#### AES-6000B

BOX PC

VIA Eden<sup>™</sup> 400MHz CPU With Ethernet, LVDS, Audio TV-Out, CompactFlash<sup>™</sup> In a light weight and small size



September 2003

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#### **Packing List**

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 AES-6000B BOX PC
- 1 100V/240V Power Adapter
- 1 1-to-3 Audio Extension Cable
- 1 PS/2 Keyboard and Mouse Cable
- 1 CD-ROM for manual (in PDF format), and drivers

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

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# Chapter

## General Information

#### **1.1 Introduction**

New BOX PC, AES-6000B gives the ready and high-performance total solution. Designed as a fanless and no cable inside computer, it erases the traditional idea of computer structure. Its upper and side of chassis are made from aluminum and have fins that improves heat dissipation. An I/O board is especially designed to replace wires and cables for connections.

With this book-size computer, 7.52" x 1.99" x 4.15", AES-6000B performs at VIA Eden 400MHz level processor. Its system memory can be extended to sufficient 512MB bandwidth via one SDRAM SODIMM. Powered by VIA ProSavage<sup>™</sup> PN133 chipset, rich 2D/3D graphic display is supported. Dual channel LVDS interface enhances the LCD presentation quality up to 1024 x 768 colors.

AES-6000B is a great solution for mobile device application. For example, consumer multimedia in-car computer, police vehicle computer, mobile medical machines and etc. Featured in mobile, reliability and high performance, this BOX PC plays as the outstanding medium for various industrial applications.

#### 1.2 Features

- Fanless and non-cable design
- VIA Eden 400MHz processor
- 10/100Mbps Fast Ethernet
- Dual channel LVDS interface
- Supports NTSC/PAL TV Out
- Supports CompactFlash<sup>™</sup> Memory
- 5V only operation
- External power adaptor

#### **1.3 Specifications**

#### System

• CPU	VIA Eden 400MHz mobile CPU
System Memory	SDRAM SODIMM x 1, Max. 512MB
Chipset	VIA VT8606 / VT82C686B
• BIOS	Award 256KB FLASH ROM
• Ethernet	10/100Base-T Ethernet RJ-45 connector x 1
• SSD	Type II CompactFlash slot
<ul> <li>Hard Disk Storage</li> </ul>	2.5" HDD Bay x 1
<ul> <li>Watchdog Timer</li> </ul>	Generate a system reset, IRQ or NMI.
• Battery	Lithium battery
• H/W Status	Supports power supply voltages and
Monitoring	temperature monitoring

BOX PC	A E S - 6 0 0 0 B
• Construction	Rugged Aluminum Alloy
Power Supply	Built-in 12V / 5A power adapter. Input
	voltage range $100V \sim 240V$
• Dimensions	7.52" (W) x 1.99" (H) x 4.15" (D)
	(191mm x 50.8mm x 105.5mm)
• Gross Weight	2.3lbs (1.04kg)
• Operating	$32^{\circ}F \sim 113^{\circ}F (0^{\circ}C \sim 45^{\circ}C)$
temperature	
• Storage	$32^{\circ}F \sim 167^{\circ}F (0^{\circ}C \sim 75^{\circ}C)$
temperature	
• Operating	$5\% \sim 95\%$ @ 40C, non-condensing
humidity	
• Storage humidity	5% ~ 95%
I/O	
• MIO	Serial Port (RS-232) x 2, PS/2 Keyboard and
	Mouse x 1,
• Audio	Mic in / Line in/ Line out
• USB	USB 1.1 port x 2

#### Display

• Resolution	up to 1600 x 1200@ 16bpp colors for CRT
	up to 1024 x 768@ 18bpp colors for LCD
• LVDS interface	36-bit dual channel LVDS LCD panel
• TV-out	Supports S-Video and component outputs

#### **1.4 General System Information**

#### Front Panel:



#### 1. Power Switch

Light O	n· 1	Power	On
Light O	и. I	rower	ΟII

Light Off: Power Off

#### 2. HDD LED

Light On: HDD is reading data

Light Off: HDD is idle

- 3. Reset Button
- 4. CompactFlash Slot
- 5. USB Connector

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#### **Rear Panel:**



- 1. Audio Connector
- 2. USB Connector
- 3. LVDS LCD D-Sub
- 4. TV Out Connector (Component)
- 5. TV Out Connector (S-Video)
- 6. COM Port D-Sub
- 7. RJ-45 Ethernet Connector
- 8. COM Port D-Sub
- 9. PS/2 Keyboard and Mouse Mini Din
- 10. CRT D-Sub
- 11. Power Input Connector

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# Quick Installation Guide



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Chapter 2 Quick Installation Guide

#### 2.1 Safety Precautions



Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.



Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

#### 2.2 Mechanical Drawing



#### 2.3 RAM Module Installation

1. Unscrew four screws on the bottom of the chassis.



2. Open the chassis lid as demonstrated.



3. Insert a SDRAM SODIMM module into the SODIMM slot as demonstrated.



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# Chapter 3

## Award BIOS Setup

#### 3.1 System test and initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

#### System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- 1. You are starting your system for the first time
- 2. You have changed the hardware attached to your system
- 3. The CMOS memory has lost power and the configuration information has been erased.

The AES-6000B CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

#### 3.2 Award BIOS setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

#### **Entering setup**

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

CMOS Setup Utility - Copyrigh	t (C) 1984-2001 Award Software	
▶ Standard CMOS Features	▶ Frequency/Voltage Control	
› Advanced BIOS Features	Load Fail-Safe Defaults	
) Advanced Chipset Features	Load Optimized Defaults	
Integrated Peripherals	Set Supervisor Password	
→ Power Management Setup	Set User Password	
> PnP/PCI Configurations	Save & Exit Setup	
→ PC Health Status	Exit Without Saving	
Esc : Quit F10 : Save & Exit Setup	†↓→+ : Select Iten	
Tine, Date, Hard Disk Type		

#### **Standard CMOS Features**

Use this menu for basic system configuration. (Date, time, IDE, etc.)

#### **Advanced BIOS Features**

Use this menu to set the advanced features available on your system.

#### **Advanced Chipset Features**

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

#### **Integrated Peripherals**

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

#### **Power Management Setup**

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

#### **PnP/PCI Configurations**

This entry appears if your system supports PnP/PCI.

#### **PC Health Status**

This menu allows you to set the shutdown temperature for your system.

#### Frequency/Voltage Control

Use this menu to specify your settings for frequency/ voltage control.

#### Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

#### **Load Optimized Defaults**

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

#### Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

#### Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

#### **Exit Without Saving**

Abandon all CMOS value changes and exit setup.

#### 3.3 Standard CMOS Features

When you choose the Standard CMOS Features option from the INITIAL SETUP SCREEN menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the right box of the Menu screen.



#### **3.4 Advanced BIOS Features**

By choosing the Advanced BIOS Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Advanced BIOS Features			
Virus Warning CPU Internal Cache External Cache CPU L2 Cache ECC Checking Processor Number Feature Quick Power On Self Test First Boot Device Second Boot Device Third Boot Device Boot Other Device Boot Other Device Swap Floppy Drive Boot Up Floppy Seek Boot Up Floppy Seek Boot Up NumLock Status Gate R20 Option Uppematic Rate Status Security Option OS Select For DRAM > 64ME	(Disabled) (Enabled) (Enabled) (Enabled) (Enabled) (Enabled) (HoD-0) (LS120) (Enabled) (Disab		Item Help Menu Level ► Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area , BIOS will show a warning message on screen and alarn beep
†↓++:Move Enter:Select +/- F5: Previous Values - F6	/PU/PD:Value 5: Fail-Safe D	F10:Save   efaults	SC:Exit F1:General Help 7: Optimized Defaults

#### **3.5 Advanced Chipset Features**

By choosing the Advanced Chipset Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed.

DRAM Timing By SPD	[Enabled]	<b>1</b>	Item Help
<ul> <li>WHAN Clock</li> <li>SDRAM Cycle Length</li> <li>SDRAM Cycle Length</li> <li>Bank Interleave</li> <li>Memory Hole</li> <li>P2C/C2P Concurrency</li> <li>System BIOS Cacheable</li> <li>Video RAM Cacheable</li> <li>Frame Buffer Size</li> <li>AGP Aperture Size</li> <li>AGP Aperture Size</li> <li>AGP-4K Mode</li> <li>OnChip USB</li> <li>USB Keyboard Support</li> <li>OnChip Sound</li> <li>CPU to PCI Write Buffer</li> <li>PCI Dynamic Bursting</li> <li>PCI Delay Transaction</li> <li>PCI Delay Transaction</li> </ul>	Bisabled Disabled (Disabled) (Disabled) (Disabled) (Disabled) (Disabled) (Enabled) (Enabled) (Disabled) (Enabled) (Enabled) (Enabled) (Enabled) (Disabled) (Enabled) (Enabled) (Enabled) (Enabled)	Ĩ	Menu Level ►

#### **3.6 Integrated Peripherals**

By choosing the Integrated Peripherals from the INITIAL SETUP SCREEN menu, the screen below is displayed.

