### **AEC-6967**

Fanless Embedded Controller Intel<sup>®</sup> 2<sup>nd</sup> Generation Core<sup>™</sup> i/ Celeron<sup>®</sup> Processor (FCBGA1023) with 2 Gigabit Ethernet COM x 6, USB x 6, CFast<sup>™</sup>, Mini Card x 2 SATA 6.0Gb/s x 2, SATA 3.0Gb/s x 2 PCI x 2 or PCI x 1 + PCI-E[x4] x 1 or PCI-E[x4] x 2 VGA x 1, HDMI x 1, DVI-D x 1 Dual-Channel 24-bit LVDS

> AEC-6967 Manual 1st Ed. September 2012

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## Packing List

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

- 1 AEC-6967 Embedded Controller
- 1 Phoenix Power Connector
- 4 M3 x 4mm Screws
- 6 6# -32 x 10mm Screws
- 2 Wallmount Brackets
- 1 DVD-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.

## Safety & Warranty

- 1. Read these safety instructions carefully.
- 2. Keep this user's manual for later reference.
- 3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
- 4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
- 5. Keep this equipment away from humidity.
- 6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.
- 7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
- 8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- 9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- 10. All cautions and warnings on the equipment should be noted.
- 11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
- 12. Never pour any liquid into an opening. This could cause fire or electrical shock.
- 13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
- 14. If any of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.

- d. The equipment does not work well, or you cannot get it to work according to the user's manual.
- e. The equipment has been dropped and damaged.
- f. The equipment has obvious signs of breakage.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 70°C (158°F). IT MAY DAMAGE THE EQUIPMENT.

## FCC



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

#### Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

# Below Table for China RoHS Requirements 产品中有毒有害物质或元素名称及含量

#### **AAEON Boxer/ Industrial System**

		有毒有害物质或元素				
部件名称	铅	汞	镉	六价铬	多溴联苯	多溴二苯
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	醚(PBDE)
印刷电路板		0	0		0	0
及其电子组件		0	0		0	0
外部信号		0	0		0	0
连接器及线材		0	0		0	0
外壳	×	0	0	0	0	0
中央处理器	~	0	0		0	0
与内存		0	0		0	0
硬盘	×	0	0	0	0	0
电源	×	0	0	0	0	0
<b>O:</b> 表示该有毒有	害物质	在该部	件所有	均质材料	中的含量	均在

SJ/T 11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注:

一、此产品所标示之环保使用期限,系指在一般正常使用状况下。 二、上述部件物质中央处理器、内存、硬盘、电源为选购品。

## Contents

Chapter 1 General Information	
1.1 Introduction	1-2
1.2 Features	1-3
1.3 Specifications	1-4
Chapter 2 Hardware Installation	
2.1 Dimension	2-2
2.2 Location of Jumpers and Connectors	2-3
2.3 List of Jumpers	2-7
2.4 List of Connectors	2-7
2.5 Setting Jumpers	2-9
2.6 Clear CMOS (JP1)	2-10
2.7 Clear ME (JP2)	2-10
2.8 Inverter Power Selection (JP3)	2-10
2.9 LVDS Port Backlight Lightness Control Mo	de Selection
(JP4)	2-10
2.10 LCD Voltage Selection (JP5)	2-10
2.11 Isolation COM2 RS232/RS485/RS422 se	election (JP8)
	2-10
2.12 COM6 +12V/+5V/Ring Selection (JP9)	2-11
2.13 COM5 +12V/+5V/Ring Selection (JP11)	2-11
2.14 Auto Power Button (J6)	2-11
2.15 SATA Power (PWR1~PWR2)	2-11
2.16 Front Panel Connector (CN4)	2-11

2.17 LVDS Connector (CN17)	2-12
2.18 LVDS Inverter/ Backlight Connector (CN18)	2-12
2.19 RS-232/422/485 Pin DEFINE (COM2)	2-13
2.20 RS-232 Box Header (COM3)	2-13
2.21 RS-232 Box Header (COM4)	2-13
2.22 USB Box Header (USB3~USB4)	2-13
2.23 HDD Installation	2-15
2.24 Memory Card Installation	2-17
2.25 PCI Card Installation	2-19
2.26 Wallmount Bracket Installation	2-21
Chapter 3 AMI BIOS Setup	
3.1 System Test and Initialization.	3-2
3.2 AMI BIOS Setup	3-3
Chapter 4 Driver Installation	
4.1 Installation	4-3
Appendix A Programming The Watchdog Timer	
A.1 Watchdog Timer Initial ProgramA	-2
Appendix B I/O Information	
B.1 I/O Address MapB	-2
B.2 Memory Address MapB	-2
B.3 IRQ Mapping ChartB	-3
B.4 DMA Channel AssignmentsB	-5

#### Appendix C RAID & AHCI Settings

C.1 Setting RAID	C-2
C.2 Setting AHCI	C-12

#### Appendix D Electrical Specifications for I/O Ports

D.1 DIO Programming	D-2
D.2 Digital I/O Register	D-3
D.3 Digital I/O Sample Program	D-4

# Chapter

## General Information

Chapter 1 General Information 1-1

#### 1.1 Introduction

Due to the growing popularity from the IPC market, the newest Boxer series AEC-6967 has been introduced by AAEON. Being a control center, the AEC-6967 is suitable for Machine Control, Data Processing, Fleet Management, Data Management. AEC-6976 equips a high efficiency heat conduction mechanism.

The AEC-6967 is compact in size but has attractive and flexible extension capabilities such as 6 USB2.0 ports, VGA, Audio, 6 COM ports, PCI and PCI-E[x4].

#### Stable Design for Rugged Environment

The AEC-6967 is designed for rugged environments due to the following reasons; first, it can withstand tough vibration testing up to 3 g rms. With the anti-vibration hard drive device option, the AEC-6967 can be used in high vibration environments. In addition, the AEC-6967 offers low power consumption system that while operating in ambient temperatures ranging from -20° to 65°C with Core™ i7-2610UE processor.

The AEC-6967 is a standalone high performance controller designed for long-life operation and with high reliability. It can replace traditional methods and become the mainstream controller for the multimedia entertainment market.

