation of Industry Standard Architecture.

100Base-TX – It is a 100Mbps IEEE 802.3/Ethernet standard that uses UTP cable. Also called Fast Ethernet, it uses RJ-45 connectors and EIA/TIA T568B pinning. Maximum cable length from hub to node is 100 meters without a repeater.

Adapter – It is also called an expansion board, expansion card, or adapter card. It is a small circuit board that is installed in the expansion slots on the motherboard. You can install a particular adapter that connects a new device such as internal modem, sound card, and scanner.

AGP (Advanced Graphic Port) – is a new 32-bit interface, with external clock rate of 66MHz that transmit a maximum of 528MB of data. It has a clock speed of 133MHz, which is four times the speed of PCI interface.

bps – Bits per second. Also often preceded by K (kilo/thousands), **Kbps** – Kilo bytes per second, and M (mega/million), **Mbps** – Mega bytes per second.

BIOS (Basic Input /Output System) – This is a chip on the motherboard that contains the instructions for starting up, or booting, the computer, and more.

Bus – Data that travels in a computer along the circuits on the motherboard are called buses. Although three main buses (data bus, address bus, and control bus) manage the computer' s operation, often these are collectively called the bus. The bus carries instructions back and forth between the CPU and other devices in the system. ISA,

EISA, VL-Bus, PCI and SCSI are examples of PC buses.

Bus Mastering – A method of transferring data through a bus in which the device takes over the bus and directly controls the transfer of data to the computer's memory. Bus mastering is a method of Direct Memory Access (**DMA**) transfer.

Cache – Cache RAM is an extra holding area for program instructions that need to be frequently used by the CPU or swapped in and out of RAM. Your CPU can usually access those instructions from the cache more quickly than it could from a hard disk or even RAM, so a cache helps the system work more efficiently. Most systems sold today offer either 256K or 512K cache.

CPU (Central Processing Unit) – executes all commands and controls the flow of data, providing the "brain" that enables the PC to calculate and perform the operations like sorting information more quickly than a human could. The CPU makes perhaps the greatest contribution to a PC's speed and power. Note: Any additional information is subject to change without prior revision from the supplier.

Table 1 -- CPU Speeds	
Processor type	Speed ratings (MHz)
486DX2	66, 80
486DX4	75, 100, 120
Pentium	90, 100, 120, 133, 166, 200
Pentium MMX	166, 200, 233
Pentium Pro	166, 180, 200
Pentium II	233, 266, 300, 333

EIDE (Enhanced IDE) – It is a hard drive controller that enables your system to be able to handle fast hard disk drives at a speed of 10Mbps.

EISA or MCA Bus – Data is transmitted along 32 data lines to adapter cards designed specifically to work with the 32-bit buses. MCA expansion slots cannot accept 8-bit or 16-bit adapter cards. EISA stands for Extended Industry Standard Architecture, while MCA stands for MicroChannel Architecture. MCA is architecture used in IBM Microcomputer.

Expansion slots – Expansion slots are plug-in connectors that allow you to insert additional circuit boards that attach to the rest of the PC through special circuitry called the **bus**. By inserting the right circuit board -- usually called an **adapter** or an **expansion card** – you can increase the resolution and the number of colors used by the display, or you can transform your PC into a machine for recording and playing music.

Fast SCSI – The common nomenclature associated with SCSI-2, the second generation of SCSI offering mandatory parity checking improvements over SCSI-1.

IDE (Integrated Drive Electronics) – It was developed from ST-506 type hard drive interface, utilizes BIOS INT 13h hard drive secondary software and supports two hard drives (Master and Slave). Do not need extra software to drive since it is directly initiated in the BIOS. Data transfer rate is 4.1 Mbps. Take note that this interface cannot support other drive like CD-ROM drive.

IEEE (Institute of Electrical and Electronic Engineers) – It is an international professional society that issues its own standard, and is a member of ANSI and ISO. Popular known standards is:

    IEEE802.3 – is a physical layer standard for 10Base-T, 100Base-T, Ethernet, and StarLAN.

    IEEE802.5 – is a physical layer standard for Token Ring.

    IEEE802.11 – is a physical layer standard for Wireless LAN/WAN compatibility.

    IEEE802.12 – is a physical layer standard for 100VG AnyLAN.

LAN (Local Area Network) – A data communications network spanning a limited area. It provides communications between three or more computers and peripherals, in most cases using a high-speed media as it's backbone.

Keyboard – This is a component that comes in direct contact for you with your PC. The mechanism of keyboard converts a key cap's movement into a signal sent to the computer. The most common key mechanism are " **capacitate** " and " **hard contact** ". Capacitate keyboard has a spring that causes the plastic and the metal plunger to move nearer to two pads that have large plates (plated in tin, nickel, and copper). These pads are connected to the keyboard's printed circuit board. Hard

contact keyboard causes the key cap to collapse a foam rubber dome that presses against a sheet of

plastic on the bottom of which is metallic area connected to the rest of the keyboard's circuit board.

LDCM (LANDesk Client Manager) – With the help of LDCM, PCs that are either stand-alone or on a network can not escape the control of a system administrator. Alerts will be sent to the user if an abnormal condition is encountered in a PC. It allows the administrator to give each PC a thorough check-up. Additionally, this feature is available to multiple OS's on the market today. LDCM Key Features include the following : Health Monitoring Real-Time Alerting Remote Accessibility Extensive Instrumentation. This is a product from Intel.