CMOS Setup Utility	- Copyright (C) Integrated Per	1984-2001 A ipherals	Ward Software
OnChip IDE Channel0	[Enabled]	4	Item Help
OnChip IDE Channell IDE Prefetch Mode Primary Master PIO Secondary Master PIO Secondary Master PIO Primary Slave PIO Primary Master UDMA Secondary Master UDMA Secondary Master UDMA Secondary Slave UDMA Init Display First IDE HDD Block Mode Onboard FDD Controller Onboard Serial Port 1 Onboard Serial Port 2 UART 2 Mode × IK Function Duplex × IX, RX inverting enable	LEnabled] [Enabled] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Enabled] [Enabled] [Enabled] [Enabled] [Auto] [Standard] Half No, Ves		Menu Level ►
†↓++:Move Enter:Select + F5: Previous Values	/-/PU/PD:Value F6: Fail-Safe D	F10:Save E efaults F	SC:Exit F1:General Help 7: Optimized Defaults

#### 3.7 Power management setup

By choosing the Power Management Setup from the INITIAL SETUP SCREEN menu, the screen below is displayed.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software Power Management Setup			
▶ Power Management	[Press Enter]	[Press Enter]	Item Help
Video Off Option Video Off Method	[Yes] [Suspend →> Off] [V/H SYNC+Blank]	Menu Level →	
11++:Move Enter:Select F5: Previous Values	+/-/PU/PD:Value F10:Save F6: Fail-Safe Defaults	ESC:Exit F1:General Help F7: Optimized Defaults	

#### 3.8 PnP/PCI configuration

By choosing the PnP/PCI configurations from the Initial Setup Screen menu, the screen below is displayed.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software PnP/PCI Configurations		
PNP OS Installed Reset Configuration Data Resources Controlled By X IRU Resources DMA Resources PCI/VGA Palette Snoop Assign IRO For VGA Assign IRO For USB	[No] [Disabled] (Auto(ESCD)] Press Enter Press Enter [Disabled] [Enabled] [Enabled]	Item Help Menu Level ► Select Yes if you are using a Plug and Play capable operating system Select No if you need the BLOS to configure non-boot devices
1↓→+:Move Enter:Select +/- F5: Previous Values F6	/PU/PD:Value F10:Save : Fail-Safe Defaults	ESC:Exit F1:General Help F7: Optimized Defaults

#### 3.9 PC Health Status

By choosing the PC Health Status from the Initial Setup Screen menu, the screen below is displayed.

CMOS Setup Utility - Copyright (C) 1984-2001 F PC Health Status	Award Software	e
Current CPU Temp.	Item	Help
Vcore 2.5V 3.3V 5V 12V	Menu Level	P.

#### 3.10 Frequency/Voltage control

By choosing the Frequency/Voltage Control from the Initial Setup Screen menu, the screen below is displayed.

CMOS Setup Utility - Copyright (C) 1984-2001 Frequency/Voltage Control	Award Software
Auto Detect DIMM/PCI Clk [Enabled]	Item Help
Spread Spectrum Modulated [DISabled]	Menu Level 🛛 🕨

#### 3.11 Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing "Y" loads the BIOS default values for the most stable, minimal performance system operations.

#### 3.12 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are manufacturer's settings for optimal performance system operations.

#### 3.13 Set Supervisor/User Password

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System Enter a password each time the system boots and when-

ever you enter Setup.

**Setup** Enter a password whenever you enter Setup.

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NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.

#### 3.14 Save & Exit setup

If you select this option and press < Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn on your system and compare this to what it finds as it checks the system. This record is required for the system to operate.

#### 3.15 Exit without saving

Selecting this option and pressing <Enter> allows you to exit the Setup program without recording any new value or changing old one.

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# Chapter

## Driver Installation

The AES-6000B comes with a CD-ROM which contains most of drivers and utilities of your needs.

There are several installation ways depending on the driver package under different Operating System application.

If you utilize Windows NT series OS, you are strongly recommended to download the latest version Windows NT Service Pack from Microsoft website and install it before installing any driver.