#### 1.2 Features

- Fanless Design
- Intel<sup>®</sup> 2<sup>nd</sup> Generation Core<sup>™</sup> i/ Celeron<sup>®</sup> Processor (FCBGA1023)
- Intel<sup>®</sup> QM67 Chipset
- Gigabit Ethernet, RJ-45 x 2
- Intel<sup>®</sup> Integrated Graphics Engine Supports Dual View by VGA, DVI-D, HDMI
- SATA 6.0 Gb/s x 2, SATA 3.0 Gb/s x 2, Support RAID 0, 1, 5, 10
- USB2.0 x 6, COM x 6 (2.5KV Isolation x 2), 2.5KV Isolated DIO x 1 (4 in, 4 out)
- Mini Card x 2, CFast<sup>TM</sup> x 1
- PCI x 2 or PCI x 1 + PCI-Express[x4] x 1 or PCI-Express[x4] x 2

#### **1.3 Specifications**

• CPU		Intel <sup>®</sup> 2 <sup>nd</sup> Generation Core™ i/
Chipset		Celeron <sup>®</sup> Processor (FCBGA1023)
		Intel <sup>®</sup> QM67
System Memo	ory	DDR3 SODIMM x 2, Max. 16 GB,
		support DDR3 1066/ 1333
<ul> <li>Display</li> </ul>	VGA	DB-15 x 1, shared system memory up
Interface		to 512MB/DVMT 5.0
	DVI	DVI-D x 1 (optional 2 <sup>nd</sup> DVI, support
		1920x1200 @ 60 Hz
	HDMI	HDMI x 1, support 1920x1200 @ 60 Hz
	Others	Dual-channel 24-bit LVDS (optional
		extension kit)
<ul> <li>Storage</li> </ul>	SSD	CFast™ slot
Device	HDD	SATA 6.0 Gb/s x 2 (SATA 0, 2), SATA
		3.0 Gb/s x 2 (SATA 2, 3), support RAID
		0, 1, 5, 10
<ul> <li>Network</li> </ul>	LAN	Gigabit Ethernet
	Wireless	Optional by Mini Card
<ul> <li>Front I/O</li> </ul>	USB Host	USB2.0 x 2
	Serial Port	RS-232 x 1, RS-232/422/485 x 1, both
		support optional 2.5KV Isolation,
		optional extra RS-232 x 6
	DIO	8-bit programmable, optional 2.5KV

AEC-6967

		Isolation protection
	KB/MS	PS/2 x 1
	Others	Power button x 1, Reset button x 1
• Rear I/O	USB Host	USB2.0 x 4
	LAN	RJ-45 x 2
	Serial Port	RS-232 x 2
	Audio	Mic-in, Line-in, Line-out
	Others	Power input x 1
• Expansion	PCle[x1]	2 (optional)
	PCI	2 (optional, limited 2.1A @ +12V)
	Mini Card	2 (optional)
	Others	SIM x 1 (optional)
<ul> <li>Indicator</li> </ul>	Front	System LED x 1, HDD LED x 1
Power Require	rement	DC-in 9~30V input, optional 100~240V
System Cooli	ng	Passive cooling
<ul> <li>Mounting</li> </ul>		Wallmount
Operating Ter	nperature	Without Airflow, with wide temperature
		Storage and RAM:
		-4°F ~ 122°F (-20°C ~ 50°C) (35W TDP
		CPU)
		-4°F ~ 149°F (-20°C ~ 65°C) (17W TDP
		CPU, not include riser card)
		Ambient with Airflow, with wide
		temperature Storage and RAM:

Embedded C	ontroller	A E C - 6 9 6 7
 		-4°F ~ 140°F (-20°C ~ 60°C) (35W TDP
		CPU)
		-4°F ~ 167°F (-20°C ~ 65°C) (17W TDP
		CPU, not include riser card
Storage Tempe	rature	-4°F ~ 158°F (-20°C ~ 70°C)
Anti-Vibration		3 g rms/ 5~500 Hz/ operation-CFast™;
		1 g rms/ 5~500 Hz/ operation-HDD
Anti-Shock		50 G peak acceleration (11 msec.
		duration) –CFast™
<ul> <li>Certification</li> </ul>	EMC	CE/FCC Class A
Dimension (W	x H x D)	8.19" x 4.9" x 9.37" (208mm x 124.4mm
		x 238mm)
<ul> <li>OS Support</li> </ul>		$Windows^{\texttt{®}} XP Embedded, Windows^{\texttt{®}}$
		XP, Windows <sup>®</sup> 7, Linux Fedora 10







# Hardware Installation

Chapter 2 Hardware Installation 2-1

#### 2.1 Dimension



#### 2.2 Location of Jumpers and Connectors





JP1, JP2, JP3, JP4, JP5





JP8



A E C - 6 9 6 7

#### JP9, JP11, J4



#### 2.3 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
JP1	Clear CMOS
JP2	Clear ME
JP3	Inverter Power Selection
JP4	LVDS Port Backlight Lightness Control Mode Selection
JP5	LVDS Voltage Selection
JP8	RS-232/422/485 Selection
JP9	COM6 +12V/+5V/RING Selection
JP11	COM5 +12V/+5V/RING Selection
J6	Auto Power Button

#### 2.4 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application.

The table below shows the function of each of the board's connectors:

Label	Function
CN1	Front Panel Connector
CN2	4-pin ATX Power +12V Connector
CN6 ~ CN7	LAN / USB Connector
CN8	CFast™ Connector
CN10	COM3 RS-232 Box Header

Chapter 2 Hardware Installation 2 - 7

CN11	COM4 RS-232 Box Header
CN13	COM5 / COM6 Connector
CN15	VGA / HDMI Connector
CN16	DVI-I Connector
CN17	LVDS Connector
CN18	LVDS Inverter / Backlight Connector
CN21	Mini Card Connector With SIM
CN24	Mini Card Connector
CN26/CN33	PCIE*4 Connector
CN27	USB X2 / PS2 Connector
CN29	Digital I/O
CN30	ISOLATION COM1 / COM2 Connector
CN30 CN31	ISOLATION COM1 / COM2 Connector DC IN
CN30 CN31 PWR1 ~ PWR2	ISOLATION COM1 / COM2 Connector DC IN SATA POWER
CN30 CN31 PWR1 ~ PWR2 SATA1~SATA2	ISOLATION COM1 / COM2 Connector DC IN SATA POWER SATA 3.0 Connector
CN30 CN31 PWR1 ~ PWR2 SATA1~SATA2 SATA3~SATA4	ISOLATION COM1 / COM2 Connector DC IN SATA POWER SATA 3.0 Connector SATA Connector
CN30 CN31 PWR1 ~ PWR2 SATA1~SATA2 SATA3~SATA4 DIMM1,DIMM2	ISOLATION COM1 / COM2 Connector DC IN SATA POWER SATA 3.0 Connector SATA Connector DDR3 DIMM Slot
CN30 CN31 PWR1 ~ PWR2 SATA1~SATA2 SATA3~SATA4 DIMM1,DIMM2 USB1	ISOLATION COM1 / COM2 Connector DC IN SATA POWER SATA 3.0 Connector SATA Connector DDR3 DIMM Slot USB Box Header
CN30 CN31 PWR1 ~ PWR2 SATA1~SATA2 SATA3~SATA4 DIMM1,DIMM2 USB1 FAN1~ FAN2	ISOLATION COM1 / COM2 Connector DC IN SATA POWER SATA 3.0 Connector SATA Connector DDR3 DIMM Slot USB Box Header 4 Pin Fan Connector

