POS–EDEN-400 Series
VIA-EDEN 400 Processor
With Ethernet, Audio
Embedded Board

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Support

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1. Introduction

Thank you for choosing POS-EDEN-400 embedded board. POS-EDEN-400 is a POS form factor CPU board equipped with a low power consumption and high performance VIA EDEN processor. It is designed for the system manufacturers, integrators, or VARs who want to provide quality and reliable performance at a reasonable price.

POS-EDEN-400 is built in with ProSavage4 AGP4X VGA controller. It is a 2D/3D graphics controller, which provides resolution of up to 1920 x 1440, and supports both CRT and LCD simultaneously. The VGA controller can share 8~32 MB frame buffer of system memory.

Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

POS-EDEN-400 has a built-in 10/100 Fast Ethernet LAN. It is a fully integrated 10BASE-T/100BASE-TX LAN controller with high performance and low power consumption features.

POS-EDEN-400 uses the advanced VIA VT8606/VT82C686B chipsets which are 100% software compatible and have PCI 2.1 standard.

Note: All shaded rows in tables of this manual are the default settings for POS-EDEN-400.

1.1 Specifications

CPU	VIA Eden 400Mhz processor; supports 100 MHz FSB
Bus interface	PCI/ISA bus
Bus speed	ISA: 8MHz, PCI: 33MHz
DMA channels	7
Interrupt levels	15
Chipset	VT8606
Real-time clock/calendar	VT82C686B
Main memory	One 168-pin DIMM socket; supports 133 Mhz SDRAM. The maximum memory is up to 512 MB. Optional on board SDRAM of memory up to 128 MB.
Ultra DMA 100 IDE interface	Up to four PCI Enhanced IDE hard drives supported. The Ultra DMA 100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA IDE specifications, no need to do any changes for users' current accessories.
Floppy disk drive interface	Supports up to two floppy disk drives, 5.25″ (360KB and 1.2MB) and/or 3.5″ (720 KB, 1.44 MB, and 2.88 MB)
Serial ports	Four RS-232 ports (including one RS232/422/485) with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2 Kbps. Can be configured to COM1, COM2 ,COM3, COM4 or disabled.
Bi-directional parallel port	Configurable to LPT1, LPT2, LPT3 or disabled. Supports EPP/ECP/SPP.
Hardware monitor	Built-in to monitor power supply voltage and fan speed status
IrDA port	Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface
USB 1.1 port	Supports four USB 1.1 ports for future expansion
Watchdog timer	Software programmable, reset generated when watchdog timer is time-out. You can use I/O Port hex 043 (843) & 443 to control the watchdog.
VGA controller	Built-in ProSavage4 AGP4X 256-bit 2D/3D graphics engine. 8~32 MB share memory. Screen resolution: up to 1920 x 1440.
Ethernet	Fast Ethernet controllers, IEEE 802.3u Auto-Negotiation supports 10BASE-

	T/100BASE-TX standard. The RJ45 connectors are located on the mounting bracket for easy connection.
Keyboard and PS/2 mouse connector	A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard and a PS/2 mouse pin header connectors are also available on board.
Audio	AC'97 Audio CODEC
Compactflash	Can be used with a passive adapter (True IDE Mode) in a Type I/II socket
Expansion bus	PICSA bus compatible
Power consumption	(VIA Eden 400 Mhz, PC133 128 M SDRAM) +5V @2.3A ,+12V @260 mA, -12@110mA, +5VSB@150mA Recommended: 150-watt power supply or higher
Operating temperature	0 ~ 60

1.2   Package Contents

POS-EDEN-400 package includes the following items:

- POS-EDEN-400POS-EDEN-400 Embedded Board x 1
- RS-232 cable x 2
- Parallel port cable x 1
- FDD cable x 1
- ATA IDE cable x 1
- Audio cable x 1
- Keyboard / Mouse adapter Y Cable x 1
- User manual x 1

If any of these items is missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2. Installation

2.1   POS-EDEN-400 Layout
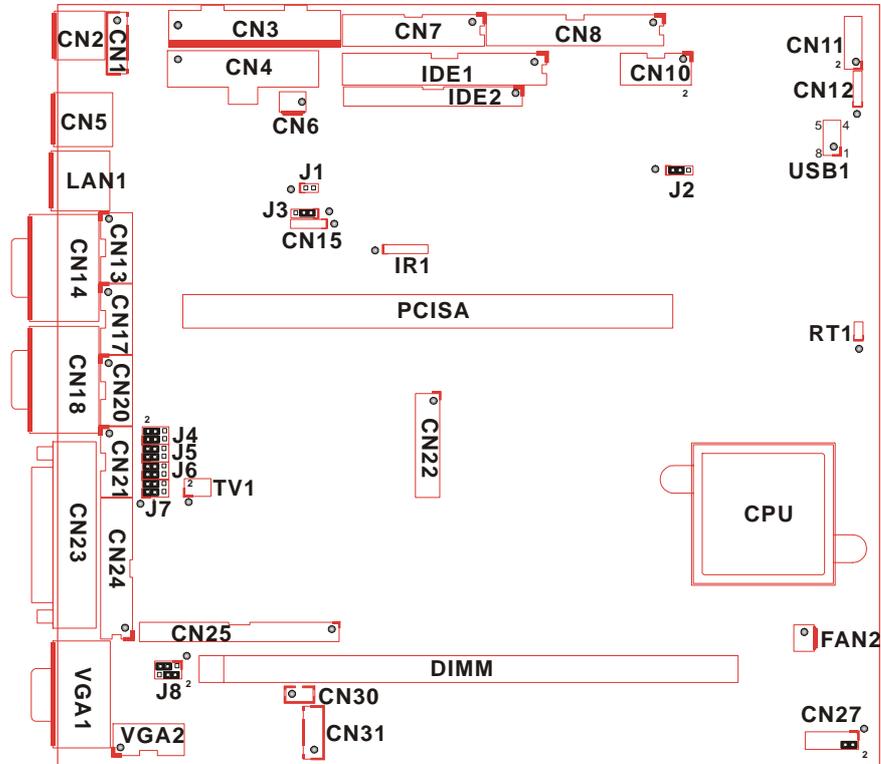
2.2   POS-EDEN-400 Dimensions

(Unit: mm)