Mouse – The keyboard is a barrier to learn how to use a computer. Xerox Corporation first developed the concept of a pointing device, something a computer user could move with his or her hand, causing a corresponding move on screen. Because of its size and tail like cable, the device was named for the mouse. Apple Computer made the mouse a standard feature of its Macintosh computers, and with the popularity of Windows, a mouse is becoming standard equipment on all PCs, as well. The " **Trackball** " have survived more awkward methods of navigating with the keyboard. " **Digitizing tablets** " are popular with architects and engineers who must translate precise movements of a pen into lines on the screen. " Touch screens ", on which you press either your finger and a special light pen to control the software, are too tiring to use for any length of time.

MMX – CPU's with MMX technology are optimized to run multimedia application, and therefore, offer faster multimedia playback than standard CPUs. However, when manufacturers introduce any new hardware technology, the software makers need to catch up. At this time of compilation, most applications can't yet take advantage of MMX capabilities.

Parallel port – Parallel ports (labeled **LPT1**, **LPT2**, and so on) are usually for plugging in printers. It is also often called a **Centronics port** – has been almost synonymous with **printer port**. Although a serial port can also be used to send data from a PC to some models of printers, the parallel port is faster. A serial port sends data one bit at a time over a single one-way wire; a parallel port can send several bits of data across eight parallel wires simultaneously. Take note that a serial connection sends a single

bit, a parallel port send an entire byte.   A parallel connection has one drawback.

PCI Bus (Peripheral Component Interconnect) – It is a connection slot in a motherboard that supports 32-bit bus transfer rates.   The now standard PCI Local Bus carries data along at least 32 lines, that is, at least 32 bits at a time. Local bus computer designs add special buses so the CPU can communicate directly with key components like the monitor, resulting in much better performance.   You should look for PCI local bus capabilities in any system you buy, especially PCI local bus video (which helps the monitor display more quickly).

POST (Power-On Self-Test) – is the first thing your PC does when you turn it on, and it's your first warning of trouble with any of the components. When the POST detects an error from the display, memory, keyboard, or other basic components, it produces an error warning in the form of a message on your display and —in case your display is part of the problem —in the form of a series of beeps.

RAM (Random Access Memory) – consists of a bank of chips that act as " working memory ", holding program instructions and data only while your computer's on. Unless the instructions and data are saved to a disk, RAM forgets them when you turn your computer off. RAM is measured in megabytes (M). Most computers today come with 32M of RAM, though some sell with only 16M installed. There are a few different flavors and speeds of RAM, as well. One of the most prominent today is Extended Data Output (EDO) RAM, but an even faster type of RAM that has just hit the market is called **SyncDRAM**.

Serial port – Serial ports are also sometimes called **COM** (short for COMmunications) ports, and are labeled **COM1**, **COM2**, and so on. It is simple in concept: one line to send data, another line to receive data, and a few other lines to regulate how data is sent over the other two lines – from commonplace modems and printers to plotters and burglar alarms. The most common use for serial port is with a **mouse** or **modem**. The reason for this is that a serial port is not a very efficient way to transfer data, so little data that speed is not crucial, and perfect for modems because. With current technology, phone lines cannot transport more than one signal at a time anyway.   The **serial port** is often referred to as an **RS-232 port**.

SCSI (Small Computer System Interface) – An intelligent bus for transmitting data commands between a variety of devices.   There are many implementations of SCSI, including Fast SCSI, Wide

SCSI, Fast Wide SCSI, Fast-20, and Fast-40.

SCSI-2 – The second generation of SCSI; includes many improvements to SCSI-1, including Fast SCSI, Wide SCSI, and mandatory parity checking.

SCSI-3 – The third generation of SCSI; introduces Fast-20 and Fast-40 as improvements to the parallel bus. The standard also includes a number of specifications for high-speed serial bus architectures such as SSA, Fiber Channel, and IEEE 1394. Also known as Ultra SCSI.

Ultra SCSI – Also known as SCSI-3, is a third generation SCSI standard that introduced parallel bus speed improvements (FAST-20 and FAST-40), an the miniaturized 68-pin micro connector.

USB (Universal Serial Bus) – USB consolidates serial, parallel, keyboard, mouse, and game ports into one asynchronous and isochronous communications port with bandwidth for data transfer speeds up to 12 Mbps without termination. By daisy-chaining USB hubs, up to 127 I/O devices can be connected to one USB port on the PC. USB is completely plug-and play meaning peripherals can be correctly detected and configured automatically as soon as they are connected.

UTP (Unshielded Twisted Pair) – Twisted pair cable with neither individual nor overall shielding. **Twisted Pair** are two wires twisted together to reduce susceptibility to RF crosswalk.

VGA (Video Graphics Array) – A video adapter that supports 640x480 pixels color resolution. The Windows OS provides medium text & graphics standard.

VL-Bus – It is also known as Local Bus; this is an I/O interface that is directly connected and depended of the system CPU. The VL-Bus is an abbreviation of VESA Local Bus.

Terms and Conditions

Warranty Policy

1. All products are warranted against defects in materials and workmanship on a period of two 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

    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:1997.10.20

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**