#### 2.5 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

#### 2.6 Clear CMOS (JP1)

JP1	Function	
1-2	Normal (Default)	
2-3	Clear CMOS	

#### 2.7 Clear ME (JP2)

JP2	Function
1-2	Normal (Default)
2-3	Clear ME

#### 2.8 Inverter Power Selection (JP3)

JP3	Function	
1-2	+12V (Default)	
2-3	+5V	

# 2.9 LVDS Port Backlight Lightness Control Mode Selection (JP4)

JP4	Function	
1-2	PWM MODE	
2-3	VR MODE (Default)	

#### 2.10 LCD Voltage Selection (JP5)

JP5	Function	
1-2	+5V	
2-3	+3.3V (Default)	

#### 2.11 Isolation COM2 RS232/RS485/RS422 selection (JP8)

JP8	Function		
RS232	1-2,3-4,5-6 close		
RS422	3-4 close , 1-2 5-6 open		

Chapter 2 Hardware Installation 2 - 10

#### RS485 5-6 close , 1-2 3-4 open

#### 2.12 COM6 +12V/+5V/Ring Selection (JP9)

JP9	Function	
1-2	+12V	
3-4	+5V	
5-6	Ring (Default)	

#### 2.13 COM5 +12V/+5V/Ring Selection (JP11)

JP6	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

#### 2.14 Auto Power Button (J6)

J6	Function	
OPEN	ATX (Default)	
1-2	AT	

#### 2.15 SATA Power (PWR1~PWR2)

Pin	Signal
1	+12V
2	GND
3	GND
4	+5V

#### 2.16 Front Panel Connector (CN4)

Pin	Signal	Pin	Signal
1	Power On Button (-)	2	Power On Button (+)
3	HDD LED (-)	4	HDD LED (+)

5	SPEAKER(-)	6	SPEAKER(+)
7	Power LED (-)	8	Power LED (+)
9	Reset Switch (-)	10	Reset Switch (+)

#### 2.17 LVDS Connector (CN17)

Pin	Signal	Pin	Signal
1	BKL_EN	2	BKL_CTL
3	LVDSVCC	4	GND
5	LVDSA_CLK#	6	LVDSA_CLK
7	LVDSVCC	8	GND
9	LVDSA_DATA0#	10	LVDSA_DATA0
11	LVDSA_DATA1#	12	LVDSA_DATA1
13	LVDSA_DATA2#	14	LVDSA_DATA2
15	LVDSA_DATA3#	16	LVDSA_DATA3
17	LVDS_DDC_DATA	18	LVDS_DDC_CLK
19	LVDSB_DATA0#	20	LVDSB_DATA0
21	LVDSB_DATA1#	22	LVDSB_DATA1
23	LVDSB_DATA2#	24	LVDSB_DATA2
25	LVDSB_DATA3#	26	LVDSB_DATA3
27	LVDSVCC	28	GND
29	LVDSB_CLK#	30	LVDSB_CLK

#### 2.18 LVDS Inverter/ Backlight Connector (CN18)

Pin	Signal	Pin	Signal
1	VDD	2	BKL_CTL
3	GND	4	GND
5	BKL_EN		

#### 2.19 RS-232/422/485 Pin DEFINE (COM2)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

#### 2.20 RS-232 Box Header (COM3)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

#### 2.21 RS-232 Box Header (COM4)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI		

#### 2.22 USB Box Header (USB3~USB4)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD-	4	GND
5	USBD+	6	USBD+

Chapter 2 Hardware Installation 2 - 13

Embedded Controller			A E C - 6 9 6 7
7	GND	8	USBD-
	GIVE	0	6666
9	GND	10	+5V

#### 2.23 HDD Installation

Step 1: Unfasten the six screws on the bottom lid and three screws on the

front and rear panel



Step 2: Place the HDD to the HDD bracket and fasten the four screws to the bottom lid of the AEC-6967



Chapter 2 Hardware Installation 2 - 15

Step 3: Fasten the screws on the front and rear panels, and the brackets of AEC-6967



#### 2.24 Memory Card Installation

Step 1: Unfasten the six screws on the bottom lid and three screws on the

front and rear panel



Step 2: Insert the RAM card to the memory slot



Step 3: Fasten the screws on the front and rear panels, and the brackets of AEC-6967



#### 2.25 PCI Card Installation

Step 1: Unfasten the six screws on the bottom lid and the three screws on

front and rear panels



Step 2: Insert the PCI bracket and fasten the two screws to fix the PCI bracket



Chapter 2 Hardware Installation 2 - 19
#### Embedded Controller

Step 3: Install a hold-down bracket to fix the PCI Card and make sure the PCI Card installs properly. Then, use two screws to fix the hold-down bracket



Step 4: Fasten the screws on the front and rear panels, and the brackets of AEC-6967



Chapter 2 Hardware Installation 2 - 20

#### 2.26 Wallmount Bracket Installation

Fasten the brackets with the appropriate screws.



# Chapter 3

# AMI 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.

System configuration verification

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time

- 2. You have changed the hardware attached to your system
- 3. The system configuration is reset by Clear-CMOS jumper
- 4. The CMOS memory has lost power and the configuration information has been erased.

The AEC-6967 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 AMI BIOS Setup

AMI 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 and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del>or <F2> immediately. This will allow you to enter Setup.

#### Setup Menu

#### Setup submenu: Main



#### Embedded Controller

#### A E C - 6 9 6 7

#### Setup submenu: Advanced

Aptio Setup Utility – Copyright (C) 2010 Ameri Main <mark>Advanced</mark> Chipset Boot Security Save & Exit	can Megatrends, Inc.
<ul> <li>ACPI Settings</li> <li>Trusted Computing</li> <li>CPU Configuration</li> <li>Digital IO</li> <li>SATA Configuration</li> <li>Intel TXT(LT) Configuation</li> <li>PCH-FW Configuration</li> <li>ANT Configuration</li> <li>USB Configuration</li> <li>Super IO Configuration</li> <li>H/W Monitor</li> </ul>	Configure Management Engine Technology Parameters ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10.1208. Copyright (C) 2010 America	

# **ACPI Settings**

Aptio Setup Advanced	Utility – Copyright (C) 2010 America	h Megatrends, Inc.
ACPI Settings		Select the highest ACPI sleep
ACPI Sleep State		when the SUSPEND button is pressed.
		++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.1	0.1208. Copyright (C) 2010 American M	Megatrends, Inc.

ACPI Sleep	Suspend Disabled	
State	S1 (CPU Stop Clock)	
	S3 (Suspend to RAM)	Default
Select the Highest ACPI sleep state the system will enter when the		
SUSPEND button is pressed.		