0
9.5
17.5
33.77
51.46
69.98
76.48
110
153.47
199.49
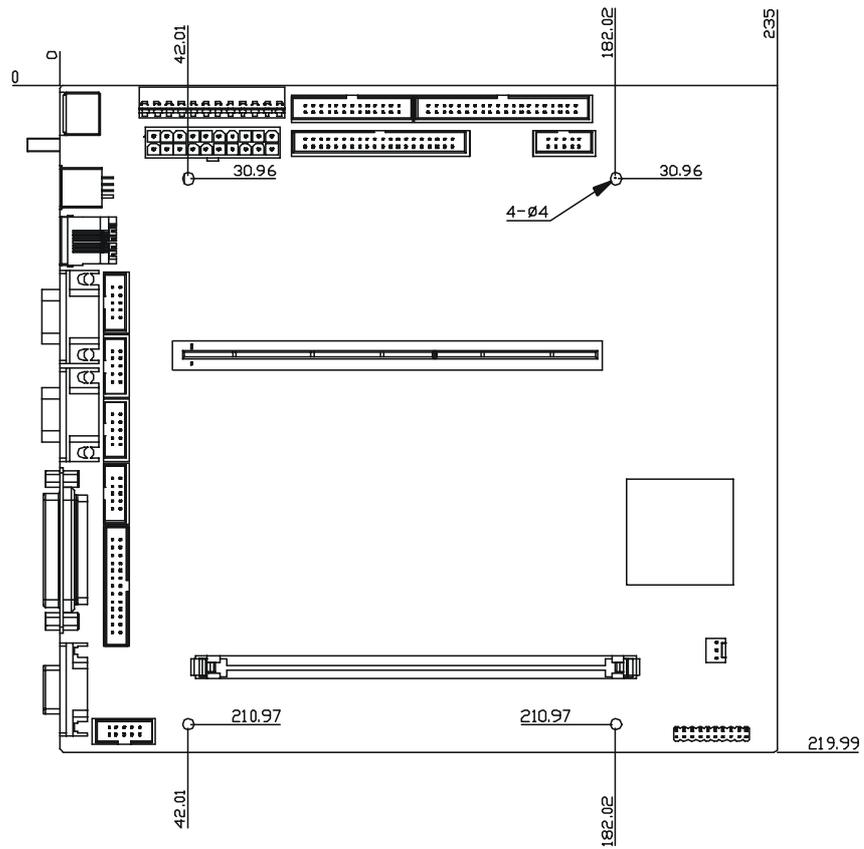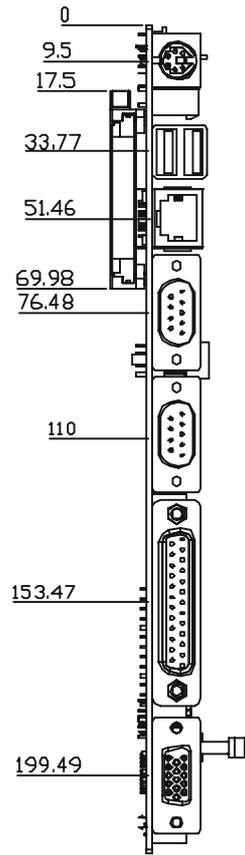
(Unit：mm)

2.3   Unpacking Precautions

Some components on POS-EDEN-400 are very sensitive to static electricity and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

- Ground yourself to remove any static charge before touching POS-EDEN-400. You can do it by using a wrist strap connected to the ground or by frequently touching any conducting materials connected to the ground.
- Handle your POS-EDEN-400 by its edges. Do not touch IC chips, leads or circuitry.
- Do not plug any connector or jumper when the power is on.

2.4   Clear CMOS Setup

To clear the CMOS Setup, close the J2 (2-3) for about 3 seconds, then open it. The system will be resumed to normal operation mode.

- **J2: Clear CMOS Setup**

J2	Description
1-2 (default)	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

2.5   Buzzer Function Setting

- **CN27 (2-4): Enabled/Disabled Onboard Buzzer Function**

2 – 4	Description
SHORT	Enabled
OPEN	Disabled

2.6   COM2 RS-232 /422/485 Mode Selection

- **J3 : COM2 Mode Selection**

J3	Description
1-2 Short	RS232
2-3 Short	RS422/485

Note: If RS422/485 is in use, the RS232 mode on the main board will be disabled.

2.7 TFT LCD Setting

- **J8: TFT LCD type (5V/3.3V & FPCLK/#FPCLK) Setting**

J8	Description
2 – 4	3.3V TFT LCD
3 – 5	FPCLK
4 – 6	5V TFT LCD
1 – 3	#FPCLK

2.8 COM1, COM2, COM3, COM4 RI Function Setting

- **J4, J5, J6, J7: RI Function Setting**

Short 2 – 4 pin, normal RS232 RI Function
Short 4 – 6, 1 – 3 pin, RI is 5V output
Short 4 – 6, 3 – 5 pin, RI is 12V output

J4, J5, J6, J7	Description
2 – 4	Normal RI Function
1 – 3 4 – 6	RI is 5Voltage output
3 – 5 4 – 6	RI is 12-Voltage output

2.9 Compact Flash Master/Slave Function Setting

- **J1: Compact Flash Master/Slave Function Setting**

Short 1 - 2 pin, Compact Flash is Master

J4	Description
Close	Master
Open	Slave

3. Connection

This chapter describes how to connect peripherals, switches and indicators to POS-EDEN-400 board.