#### Please follow the sequence below to install the drivers:

Step 1 - Install VIA 4-in-1 System Driver

Step 2 - Install VGA Driver

Step 3 – Install LAN Driver

Step 4 - Install Audio Driver

For installation procedures of each driver, you may refer to section 4.1-4.3.

#### 4.1 Installation 1:

#### Applicable for Windows 2000/98/ME/NT 4.0

- 1. Insert the AES-6000B CD-ROM into the CD-ROM Drive.
- 2. From the CD-ROM, select the desired component Driver folder, and then select the desired Operation System folder to double click on the Setup.exe icon. A driver installation screen will appear.

#### (Notice: take VGA driver installation under Windows 98 for example, choose the corresponding folder depending on your OS)

3. A driver installation screen will appear, please follow the onscreen instructions to install the driver in sequence and click on the Next button.

#### (Notice: In some cases the system will ask you to insert Windows 98 CD ROM and key in its path. Then click on the OK button to key in path.)

4. Click on the **Finish** button to finish installation process. And allow the system to reboot.

#### 4.2 Installation 2:

#### Applicable for Windows 2000/ 98/ME

- 1. Insert the **AES-6000B CD-ROM** into the CD-ROM Drive.
- 2. Click on **Start** button, select the **Settings**, and then click on the **Control Panel** icon.
- 3. Double click on the **Add/Remove Hardware** icon and **Add New Hardware Wizard** will appear. Click on the **Next** button.
- 4. Select **Search for the best driver for your device** (**Recommended**) and click on the **Next** button.
- 5. Select **Specify a location**, click on **Have Disk** button then key in the CD-ROM path and specify component drivers and OS folders. Then click on the **Next** button.
- 6. The Wizard shows that Windows driver file search for the device. Click on the **Next** button.
- 7. The system will ask you to insert Windows 98 CD ROM. Click on the **OK** button to insert CD-ROM and key in path.
- 8. Click on the **OK** button.
- 9. Click on the **Finish** button to finish installation process. And allow the system to reboot.

#### 4.3 Installation 3:

#### **Applicable for Windows NT 4.0**

- 1. Insert the **AES-6000B CD ROM** into the CD-ROM Drive.
- Start system with Windows NT 4.0 installed. IMPORTANT: When the "Please select the operating system to start..." message is displayed, select "Windows NT Workstation Version 4.00 [VGA mode]".
- 3. From Start, select the Settings group and then click on the

#### Control Panel icon.

- 4. In the **Control Panel**, select the desired device and click on the icon.
- 5. Follow the step-by-step instruction and click on **OK** button.
- 6. Click on the **Have Disk...** button.
- 7. Key in CD-ROM path and specify component drivers, then click on the **OK** button.
- 8. From the list of displayed devices, select your desired device.
- 9. If a message appears stating the driver is already installed on the system, and asks if you want to use the current or new drivers, be sure to select the **New** button.
- 10. If prompted for the driver diskette a second time, click on the Continue button.
  (Notice: In some cases the system will ask you to insert Windows NT CD ROM. Follow its instructions to complete the setup procedures.)
- 11. When the message **"The drivers were successfully installed"** is displayed, click on the **OK** button.
- 12. Reboot the system.

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# Programming the Watchdog Timer

#### Programming

An onboard watchdog timer reduces the chance of disruptions which CPLD (Compact Programmable Logical Device) interface can cause. This is an invaluable protective device for standalone or unmanned applications. When the watchdog timer activates (CPU processing has come to a halt), it can reset the system, or generate an interrupt on IRQ10, IRQ11, IRQ15, and NM1. This can be set via I/O Port 444, the function as following:

0: RESET 1: NM1 2: IRQ10 3: IRQ11

4: IRQ15

If you decide to program the watchdog timer, you must write data to I/O port 443 (hex). The output data is a value timer. You can write form 01 (hex) to FF (hex) while simultaneously setting it. When you want to disable the watchdog timer, your program should read a Hex value from I/O port 80 (hex).

The following procesude is a sample program for the watchdog timer:

- Type C:\DOS\Debug <ENTER>
- To start watchdog timer and set function "Reset" type;

o 444 0<Enter>; out 444h data 0

- To input Watchdog timers time-out interval of 5 seconds type; o 443 05<Enter>; out 443h data 05
- To disable the watchdog timer type;

i 80 <Enter>

The time interval data of the watchdog timer is shown in binary code (8 bits).

Sample 2: 5 seconds



Appendix A Programming the Watchdog Timer