# **Trusted Computing**

Aptio Setup Util Advanced	ity – Copyright (C) 2010 Am	merican Megatrends, Inc.
TPM Configuration TPM SUPPORT	[Disable]	Enables or Disables TPM support. O.S. will not show TPM. Reset of platform is required.
Current TPM Status Information TPM SUPPORT OFF		
		++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10.12	08. Copyright (C) 2010 Amer	rican Megatrends, Inc.

TPM	Disable	Default
SUPPORT	Enable	
Enables or Disables TPM support. O.S. will not show TPM. Reset of		
platform is requi	red.	

# **CPU Configuration**

CPU Configuration       When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology         Intel(R) Celeron(R) CPU 827E @ 1.40GHz       Dofa7         CPU Signature       206a7         Microcode Patch       25         Max CPU Speed       1400 MHz         Min CPU Speed       800 MHz         Processor Cores       1         Intel HT Technology       Not Supported         Intel SMX Technology       Not Supported         L1 Data Cache       32 kB x 1         L2 Cache       256 kB x 1         L3 Cache       1536 kB         Intel Virtualization Technology       [Enabled]         F2: Previous Values       F3: Optimized Defaults         F4: Save & Exit       ESC: Exit	Aptio Setup Utility Advanced	y – Copyright (C) 2010 Amer	rican Megatrends, Inc.
Intel(R) Celeron(R) CPU 827E @ 1.40GHzhardware capabilities providedCPU Signature206a7Microcode Patch25Max CPU Speed1400 MHzMin CPU Speed800 MHzProcessor Cores1Intel VT-x TechnologyNot SupportedIntel VT-x TechnologyNot SupportedIntel SMX TechnologyNot SupportedL1 Data Cache32 kB x 1L2 Cache256 kB x 1L3 Cache1536 kBIntel Virtualization TechnologyEnabled]File General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & ExitESC: Exit	CPU Configuration		When enabled, a VMM can
CPU Signature     206a7       Microcode Patch     25       Max CPU Speed     1400 MHz       Min CPU Speed     800 MHz       Processor Cores     1       Intel VT-x Technology     Not Supported       Intel VT-x Technology     Not Supported       64-bit     Supported       L1 Data Cache     32 kB x 1       L2 Cache     256 kB x 1       L3 Cache     1536 kB       Intel Virtualization Technology     [Enabled]	Intel(R) Celeron(R) CPU 827E @ 1	40GHz	hardware canabilities provided
Microcode Patch25Max CPU Speed1400 MHzMin CPU Speed800 MHzProcesson Cores1Intel NT TechnologyNot SupportedIntel VT-x TechnologyNot Supported64-bitSupportedL1 Data Cache32 kB x 1L2 Cache256 kB x 1L3 Cache1536 kBIntel VT-tualization Technology[Enabled]F1: General HelpF2: Optimized DefaultsF3: Optimized DefaultsF4: Save & ExitE5: Exit	CPU Signature	206a7	by Vanderpool Technology
Max CPU Speed1400 MHzMin CPU Speed800 MHzProcesson Cores1Intel HT TechnologyNot SupportedIntel VT-x TechnologySupportedIntel SHX TechnologyNot Supported64-bitSupportedL1 Data Cache32 kB x 1L2 Cache256 kB x 1L3 Cache1536 kBFit: General HelpIntel Virtualization Technology[Enabled]F2: Previous ValuesF3: Optimized DefaultsF4: Save & ExitESC: Exit	Microcode Patch	25	
Min CPU Speed       800 MHz         Processor Cores       1         Intel IT Technology       Not Supported         Intel SMX Technology       Not Supported         Intel SMX Technology       Not Supported         L1 Data Cache       32 kB x 1         L2 Cache       32 kB x 1         L3 Cache       1536 kB         Intel Virtualization Technology       [Enabled]         F2: Previous Values         F3: Optimized Defaults         F4: Save & Exit         ESC: Exit	Max CPU Speed	1400 MHz	
Processor Cores       1         Intel HT Technology       Not Supported         Intel VT-x Technology       Not Supported         Intel SMX Technology       Not Supported         64-bit       Supported         L1 Data Cache       32 kB x 1         L2 Cache       256 kB x 1         L3 Cache       1536 kB         Intel Virtualization Technology       [Enabled]         F1: General Help         F2: Optimized Defaults         F3: Optimized Defaults         F4: Save & Exit         ESC: Exit	Min CPU Speed	800 MHz	
Intel HT Technology       Not Supported         Intel VT-x Technology       Supported         Intel SWX Technology       Not Supported         64-bit       Supported         L1 Data Cache       32 kB x 1         L2 Cache       32 kB x 1         L3 Cache       32 kB x 1         L3 Cache       1536 kB         Heil Virtualization Technology       [Enabled]         F2: Previous Values         F3: Optimized Defaults         F4: Save & Exit         ESC: Exit	Processor Cores	1	
Intel VT-x Technology       Supported         Intel SHX Technology       Not Supported         64-bit       Supported         L1 Data Cache       32 kB x 1         L1 Code Cache       32 kB x 1         L2 Cache       256 kB x 1         L3 Cache       1536 kB         Intel Virtualization Technology       [Enabled]         F2: Previous Values         F3: Optimized Defaults         F4: Save & Exit         ESC: Exit	Intel HT Technology	Not Supported	
Intel SMX Technology     Not Supported       64-bit     Supported       L1 Data Cache     32 kB x 1       L1 Code Cache     32 kB x 1       L2 Cache     256 kB x 1       L3 Cache     1536 kB       Intel Virtualization Technology     [Enabled]       F2: Previous Values       F3: Optimized Defaults       F4: Save & Exit	Intel VT-x Technology	Supported	
64-bit     Supported       L1 Data Cache     32 kB x 1       L1 Code Cache     32 kB x 1       L2 Cache     256 kB x 1       L3 Cache     1536 kB       H: Change Opt.       F1: General Help       F1: General Help       F3: Optimized Defaults       F4: Save & Exit	Intel SMX Technology	Not Supported	
L1 Data Cache 32 kB x 1 L1 Code Cache 32 kB x 1 L2 Cache 256 kB x 1 L3 Cache 1536 kB +/-: Change Opt. Intel Virtualization Technology [Enabled] F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	64-bit	Supported	
Li Code Cache 32 KB x 1 L2 Cache 256 KB x 1 L2 Cache 256 KB x 1 L3 Cache 1536 KB 4/-: Change Opt. Intel Virtualization Technology [Enabled] F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	11 Data Cache	32 kB x 1	++: Select Screen
L2 Cache 256 kB x 1 Enter: Select L3 Cache 1536 kB +/-: Change Opt. Fi General Help Intel Virtualization Technology [Enabled] F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	L1 Code Cache	32 kB x 1	11: Select Item
L3 Cache 1536 KB +/-: Change Opt. F1: General Help Intel Virtualization Technology [Enabled] F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	L2 Cache	256 kB × 1	Enter: Select
Intel Virtualization Technology       [Enabled]       F1: General Help         F2: Previous Values       F3: Optimized Defaults         F3: Save & Exit       ESC: Exit	L3 Cache	1536 kB	+/-: Change Opt.
Intel Virtualization Technology [Enabled] F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			F1: General Help
F3: Optimized Defaults F4: Save & Exit ESC: Exit	Intel Virtualization Technology		F2: Previous Values
F4: Save & Exit ESC: Exit			F3: Optimized Defaults
ESC: Exit			F4: Save & Exit
			ESC: Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.	Version 2.10.1208.	. Copyright (C) 2010 Americ	can Megatrends, Inc.