3.1 Audio Connectors

The onboard AC'97 CODEC supports several audio functions. The functions of audio connectors are described below:

- **CN11: Audio connector**

Speaker out (6W AMP), Line out (0.25W AMP), Line in, and MIC in

PIN	Description	PIN	Description
1	Speaker out (Left)	2	Speaker Out (Right)
3	GROUND	4	GROUND
5	Line Out (Left)	6	Line Out (Right)
7	Line in (Left)	8	Line In (Right)
9	GROUND	10	GROUND
11	MIC In	12	GROUND

- **CN12: Audio CD In connector**

PIN	Description
1	CD SIGNAL (LEFT)
2	GROUND
3	GROUND
4	CD SIGNAL (RIGHT)

3.2 PCI E-IDE Disk Drive Connector

You can attach up to four IDE (Integrated Device Electronics) devices.
IDE1 : Primary IDE Connector (40pin 2.54mm)
IDE2 : Secondary IDE Connector (44pin 2.0mm)

- **IDE1 & IDE2: IDE Interface Connector**

PIN	Description	PIN	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	N/C
21	DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	CHRDY	28	REV. PULL LOW
29	DACK	30	GROUND-DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V(IDE2)	42	+5V(IDE2)
43	GND(IDE2)	44	N/C(IDE2)

3.3 Parallel Port

POS-EDEN-400 has two on-board parallel ports, which can be accessed via a 26-pin flat-cable and 25 pin D-Type.

- **CN24, CN23: LPT1 Parallel Port Connector**
  CN24: 26-pin header (26-pin, 2.54 mm)
  CN23: 25 pin D-Type Connector

- **CN7: LPT2 Parallel Port Connector**
  CN7: 26-pin header (26-pin, 2.54 mm)

PIN	Description	PIN	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 LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

3.4 USB Port Connectors

POS-EDEN-400 is also equipped with four USB 1.1 ports.

- **USB 1: 8-pin header Connector (2 ports)**

PIN	Description	PIN	Description
1	VCC	8	GROUND
2	DATA0-	7	DATA1+
3	DATA0+	6	DATA1-
4	GROUND	5	VCC

- **CN5: 2 External USB Connectors**

PIN	Description	PIN	Description
1	VCC	8	GROUND
2	DATA0-	7	DATA1+
3	DATA0+	6	DATA1-
4	GROUND	5	VCC

3.5 Power Button Switch

- **CN27: 2 Pin (Pin5 & Pin7) Power Button Switch**

PIN	Description
5	ATX SW Pin 1
7	ATX SW Pin 2

3.6 Serial Port

POS-EDEN-400 offers four high speed NS16C550 compatible UARTs with 16-byte Read/Receive FIFO serial ports.

- **CN13 (CN14), CN17 (CN18), CN20, CN21: COM1 to COM 4 Serial Port Connector**

CN13, CN17, CN20, CN21 10-pin Header
CN14, CN18 9-pin D-Type Connector

PIN	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)

3.7 Keyboard/Mouse Connector

POS-EDEN-400 has a 6-pin DIN keyboard/mouse connector and a 6-pin keyboard connector.

- **CN2: Mini DIN Keyboard/Mouse Connector**

PIN	Description
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

- **CN1: 6-pin Keyboard/Mouse Connector**

PIN	Description
1	+5V
2	MOUSE DATA
3	MOUSE CLOCK
4	KEYBOARD DATA
5	KEYBOARD CLOCK
6	GROUND

3.8 IrDA Infrared Interface Port

POS-EDEN-400 has an integrated IrDA port which supports either a Serial Infrared(SIR) or an Amplitude Shift Keyed IR(ASKIR) interface.

- **IR1: IrDA connector**

PIN	Description
1	VCC
2	N/C
3	IR-RX
4	Ground
5	IR-TX

3.9 Fan Connector

POS-EDEN-400 has a CPU cooling fan connector, which can supply 12V/500mA to the fan. There is a "rotation" pin in the fan connector, which transfers the fan's rotation signal to the system BIOS in order to recognize the fan speed. Note that only specific fans have a rotation signal.

- **FAN2: CPU Fan Connector**

PIN	Description
1	Rotation Signal
2	+12V
3	Ground

3.10 VGA Connector

- **VGA1 : 15-pin Female VGA Connector**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDC CLK		

- **VGA2: 10-pin VGA Connector**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	HSYNC
5	VSYNC	6	DDCDAT
7	DDCDAT	8	GROUND
9	GROUND	10	GROUND

3.11 TV OUT Connector (Optional)

POS-EDEN-400 supports both NTSC and PAL signal on the TV-out.

- **TV1: 6-pin TV-OUT Connector**

PIN	Description	PIN	Description
1	GROUND	2	TV_Y
3	GROUND	4	TV_C
5	GROUND	6	TV_CVBS

3.12 Digital I/O Connector

The digital IO port of POS-EDEN-400 is of 5V TTL level. Internal pull-up is available on the output.

- **CN10: 10-pin Digital I/O Connector**

PIN	Description	PIN	Description
1	GROUND	2	+5V
3	OUTPUT3	4	OUTPUT2
5	OUTPUT1	6	OUTPUT0
7	INPUT3	8	INPUT2
9	INPUT1	10	INPUT0

3.13 Power Connector

- **CN3: AT Power Supply Connector**

If you use AT power supply, plug both power supply connectors into CN3. Make sure you plug them in the right direction; the black wires (GND) of each power cable must be CLOSE to each other (in the center of the CN3 connector).

PIN		CN3 Connector	Cable Color
P8 1	⊖	Power Good	
2	●	+5V	Red
3	●	+12V	
4	●	-12V	
5	●	Ground	Black
6	●	Ground	Black
7	⊖	Ground	Black
8	●	Ground	Black
P9 9	●	-5V	
10	●	+5V	Red
11	●	+5V	Red
12	●	+5V	Red

- **CN4: ATX Power Supply Connector**
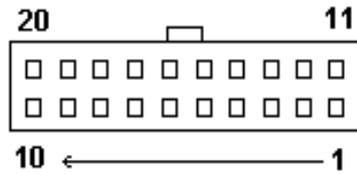
CN4 is a 20-pin ATX Power Supply Connector. The pin assignments are listed as below:

PIN	Description	PIN	Description
11	3.3V	1	3.3V
12	-12V	2	3.3V
13	GND	3	GND
14	PS-ON	4	+5V
15	GND	5	GND
16	GND	6	+5V
17	GND	7	GND
18	-5V	8	Power good
19	+5V	9	5VSB
20	+5V	10	+12V

3.14 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All functions are in the CN27 connector.