Intel	Disabled	
Virtualization	Enabled	Default
Technology		
When enabled, a VMM can utilize the additional hardware		
capabilities provided by Vanderpool Technology		

# **Digital IO**

Aptio Setup U Advanced	tility – Copyright (C) 2010	American Megatrends, Inc.
DID_P#1 DID_P#2 DID_P#2 DID_P#5 DID_P#5 DID_P#5 DID_P#5 DID_P#6 Direction DID_P#7 DID_P#7 DID_P#8 DID_P#8 Direction	<pre>[Input] [Input] [Input] [Output] [Low] [Output] [Low] [Output] [Low] [Output] [Low]</pre>	Set GPIO Output as Hi or Low
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Oot. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.10	.1208. Copyright (C) 2010 Am	merican Megatrends, Inc.

# **Options Summary :**

DIO_P#1	Input	Default
DIO_P#2	Input	Default
DIO_P#3	Input	Default
DIO_P#4	Input	Default
DIO_P#5	Output	Default
DIO_P#5 Direction	Low Hi	Default
DIO_P#6	Output	Default
DIO_P#6 Direction	Low	Default

Chapter 3 AMI BIOS Setup 3-9

#### Embedded Controller

A E C - 6 9 6 7

	Hi	
DIO_P#7	Output	Default
DIO_P#7 Direction	Low	Default
	Hi	
DIO_P#8	Output	Default
DIO_P#8 Direction	Low	Default
	Hi	
Set GPIO Output as Hi or Low		

# SATA Configuration (IDE)

Aptio Setup Utili Advanced	ty – Copyright (C) 2010 Amer.	ican Megatrends, Inc.
SATA Controller(s) SATA Mode Selection	[Enabled] [IDE]	Enable or disable SATA Device.
Serial ATA Port O Serial ATA Port 1 Serial ATA Port 2 Serial ATA Port 3 Serial ATA Port 4	Empty Empty Empty Empty Empty	
		<pre>++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values</pre>
		F3: Optimized Defaults F4: Save & Exit ESC: Exit

SATA	Enabled	Default	
$O_{1}$		Deldan	
Controller(s)	Disabled		
Enable or disab	Enable or disable SATA Device.		
SATA Mode	IDE	Default	
Selection	AHCI		
	RAID		
Determines how SATA controller(s) operate.			

# **IDE Configuration (AHCI)**

Aptio Setup Utili Advanced	ty – Copyright (C) 2010 Ame	erican Megatrends, Inc.
SATA Controller(s) SATA Mode Selection Serial ATA Port 0 Hot Plug Serial ATA Port 1	(Enabled) (AHCI) Empty (Disabled)	Determines how SATA controller(s) operate.
Hot Plug Serial ATA Port 2 Hot Plug Serial ATA Port 3 Hot Plug Serial ATA Port 4	(Disabled) Empty (Disabled) Empty (Disabled) Empty (Disabled)	
nut Fiug	[01240160]	++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit

# **Options Summary :**

SATA Controller(s)	Disabled		
	Enabled	Default	
Enable or Disable SAT	A Port.		
SATA Mode	IDE		
	AHCI	Selected	
	RAID		
Determines how SATA controller(s) operate.			
SATA Port 0 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			
SATA Port 1 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			
SATA Port 2 Hot Plug	Disable	Default	
	Enabled		

Chapter 3 AMI BIOS Setup 3-12

# Embedded Controller

Designates this port as Hot Pluggable.			
SATA Port 3 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			
SATA Port 4 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			

# IDE Configuration (RAID)

SATA Controller(s)     [Enabled]     Determines how SATA       SATA Mode Selection     [RAID]     controller(s) operate.       Serial ATA Port 0     Empty       Hot Plug     [Disabled]       Serial ATA Port 1     Empty	Aptio Set Advanced	up Utility – Copyright (C) 2010 Amer	rican Megatrends, Inc.
Hot Plug [Disabled] Serial ATA Port 2 Empty Hot Plug [Disabled] Serial ATA Port 3 Empty Hot Plug [Disabled] Serial ATA Port 4 Empty Hot Plug [Disabled] ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt.	Aptio Set Advanced SATA Controller(s) SATA Mode Selection Serial ATA Port 0 Hot Plug Serial ATA Port 1 Hot Plug Serial ATA Port 2 Hot Plug Serial ATA Port 3 Hot Plug Serial ATA Port 4 Hot Plug	up Utility - Copyright (C) 2010 Amer [Enabled] [RAID] Empty [Disabled] Empty [Disabled] Empty [Disabled] Empty [Disabled] Empty [Disabled] Empty [Disabled]	<pre>hican Megatrends, Inc. Determines how SATA controller(s) operate.  ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt.</pre>
F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

# **Options Summary :**

SATA Controller(s)	Disabled		
	Enabled	Default	
Enable or Disable SAT	A Port.		
SATA Mode	IDE		
	AHCI	Selected	
	RAID		
Determines how SATA controller(s) operate.			
SATA Port 0 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			
SATA Port 1 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			
SATA Port 2 Hot Plug	Disable	Default	
	Enabled		

Chapter 3 AMI BIOS Setup 3-14

# Embedded Controller

Designates this port as Hot Pluggable.			
SATA Port 3 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			
SATA Port 4 Hot Plug	Disable	Default	
	Enabled		
Designates this port as Hot Pluggable.			

Embedded Controller

# Intel TXT(LT) Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2010 American	Megatrends, Inc.
Intel Trusted Execution Technology C	onfiguration	
Intel TXT support only can be enable enabled. And must enables the VT sup	d∕disabled if SMX port prior to TXT.	
Secure Mode Extensons (SMX) Intel TXT(LT) Support	[Disabled] [Disabled]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10.1208. Co	pyright (C) 2010 American Mu	egatrends, Inc.

#### **PCH-FW** Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2010 American	Megatrends, Inc.
ME FW Version ME Firmware Mode ME Firmware Type ME Firmware SKU ▶ Firmware Update Configuration	7.1.40.1161 Normal Mode Full Sku Firmware 5MB	Configure Management Engine Technology Parameters ++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10.1208. Co	opyright (C) 2010 American M	egatrends, Inc.