- **CN27 Connector**

Function	PIN	Description	
SPEAKER	2	SPK SIGNAL	Jump for Buzzer
	4	Buzzer-	
	6	NC	
	8	VCC	
RESET	10	RESET	
	12	GROUND	
HDD LED	9	IDE_LED+	
	11	IDE_LED-	
POWER LED	1	LED+	
	3	LED- (GROUND)	
Power Button	5	GROUND	
	7	PSON	

3.15 PS-ON Connector

This connector is used to control the ATX power supply to AT function.

- **CN6: PS-ON Connector**

PIN	Description
1	+5V Standby
2	PS-ON
3	Ground

3.16 LAN Connector

POS-EDEN-400 is equipped with 10/100Mbps Ethernet controllers, which are connected to the LAN via an RJ45 connector. The pin assignments are listed below:

- **LAN1: RJ45 Connectors (10/100M)**

PIN	Description	PIN	Description
1	TX+	7	N/C
2	TX-	8	N/C
3	RX+	9	Speed +
4	N/C	10	Speed -
5	N/C	11	Active/LINK +
6	RX-	12	Active/LINK -

3.17 RS422/485 Connector

The RS485 port of POS-EDEN-400 is half-duplex with auto direction. So you do not have to switch transfer mode while sending or receiving the data.

- **CN15: RS 422 / 485 Connector**

PIN	Description
1	TX+
2	TX-
3	RX+
4	RX-

3.18 LCD Backlight Connector

- **CN31: LCD Backlight Connector**

PIN	Description	PIN	Description
1	NC	2	GND
3	+12V	4	GND
5	ENABKL		

3.19 DSTN LCD Brightness Control Connector

- **CN30: DSTN LCD Brightness Control Connector**

PIN	Description
1	+5V
2	Connect to CN25 Pin 1
3	GND

3.20 TFT LCD Connector

POS-EDEN-400 is equipped with TFT LCD controller, which can be connected to the LCD via CN25 connector. The pin assignments are listed below:

- **CN25: TFT LCD Connector**

PIN	Description	PIN	Description
1	N/C	2	FP33
3	FP34	4	FP31
5	FP35	6	FP32
7	FP30	8	FP28
9	FP29	10	FP27
11	FP25	12	FP26
13	FP24	14	FP21
15	FP23	16	FP22
17	FP16	18	FP20
19	FP17	20	FP18
21	FP19	22	FP14
23	FP13	24	FP12
25	FP15	26	FP11
27	FP7	28	FP10
29	+LCD	30	+LCD
31	FP9	32	FP8
33	FP4	34	FP6
35	FP3	36	FP5
37	FP2	38	FP1
39	FPDEN	40	FP0
41	FPCLK	42	VEEON
43	ENVDD	44	FPVS
45	ENVEE	46	FPHS
47	GND	48	GND
49	+12V	50	+12V

3.21 LVDS LCD Connector

POS-EDEN-400 is equipped with LVDS controllers, which can be connected to the LVDS LCD via CN22 connector. The pin assignments are listed below:

- **CN22: LVDS LCD Connector**

PIN	Description	PIN	Description
1	ZCP	2	ZCM
3	Z2P	4	Z2M
5	Z1P	6	Z1M
7	Z0P	8	Z0M
9	YCP	10	YCM
11	Y2P	12	Y2M
13	Y1P	14	Y1M
15	Y0P	16	Y0M
17	GROUND	18	GROUND
19	+LCD (+3Vor +5V)	20	+LCD (+3Vor +5V)

3.22 Floppy Connector

- **CN8: Floppy Connector**

PIN	Description	PIN	Description
1	GROUND	2	RWC0-
3	GROUND	4	NC
5	GROUND	6	RWC1-
7	GROUND	8	INDEX-
9	GROUND	10	MO-A
11	GROUND	12	DS-B
13	GROUND	14	DS-A
15	GROUND	16	MO-B
17	GROUND	18	DIR-
19	GROUND	20	STEP-
21	GROUND	22	WD-
23	GROUND	24	WGATE-
25	GROUND	26	TRK0-
27	GROUND	28	WP-
29	GROUND	30	RDATA-
31	GROUND	32	HEAD-
33	GROUND	34	DSKCHG-

4. AMI BIOS Setup

4.1 Introduction

This manual discusses AMI Setup program built into the ROM BIOS. The Setup program enables users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

4.2 Starting Setup

AMI BIOS is immediately activated when you first power on the computer. BIOS reads the system information contained in the CMOS and configure the system. When it finishes, BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. By pressing the <Del>key when the following message appears briefly at the bottom of the screen during the POST.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON, or by pressing the "RESET" button on the system case. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to:

Press F2 to Continue, DEL to Enter SETUP

4.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu— Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu— Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F4 key	Reserved
F5 key	Reserved
F6 key	Reserved
F7 key	Reserved
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

4.4 Getting Help

Press F1, a help window will pop up to describe the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc> or the F1 key again.
If your computer cannot boot after making and saving system changes with Setup, AMI BIOS supports an override to the CMOS settings which can reset your system to the default settings.

It is highly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the best and reliable performance. A small change to the chipset setup may cause potential system malfunction.

4.5 Main Menu

Once you enter the AMIBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu enables you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

Note that a brief description of each highlighted selection will appear at the bottom of the screen.

The main menu includes the following main setup categories. Note that some systems may not include all entries.

Standard CMOS Setup

Use this menu for basic system configuration.

Advanced CMOS Setup

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Setup

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

Power Management Setup

When Disabled, SMI will not be initialized, and complete power management functionality will be removed until this option is set to Enabled.

PCI/Plug and Play Setup

This entry appears if your system supports PnP/PCI.

Peripheral Setup

Use this menu to specify your settings for integrated peripherals.

Hardware Monitor Setup

Use this menu to monitor your hardware.

Auto-detect Hard Disks

Use this menu to specify your settings for hard disks control.

Change Supervisor Password

Use this menu to set Supervisor and User passwords.