Firmware	Configure Management Engine Technology
Update	Parameters.
Configuration	

#### Firmware Update Configuration

Apti Advanced	o Setup Utility – Copyright (	C) 2010 American M	legatrends, Inc.
Advanced Me FW Image Re-Fla	sh [Disabled]	E R - + t E F F F	nable/Disable Me FW Image e-Flash function.
		F F E	3: Optimized Defaults 4: Save & Exit SC: Exit
Ven		2010 American Meg	

Me FW Image	Disabled	Default
Re-Flash	Enabled	
Enable/Disable Me FW Image Re-Flash function.		

# **AMT Configuration**

Apti Advanced	io Setup Utility – Copyright (C) 2010 American	Megatrends, Inc.
Intel AMT Un-Configure ME	[Enabled] [Disabled]	Enable/Disable Intel (R) Active Management Technology BIOS Extension. Note : IAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Ver	rsion 2.10.1208. Copyright (C) 2010 American M	egatrends, Inc.

Intel AMT	Disabled		
	Enabled	Default	
Enable/Disable	Intel (R) Active Manag	ement Technology BIOS	
Extension.			
Note: iAMT H/V	/ is always enabled.		
This option just	controls the BIOS exte	ension execution.	
If enabled, this requires additional firmware in the SPI device			
Un-Configure	Disabled	Default	
ME	Enabled		
OEMFlag Bit 15:			
Un-Configure ME without password.			

#### **USB Configuration**

Aptio Setup Utility - Advanced	Copyright (C) 2010 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support.
USB Devices: 1 Drive, 1 Keyboard, 1 Mouse,	2 Hubs	support if no USB devices are connected. DISABLE option will
Legacy USB Support		only for EFI applications.
Mass Storage Devices: USB 2.0 SD/MMC Reader 🖥	[Auto]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10.1208. Cc	pyright (C) 2010 American M	egatrends, Inc.

**Options Summary :** 

Legacy USB Support	Enabled	Default
	Disabled	
	Auto	

Enable Legacy USB support.

AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

# **Super IO Configuration**

Aptio Setup Utility - Advanced	Copyright (C) 2010 American	Megatrends, Inc.
Super IO Configuration		Set Parameters of Serial Port
Super IO Chip > Serial Port 1 Configuration > Serial Port 2 Configuration > Serial Port 3 Configuration > Serial Port 4 Configuration > Serial Port 5 Configuration > Serial Port 6 Configuration	F81866	
Power Saving Function	(Disabled)	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10.1208. Cc	pyright (C) 2010 American M	egatrends, Inc.

Power Saving	Disabled	Default	
Function	Enabled		
Enable to reduce power consumption is system off state.			
When Enabled, only power button can power-up system.			

# **Serial Port 1 Configuration**

Aptio Setup Utility - Advanced	- Copyright (C) 2010 American	n Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
		++: Select Screen 14: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Varaian 0.40.4000	Copusidat (C) 2010 American I	teretrende. The
Version 2.10.1208. (	Copyright (C) 2010American M	√egatrends, Inc.

Serial Port	Disabled	
	Enabled	Default
Enable or Disable se	rial Port (COM)	
Change Settings A	Auto	Default
(Serial Port 1)	0=3F8h; IRQ=4;	
1	O=3F8h; IRQ=3,4;	
1	O=2F8h; IRQ=3,4'	
1	O=3E8h;	
1	RQ=3,4;	
1	O=2E8h;	
	RQ=3,4;	
Select an optimal setting for Super IO device.		

# **Serial Port 2 Configuration**

Aptio Setup Utility – Advanced	Copyright (C) 2010 American	Megatrends, Inc.
Serial Port 2 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	(001)
Change Settings	[Auto]	
		↔: Select Screen
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2 10 1208 - Po	nuridht (P) 2010 American M	edatronds Inc

Serial Port	Enabled	Default
	Disabled	
Enable or Disable S	erial Port (COM)	
Change Settings	Auto	Default
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4'	
	IO=3E8h;	
	IRQ=3,4;	
	IO=2E8h;	
	IRQ=3,4;	
Select an optimal se	etting for Super IO de	evice.

# **Serial Port 3 Configuration**

Aptio Setup Utility - Advanced	Copyright (C) 2010 American	Megatrends, Inc.
Serial Port 3 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3E8h; IRQ=5;	
Change Settings	[Auto]	
		++: Select Screen ↑↓: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2 10 1208 Pr	nuright (P) 2010 American M	evatrends Inc

Serial Port	Enabled	Default
	Disabled	
Enable or Disable S	erial Port (COM)	
Change Settings	Auto	Default
	IO=3E8h; IRQ=5;	
	IO=2E8h; IRQ=5;	
	IO=2D0h; IRQ=5'	
	IO=2D8h; IRQ=5;	
Select an optimal se	etting for Super IO d	evice.

# **Serial Port 4 Configuration**

Aptio Setup Utility - Advanced	Copyright (C) 2010 American	Megatrends, Inc.
Serial Port 4 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2E8h; IRQ=5;	(001)
Change Settings	[Auto]	
		↔: Select Screen ↓: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2 10 1208 Pr	nuridht (C) 2010 American M	eratrands. Inc

Serial Port	Enabled	Default
	Disabled	
Enable or Disable S	erial Port (COM)	
Change Settings	Auto	Default
	IO=2E8h; IRQ=5;	
	IO=3E8h; IRQ=5;	
	IO=2D0h; IRQ=5;	
	IO=2D8h; IRQ=5;	
Select an optimal setting for Super IO device.		

# **Serial Port 5 Configuration**

Aptio Setup Utility - Advanced	Copyright (C) 2010 American	) Megatrends, Inc.
Serial Port 5 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2DOh; IRQ=5;	
Change Settings	[Auto]	
		++: Select Screen  14: Select Item
		Enter: Select +/−: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.10.1208. Cr	nuright (C) 2010 American M	legatrends. Inc.

Serial Port	Enabled	Default
	Disabled	
Enable or Disable S	erial Port (COM)	
Change Settings	Auto	Default
	IO=2D0h; IRQ=5;	
	IO=3E8h; IRQ=5;	
	IO=2E8h; IRQ=5;	
	IO=2D8h; IRQ=5;	
Select an optimal setting for Super IO device.		

# **Serial Port 6 Configuration**

Aptio Setup Utility – Advanced	Copyright (C) 2010 American	Megatrends, Inc.
Serial Port 6 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2D8h; IRQ=5;	
Change Settings	[Auto]	
		++: Select Screen  14: Select Item
		Enter: Select +/−: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2 10 1208 Pr	nuright (C) 2010 American M	egatrends Inc

Serial Port	Enabled	Default
	Disabled	
Enable or Disable S	erial Port (COM)	
Change Settings	Auto	Default
	IO=2D8h; IRQ=5	
	IO=3E8h; IRQ=5;	
	IO=2E8h; IRQ=5;	
	IO=2D0h; IRQ=5;	
Select an optimal setting for Super IO device.		