Auto Configuration with Optimal Settings

Use this menu to load the BIOS default values for optimal performance system operation. When AMI has designed the custom BIOS to maximize performance, these defaults can be changed to meet the needs.

Auto Configuration with Fail Safe Settings

Use this menu to load the BIOS default values for the minimal and stable performance for the system.

Save Settings and Exit

Save CMOS value changes to CMOS and exit setup.

Exit without Saving

Abandon all CMOS value changes and exit setup.

4.6   Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up

4.7 Advanced CMOS Setup

This section allows you to configure your system for basic operation. You can select the system default speed, boot-up sequence, keyboard operation, shadowing and security.
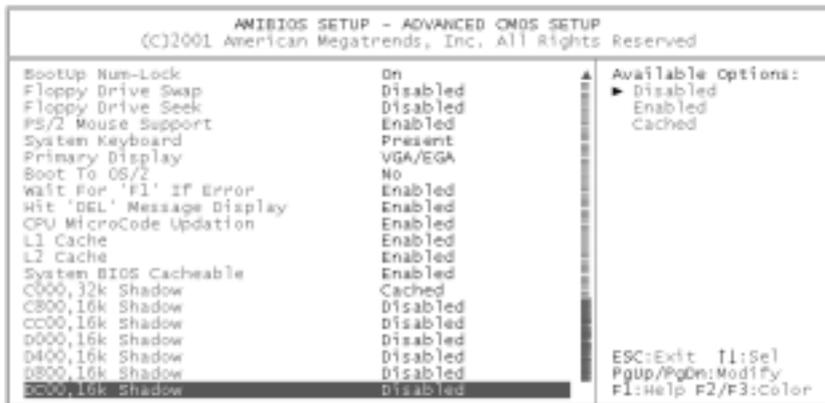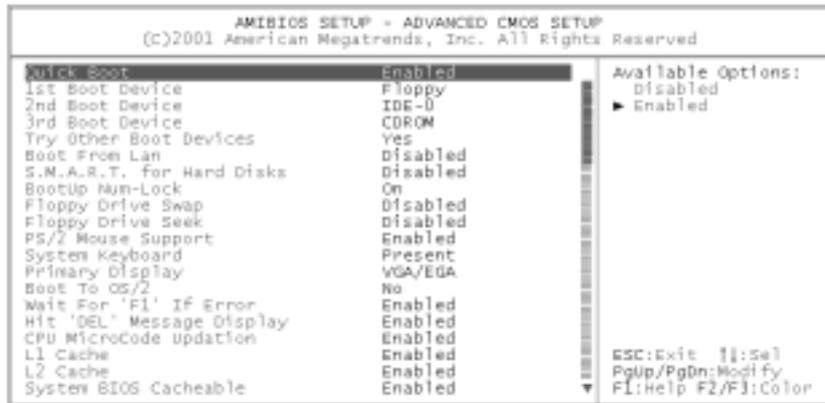
Quick Boot

When set to Enabled, DRAM testing function will be disabled.

1st /2nd /3rd Boot Device

This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. The settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, or SCSI.

Try Other Boot Devices

Set this option to Yes to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the 1st Boot Device, 2nd Boot Device, 3rd Boot Device, 4th Boot Device options. The settings are Yes or No.

Floppy Access Control

This option specifies the read/write access that is set when booting from a floppy drive. The settings are Read/Write or Read-Only.

Hard Disk Access Control

This option specifies the read/write access that is set when booting from a hard disk drive. The settings are Read/Write or Read-Only.

S.M.A.R.T. for Hard Disks

Self-Monitoring, Analysis and Reporting Technology. This option helps BIOS to warn the user of the possible device failure and give user a chance to back up the device before actual failure happens. The settings are Disabled, or Enabled.

Boot Up Num-Lock

When on, this option turns off Num Lock when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard.

Floppy Drive Swap

Set this option to Enabled to permit drives A: and B: to be swapped. The settings are Enabled or Disabled.

Floppy Drive Seek

Set this option to Enabled to specify that floppy drives A: will perform a Seek operation at system boot. The settings are Enabled or Disabled.

PS/2 Mouse Support

When this option is enabled, BIOS support a PS/2- type mouse.

System Keyboard

This option does not specify if a keyboard is attached to the computer. Rather, it specifies if error messages are displayed if a keyboard is not attached. This option permits you to configure workstation with no keyboard. The settings are Absent, or Present.

Primary Display

Select this option to configure the type of monitor attached to the computer. The settings are Monochrome, Color 40 x 25, and Color 80 x 25, VGA/PGA/EGA, or Not Install.

Password Check

This option enables the password check option every time the system boots or the end user runs Setup. If always is chosen a user password prompt appears every time the computer is tuned on. If setup is chosen, the password prompt appears if BIOS is executed.

Boot To OS/2

Set this option to Enabled if running OS/2 operating system and using more than 64MB of system memory on the motherboard. The settings are YES or NO.

Wait For 'F1' If Error

If this option is enabled, AMIBIOS waits for the end user to press <F1> before continuing. If this option is disabled, AMIBIOS continues the boot process without waiting for <F1> to be pressed.

The settings are Disabled or Enabled.

Hit 'DEL' Message Display

Disabling this option prevents "Hit <DEL> if you want to run Setup" from appearing when the system boots. The settings are Disabled or Enabled.

Internal Cache

The option enabled or disabled the internal cache memory in the processor.

External Cache

The option enables secondary cache memory. If Enabled is selected, external cache memory is enabled. If disabled is selected, external cache memory is disabled.

System BIOS Cacheable

When this option is set to Enabled, the System ROM area from F0000-FFFFF is copied (shadowed) to RAM for faster execution.

C000, 32k Shadow

When this option is set to Enabled, the Video ROM area from C0000-C7FFF is copied (shadowed) to RAM for faster execution.
Disabled: The contents of the video ROM are not copied to RAM.
Cached: The contents of the video ROM area from C0000h - C7FFFh are copied from ROM to RAM and can be written to or read from cache memory.
Enabled: The contents of the video ROM area from C0000h - C7FFFh are copied (shadowed) from ROM to RAM for faster execution.

C800, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.000, 32k Shadow.

CC00, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.800, 16k Shadow.

D000, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. C00, 16k Shadow.

D400, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.000, 16k Shadow.

D800, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.400, 16k Shadow.

DC00, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. ISA adapter cards will be allocated to PCI adapter cards.800, 16k Shadow.

4.8   Advanced Chipset Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

DRAM Frequency

This setting is decided by Memory frequency.

SDRAM CAS# Latency

This setting is decided by Memory CAS latency.

AGP Aperture Size

Select the size of AGP aperture, which is a portion of the PCI Memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

USB Controller

Select Enabled if your system contains a USB controller and you have USB Peripherals.

USB Device Legacy support

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Enable or Disable for USB device legacy support.

4.9   Power Management Setup

```
             AMIBIOS SETUP - POWER MANAGEMENT SETUP
         (C)2001 American Megatrends, Inc. All Rights Reserved
ACPI Aware O/S                      No            Available Options:
ACPI Standby State                  S1/POS        ► No
Re-Call VGA BIOS at S3 Resuming     Enabled          Yes
Power Management/APM                Enabled
Video Power Down Mode               Disabled
Hard Disk Power Down Mode           Disabled
Standby Time Out (Minute)           Disabled
Suspend Time Out (Minute)           Disabled
Throttle Slow Clock Ratio           50%~56.25%
Display Activity                    Ignore
IRQ3                                Monitor
IRQ4                                Monitor
IRQ5                                Ignore
IRQ7                                Monitor
IRQ9                                Ignore
IRQ10                               Ignore
IRQ11                               Ignore
IRQ13                               Ignore    ESC:Exit  ↑↓:Sel
IRQ14                               Monitor   PgUp/PgDn:Modify
IRQ15                               Ignore ▼  F1:Help F2/F3:Color
```

```
             AMIBIOS SETUP - POWER MANAGEMENT SETUP
         (c)2001 American Megatrends, Inc. All Rights Reserved
Display Activity                    Ignore    ▲  Available Options:
IRQ3                                Monitor         AT
IRQ4                                Monitor      ► ATX
IRQ5                                Ignore
IRQ7                                Monitor
IRQ9                                Ignore
IRQ10                               Ignore
IRQ11                               Ignore
IRQ13                               Ignore
IRQ14                               Monitor
IRQ15                               Ignore
Power Button Function               On/Off
Restore on AC/Power Loss            Last State
Resume On Ring/LAN                  Disabled
Resume On RTC Alarm                 Disabled
RTC Alarm Date                      15
RTC Alarm Hour                      12
RTC Alarm Minute                    30          ESC:Exit  ↑↓:Sel
RTC Alarm Second                    30          PgUp/PgDn:Modify
Power Type Select                   ATX         F1:Help F2/F3:Color
```

ACPI Aware O/S

This feature is switch of ACPI function. Configuration options: [No] or [Yes].

ACPI Standby State

This feature is a switch of STR (S3) or POS (S1) function. Configuration options: [S3/STR] or [S1/POS].

Power Management/APM

When Disabled, SMI will not be initialized, and complete power management functionality will be removed until this option is set to Enabled.

Video Power Down Mode

Video will power down when system is in Suspend mode.
Video will power down when system is in Standby mode.

Hard Disk Power Down Mode

Hard Disk will power down when system in Suspend mode.
Hard Disk will power down when system in Standby mode.

Suspend Time Out

If no activity occurs during this time period, the BIOS will place the system into suspend low power state. The ''Standby Time Out'' period must expire first (if enabled) before this time out period begins.

IRQ3, 4, 5, 7, 9, 10, 11, 13, 14, 15

As Individual IRQ Wake Up Events.

Power Button Function

On/Off enables the system to switch off immediately the power button is pressed. Suspend allows the system to suspend immediately the power button is pressed.

Resume on Ring/LAN

Allows the system to wake up in response to a Ring Indicator signal from external modem. Wake up on LAN gives you the ability to remotely boot a PC from across a network even if it has been powered down.

Resume On RTC Alarm

When this option is set enabled, you can set the time to wake the system up from soft off mode.

Power Type Select

To select Power Type for AT or ATX.

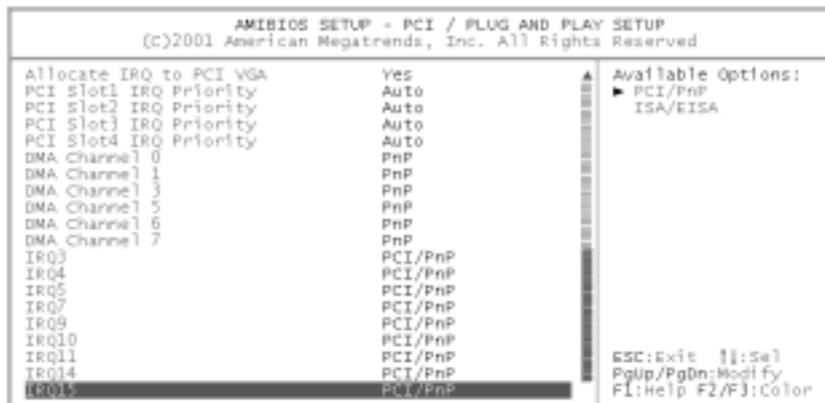## 4.10 PCI / Plug and Play Setup

```
         AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP
      (c)2001 American Megatrends, Inc. All Rights Reserved
 Plug and Play Aware O/S          No           Available Options:
 Clear NVRAM                      No            ► No
 OnBoard USB2.0 Controller        Enabled         Yes
 OnBoard LAN_1 Controller         Enabled
 OnBoard LAN_2 Controller         Enabled
 OnChip VGA Frame Buffer Size     8MB
 PCI Latency Timer (PCI Clocks)   32
 Primary Graphics Adapter         PCI
 Boot Screen Select               CRT
 TV Out Type                      U.S. NTSC
 LCD Panel Type                   1 800x600 TFT
 Allocate IRQ to PCI VGA          Yes
 PCI Slot1 IRQ Priority           Auto
 PCI Slot2 IRQ Priority           Auto
 PCI Slot3 IRQ Priority           Auto
 PCI Slot4 IRQ Priority           Auto
 DMA Channel 0                    PnP
 DMA Channel 1                    PnP          ESC:Exit  ↑↓:Sel
 DMA Channel 3                    PnP          PgUp/PgDn:Modify
 DMA Channel 5                    PnP      ▼   F1:Help F2/F3:Color
```

```
         AMIBIOS SETUP - PCI / PLUG AND PLAY SETUP
      (c)2001 American Megatrends, Inc. All Rights Reserved
 Allocate IRQ to PCI VGA          Yes         ▲ Available Options:
 PCI Slot1 IRQ Priority           Auto          ► PCI/PnP
 PCI Slot2 IRQ Priority           Auto            ISA/EISA
 PCI Slot3 IRQ Priority           Auto
 PCI Slot4 IRQ Priority           Auto
 DMA Channel 0                    PnP
 DMA Channel 1                    PnP
 DMA Channel 3                    PnP
 DMA Channel 5                    PnP
 DMA Channel 6                    PnP
 DMA Channel 7                    PnP
 IRQ3                             PCI/PnP
 IRQ4                             PCI/PnP
 IRQ5                             PCI/PnP
 IRQ7                             PCI/PnP
 IRQ9                             PCI/PnP
 IRQ10                            PCI/PnP
 IRQ11                            PCI/PnP      ESC:Exit  ↑↓:Sel
 IRQ14                            PCI/PnP      PgUp/PgDn:Modify
 IRQ15                            PCI/PnP      F1:Help F2/F3:Color
```