# H/W Monitor

Aptio Setup Utilit Advanced	y – Copyright (C) 2010 Ameri	can Megatrends, Inc.
PC Health Status PCH Outside Temperature CPU Outside Temperature CPU Inside Temperature PCH Inside Temperature VCC_CORE VSA_DUAL VSS V12S VSBSV VCC3V VSBSV VCC3V VSBSV VBAT	: +39 % : +41 % : +32 % : +43 % : +0.976 V : +5.080 V : +5.080 V : +11.792 V : +5.304 V : +3.392 V : +3.376 V : +3.344 V	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versiun 2.10.1208	. copyright (c) 2010 Hillerica	n Megatrenus, Inc.

#### Setup submenu: Chipset

Aptio Setup Ut Main Advanced Chipset Bo	ility – Copyright (C) ot Security Save &	) 2010 American Exit	Megatrends, Inc.
> System Agent (SA) Configurat > PCH−IO Configuration			System Agent (SA) Parameters ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
version 2.10.	1206. Cupyright (C) ;	2010 HWEP1CAN ME	gatrenus, INC.

# System Agent (SA) Configuration

Aptio Setup Ut Chipset	ility – Copyright (C) 2010 Amer	rican Megatrends, Inc.
VT-d Capability Memory Frequency Total Memory DIMM#0 DIMM#2	Unsupported 1333 Mhz 2048 MB (DDR3) Not Present 2048 MB (DDR3)	Config Graphics Settings.
▶ Graphics Configuration		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Graphics	Config Graphics Settings.
Configuration	

### **Graphics Configuration**

Aptio Setup Chipset	Utility – Copyright (C) 2010	American Megatrends, Inc.
Graphics Configuration		Keep IGD enabled based on the
Internal Graphics DVMT Pre-Allocated DVMT Total Gfx Mem	[Auto] [64M] [MAX]	secup operations.
▶ Display Control		
		++: Select Screen
		T4: Select Item Enter: Select
		+/−: Change Upt. F1: General Help
		F3: Optimized Defaults
		ESC: Exit
Version 2.1		

# Options Summary :

Internal Graphics	Auto	Default
	Disabled	
	Enabled	
Keep IGD enabled ba	ased on the setup o	ptions.
DVMT Pre-Allocated	OM	
	32M	
	64M	Default
	96M	
	128M	
	160M	
	192M	
	224M	
	256M	
	288M	
	320M	

Chapter 3 AMI BIOS Setup 3-31

#### Embedded Controller

	352M	
	384M	
	416M	
	448M	
	480M	
	512M	
Select DVMT 5.0 Pre-	-Allocated (Fixed) C	Graphics Memory size used
by the Internal Graph	ics Device.	-
DVMT Total Gfx Men	128M	
	256M	
	MAX	Default
Select DVMT5.0 Tota	I Graphic Memory s	size used by the Internal
Graphics Device.		

#### **Display Control**

	Aptio Setup Utility - Chipset	- Copyright (C) 2010 American	Megatrends, Inc.
Display Contro	01		Select the Video Device during
Boot Display S			POST and DOS. This has no effect if external graphics present. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.10.1208. C	Copyright (C) 2010 American M	legatrends, Inc.

Boot Display Select	VBIOS Default	Default			
	CRT				
	HDMI				
	DVI				
Select the Video Device during POST and DOS.					
This has no effect if external graphics present.					

#### **PCH-IO Configuration**



Power Mode	АТХ Туре	Default			
	АТ Туре				
Select power supply mode.					
Restore AC Power	Power off				
Loss	Power on				
	Last State	Default			
Select AC power state when power is re-applied after a power					
failure.					
Azalia	Disabled				
	Enabled				
	Auto	Default			
#### Embedded Controller

Control Detection of t	he Azalia device.	
Disabled = Azalia will	be unconditionally	disabled
Enabled = Azalia will	be unconditionally	Enabled
Auto = Azalia will be	enabled if present,	disabled otherwise.
Azalia Internal HDMI	Disabled	
Codec for Azalia	Enabled	Default
Enable or disable inte	ernal HDMI codec for	or Azalia.
Azalia HDMI codec	Disabled	Default
Port B	Enabled	
Enable or disable inte	ernal HDMI codec F	Port for Azalia.
Azalia HDMI codec	Disabled	
Port C	Enabled	Default
Enable or disable inte	I ernal HDMI codec F	Port for Azalia.
Azalia HDMI codec	Disabled	Default
Port D	Enabled	
Enable or disable inte	ernal HDMI codec F	Port for Azalia.
PCH LAN Controller	Enabled	Default
	Disabled	
Enable or disable on	board NIC.	
Wake on LAN	Enabled	Default
	Disabled	
Enable or disable inte	egrated LAN to wak	e the system.
OnBoard LAN 2	Disabled	
	Enabled	Default
OnBoard LAN 2 RTL	8111E LAN En/Disa	able Control
PCIe Mini-Card 1	Disabled	
	Enabled	Default
Enable / Disable PCI	e Mini-Card 1	
PCIe Mini-Card 2	Disabled	
	Enabled	Default
Enable / Disable PCI	e Mini-Card 2	

Embe	dded	Contro	ller

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#### Setup submenu: Boot

Aptio Setup U Main Advanced Chipset B	tility – Copyright (C) 2010 American oot Security Save & Exit	Megatrends, Inc.
Boot Configuration Quiet Boot Launch 182579LM PXE OpROM Launch RTL8111E PXE OpROM	[Enabled] [Disabled] [Disabled]	Enables or disables Quiet Boot option
Boot Option Priorities Boot Option #1 Boot Option #2 Hand Drive BBS Priorities	[UEFI: USB 2.0 SD/M] [USB 2.0 SD/MMC Rea]	
		++: Select Screen
		†∔: Select Item Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.10	.1208. Copyright (C) 2010 American M	egatrends, Inc.

#### Options Summary :

Quiet Boot	Disabled			
	Enabled	Default		
Enables or disables C	Quiet Boot optior	1		
Launch 182579LM	Disabled	Default		
PXE OpROM	Enabled			
Enable or Disable Leg	gacy Boot Optio	n for I82579LM.		
Launch RTL8111E	Disabled	Default		
PXE OpROM	Enabled			
Enable or Disable Legacy Boot Option for RTL8111E				
Boot options #X	Your storage/disk devices			
-	-			
Sets the system boot order				

#### Hard Drives BBS Priorities

Boot Option #1 [USB 2.0 SD/MMC Rea] Sets the system boot order +: Select Screen 1: Select Item Enter: Select +-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		Aptio Setup Utility Boot	– Copyright (C) 2010 America	n Megatrends, Inc.
	Boot Option	#1	[USB 2.0 SD/MMC Rea]	Sets the system boot order ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Heip F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2 10 1208 Convright (C) 2010 American Megatrends. Inc		Version 2 10 4208	Conuright (C) 2010 American	Megatrends Inc

#### Submenu: Security

Aptio Setup Utility – Copyright (C) 2010 American Main Advanced Chipset Boot <mark>Security</mark> Save & Exit	Megatrends, Inc.		
Password Description If DNLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password must be 3 to 20 characters long.	Set Setup Administrator Password		
Administrator Password User Password	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.			