Plug and Play Aware O/S

If enabled, BIOS will configure only PnP ISA boot devices (i.e. all PnP ISA cards which has boot flag set). And PnP aware OS will configure all other devices. If disabled, BIOS will configure all devices.

Clear NVRAM

When this option is set to Yes, system can auto clear NVRAM. The settings are Yes or No.

On Board USB2.0 Controller

To enable or disable USB2.0 controller.

On Board LAN1 Controller

To enable or disable LAN1 controller.

On Board LAN2 Controller

To enable or disable LAN2 controller.

On Chip VGA Frame Buffer Size

To select frame buffer size (2~32MB) for VGA.

PCI Latency Timer (PCI Clocks)

This option specifies the latency timings (in PCI clocks) for PCI devices installed in the PCI expansion slots. The settings are 32, 64, 96, 128, 160, 192, 224, or 248.

Boot Screen Select

This option is select Boot Screen from CRT or LCD or TV out. Select CRT+LCD or CRT+TV is Boot from CRT and LCD or CRT and TV.

TV Out Type

If you select TV or CRT+TV from Boot screen select optional. You can select TV out type optional to select TV out type. You can select U.S. NTSC, Japanese NTSC or PAL.

LCD Panel Type

This option is select LCD Panel type.

Allocate IRQ to PCI VGA

Set this option to Yes to allocate an IRQ to the VGA device on the PCI bus. The settings are Yes or No.

PCI Slot1 / Slot2 / Slot3 / Slot4 IRQ Priority

To specify the IRQ priority for PCI device installed in the PCI expansion slot. The settings are Auto, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority orders.

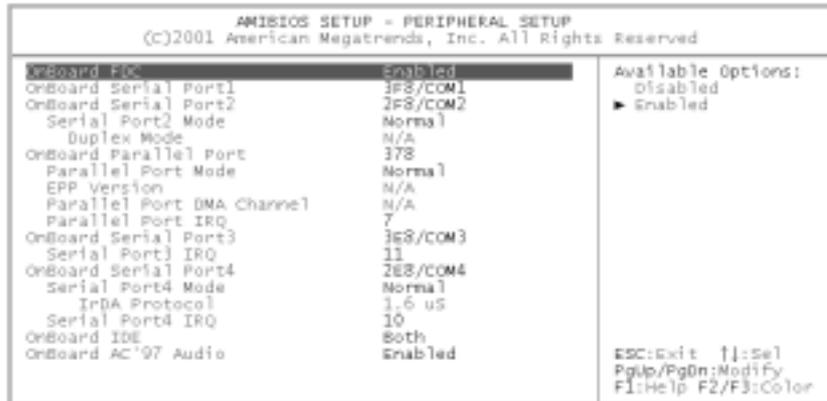### DMA Channel 0, 1, 3, 5, 6, 7

To specify the bus type used by each DMA channel. The settings are PnP or ISA/EISA.

IRQ3, 4, 5, 7, 9, 10, 11, 14, 15

To specify the bus that the specified IRQ line is used on. This option enables you to reserve IRQs for legacy ISA adapter cards, and determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, end users can use the option to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP.

4.11 Peripheral Setup

Peripheral Setup enables you to configure your system to most energy-saving status.

```
             AMIBIOS SETUP - PERIPHERAL SETUP
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OnBoard FDC                      Enabled          Available Options:
OnBoard Serial Port1             3F8/COM1            Disabled
OnBoard Serial Port2             2F8/COM2          ▶ Enabled
  Serial Port2 Mode              Normal
    Duplex Mode                  N/A
OnBoard Parallel Port            378
  Parallel Port Mode             Normal
  EPP Version                    N/A
  Parallel Port DMA Channel      N/A
  Parallel Port IRQ              7
OnBoard Serial Port3             3E8/COM3
  Serial Port3 IRQ               11
OnBoard Serial Port4             2E8/COM4
  Serial Port4 Mode              Normal
    IrDA Protocol                1.6 uS
  Serial Port4 IRQ               10
OnBoard IDE                      Both
OnBoard AC'97 Audio              Enabled           ESC:Exit  ↑↓:Sel
                                                   PgUp/PgDn:Modify
                                                   F1:Help F2/F3:Color
```

OnBoard Serial Port 1/Port 2/Port 3/Port4

This option specifies the base I/O port address of serial port 1. The settings are Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h, 2F8h, 2E8h, or 3E8h.

Serial Port4 Mode

This option specifies the IR active pulse or inverting clock of serial port B.

IR Pin Select

The SIN/SOUT pin of Serial Port 3 function or IRRX/IRTX pin if IR function in normal condition.

OnBoard Parallel Port

This option specifies the base I/O port address of parallel port on the motherboard. The settings are Disabled, 378h, 278h, or 3BCh.

Parallel Port Mode

This option specifies the parallel port mode. The settings are Normal, Bi-Dir, EPP, or ECP.
Normal: The normal parallel port mode is used. Bi-Dir: Use this setting to support bi-directional 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 bi-directional 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 data transfer rates up to 2.5 Megabits per second. ECP providessymmetric bi-directional communication.

EPP Version

EPP data or address read cycle 1.9 or 1.7.

Parallel Port IRQ

This option specifies the IRQ used by the parallel port. The settings are Auto, (IRQ) 5, or (IRQ) 7.

Parallel Port DMA Channel

This option is only available if the setting for the Parallel Port Mode option is ECP. This option sets the DMA channel used by the parallel port. The settings are DMA Channel 0, 1, or 3.

On Board LAN

To enable or disable LAM function.

On Board LAN P.M.E

To enable or disable P.M.E function for LAN Wake up.

On Board AC'97 Audio

Enable or Disable AC'97 Audio Function

4.12 Hardware Monitor Setup

The following screen shows the hardware monitor setup menu.

```
                    AMIBIOS SETUP - HARDWARE MONITOR SETUP
                (C)2001 American Megatrends, Inc. All Rights Reserved

  -== System Hardware Monitor ==- -
     System Temperature
       CPU Temperature
         CPU Fan Speed
       Vcore
       + 2.500v
       + 3.300v
       + 5.000v



                                          ESC:Exit  ↑↓:Sel
                                          PgUp/PgDn:Modify
                                          F1:Help F2/F3:Color
```

4.13 Change Supervisor Password

You can set either supervisor or user password, or both of them. The differences between are:

Supervisor password:
You can enter and change the options of the setup menus.

User password:
You can only enter the setup menus but do not have the right to change the options in them. When you select this option, the following message will appear at the center of the screen to assist you to create a password.

Enter Password:

Enter a password of eight characters in length and press <Enter>. Previous password will then be cleared from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, press <Enter> when you are prompted to enter the password. Confirm to disable the password. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disabled

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

When a password is enabled, you can require BIOS to request a password every time your system is rebooted. You can also determine when a password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "Always", a password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

Appendix A: Watchdog Timer

Watchdog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that cause system crash which may be caused by an external EMI or a software bug. When the system stops working, the hardware on the board will reset (cold boot) to restore the system to normal status.

Three I/O ports control the operation of Watchdog Timer:

443 (hex)	Write	Set Watchdog Timer period
443 (hex)	Read	Enable Watchdog Timer
043/843 (hex)	Read	Disable Watchdog Timer

Set the time-out period for Watchdog Timer. The resolution of the timer is 1 second and the range of the timer is from 1 sec to 255 sec. You need to send the time-out value to the I/O port 443H, and then enable it by reading data from the same I/O port 443H. This will activate the timer which will eventually time out and reset the CPU board. To avoid system reset, Watchdog Timer must be periodically refreshed by reading the same I/O port 443H. This must be done within the time-out period that is set by the software, please refer to the example program. Disable Watchdog timer by reading the I/O port: 843H or 043H. Otherwise the system could reset unconditionally.

A tolerance of at least 5% must be maintained to avoid unknown routines in the operating system (DOS), such as disk I/O that can be very time-consuming. For example, if the time-out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Example assembly program:

```
TIMER_PORT   =  443H

TIMER_START  =  443H

TIMER_STOP   =  843H


;;INITIAL TIMER COUNTER

MOV DX, TIMER_PORT

MOV AL, 8    ;;8 seconds

OUT DX, AL

MOV DX, TIMER_START

IN AL, DX.     ;;START COUNTER

W_LOOP:

MOV DX, TIMER_STOP

IN AL, DX

MOV DX, TIMER_START

IN AL, DX       ;;RESTART COUNTER

;;ADD YOUR APPLICATION HERE

CMP EXIT_AP, 0

JNE W_LOOP

MOV DX, TIMER_STOP

IN AL, DX

;;EXIT AP
```

Appendix B: I/O Address Map

I/O Address Map

I/O Address Map	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller # 1, Master
040-05F	System Timer
060-06F	Standard 101/102 keyboard Controller
070-07F	Real time Clock, NMI Controller
080-0BF	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-0FF	Math Coprocessor
170-1F7	BUS Master PCI IDE Controller
278-27F	Parallel Printer Port 2
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
376-376	BUS Master PCI IDE Controller
378-37F	Parallel Printer Port 1
3B0-3DF	AGP Graphic Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1
443	Watchdog timer enable
480-48F	PCI BUS
843/043	Watchdog timer disable

1ˢᵗ MB Memory Address Map

Memory address	Description
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER
C0000-CFFFF	VGA BIOS
E0000-FFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

IRQ Mapping Chart

IRQ0	System Timer	IRQ8	RTC CMOS clock
IRQ1	Keyboard	IRQ9	ACPI STEERING
IRQ2	IRQ Controller	IRQ10	COM4
IRQ3	COM2	IRQ11	COM3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	USB	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignment

Channel	Function
0	Available
1	Available
2	Floppy disk
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix C: How to use Wake-Up Function

POS-EDEN-400 provides a Wake-up function which only works with ATX power supply.

Wake-Up On Modem(Ring):

You must set the option Wake-Up On LAN/Ring of CMOS SETUP to be enabled. ATX power supply will be switched on when there is a ring signal detected on pin "RI" of serial port.

Wake-Up On LAN:

When you see LAN Link/Active LED flashing, it indicates that the LAN chip has entered standby mode and waits for Wake-Up signal. You can use other computers to wake up your computer by sending an ID to it.

ID: ID is the MAC address of your system LAN. Every LAN chip has a factory-set ID, which can be found from network information in Windows.

    ID format is xxxxxxxxxxxx
    Example ID: 009027388320