#### Change User/Supervisor Password

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

#### **Removing the Password**

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

#### Setup submenu: Exit

Aptio Setup Utility – Copyright (C) 2010 American Main Advanced Chipset Boot Security Save & Exit	Megatrends, Inc.
Save Changes and Reset Discard Changes and Reset Restore Defaults Save as User Defaults Restore User Defaults	Reset the system after saving the changes.
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.10.1208. Copyright (C) 2010 American M	

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# Chapter

### Driver Installation

Chapter 4 Driver Installation 4-1

The AEC-6967 comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver DVD, the driver DVD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

#### Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver
Step 2 – Install VGA Driver
Step 3 – Install Audio Driver
Step 4 – Install LAN Driver
Step 5 – Install ME Driver
Step 6 – Install RAID & AHCI Driver
Step 7 – Install TPM Driver
Step 8 – Install Serial Port Driver (Optional)
 If you get competible icous for COM part, places find its driv

<u>Note:</u> If you got compatible issue for COM port, please find its driver under STEP 8 folder and then install it by administrative login permission.

Please read instructions below for further detailed installations.

#### 4.1 Installation:

Insert the AEC-6967 DVD-ROM into the DVD-ROM drive. And install the drivers from Step 1 to Step 8 in order.

Step 1 – Install Chipset Driver

- Click on the STEP 1-CHIPSET folder and double click on the *infinst\_autol.exe* file
- 2. Follow the instructions that the window shows
- 3. The system will help you install the driver automatically

#### Step 2 – Install VGA Driver

- Click on the STEP2-VGA folder and select the OS folder your system is
- 2. Double click on the **.exe** file located in each OS folder
- 3. Follow the instructions that the window shows
- 4. The system will help you install the driver automatically

Note 1:

- This motherboard supports VGA and LVDS display devices. In Single Display mode, use the hot keys to switch between VGA to LVDS device or vice versa. By default, press
   <Ctrl>+<Alt>+<F1> to switch to VGA device and press
   <Ctrl>+<Alt>+<F3> to switch to LVDS device.
- Before removing the current display device, connect the display device that you want to use, and then press the hot keys to switch to that device.

<u>Note 2:</u> If the OS is Windows<sup>®</sup> XP, you have to install the driver of dotNet Framework first. Simply click on *dotnetfx35.exe* located in

#### dotNet Framwork folder.

- Step 3 –Install Audio Driver
  - 1. Click on the **STEP3-AUDIO** folder and select the OS folder your system is
  - 2. Double click on the .exe located in each OS folder
  - 3. Follow the instructions that the window shows
  - 4. The system will help you install the driver automatically
- Step 4 Install LAN Driver
  - Click on the STEP4-LAN folder and select the folder of intel\_82579 or realtek\_8111E based on the LAN chipset in your system.
  - Select the OS folder your system is located in the chipset folder, then double click on *.exe* file located in each OS folder
  - 3. Follow the instructions that the window shows
  - 4. The system will help you install the driver automatically
- Step 5 Install ME Driver
  - 1. Click on the *STEP5-ME* folder and double click on the *setup.exe* file
  - 2. Follow the instructions that the window shows
  - 3. The system will help you install the driver automatically

Step 6 - Install RAID & AHCI Driver

Please refer to the Appendix C RAID & AHCI Settings

Step 7 – Install TPM Driver

- 1. Click on the **STEP7-TPM** folder and double click on the **Setup.exe** file
- 2. Follow the instructions that the window shows
- 3. The system will help you install the driver automatically

Step 8 –Install Serial Port Driver (Optional)

For Windows<sup>®</sup> XP 32-bit, select the folder of *WINXP\_32* and double click on the *patch.bat* 

For Windows<sup>®</sup> 7, please refer to the installation procedures below.

1. Create a password for Administrator account.



Chapter 4 Driver Installation 4-5

#### 2. Change User Account Control Settings to [Never notify]



#### 3. Reboot and Administrator login.

1 serial patch patch install	
Getting Started	
😰 Windows Media Center	1
Calculator	Documents
🧭 Paint 🔸	Pictures
Sticky Notes	Music
Snipping Tool	Games
Remote Desktop Connection	Computer
Magnifier	Control Panel
Solitaire	Devices and Printers
Intel® Management and Security	Default Program Log off Lock
All Programs	Restart
Search programs and files	Shut down > Hibemate
🚳 🙆 🚞 O	→ P* 10/20/2011     →

Chapter 4 Driver Installation 4-6

4. To run patch.bat with [Run as administrator].



# Appendix A

# Programming the Watchdog Timer

Appendix A Programming the Watchdog Timer A-1

#### A.1 Watchdog Timer Initial Program

Table 1 : SuperIO relative register table			
Default Value Note			
Index	0x2E(Nata1)	SIO MB PnP Mode Index Register	
Index	UX2E(NOTET)	0x2E or 0x4E	
Data	0x2E(Nete2)	SIO MB PnP Mode Data Register	
Data	UXZF(INOTEZ)	0x2F or 0x4F	

	Table 2 : Watchdog relative register table					
	LDN Register BitNum Value		Note			
Timer Counter	<b>0x07</b> (Note3)	<b>0xF6</b> (Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access	
Counting Unit	<b>0x07</b> (Note5)	<b>0xF5</b> (Note6)	<b>3</b> (Note7)	<b>0</b> (Note8)	Select time unit. 0: second 1: minute	
Watchdog	0x07	0xF5	5	1	0: Disable	
Enable	(Note9)	(Note10)	(Note11)	(Note12)	1: Enable	
Timeout Status	<b>0x07</b> (Note13)	<b>0xF5</b> (Note14)	6 (Note15)	1	1:Clear timeout status	
Output Mode	<b>0x07</b> (Note16)	<b>0xF5</b> (Note17)	<b>4</b> (Note18)	<b>1</b> (Note19)	Select WDTRST# output mode 0: level 1: pulse	
WDTRST output	<b>0x07</b> (Note20)	<b>0xFA</b> (Note21)	<b>0</b> (Note22)	1(Note2 3)	Enable/Disable time out output via WDTRST# 0: Disable 1: Enable	

Embedded Controller

\*\*\* // SuperIO relative definition (Please reference to Table 1) SIOIndex //This parameter is represented from Note1 #define byte //This parameter is represented from Note2 #define byte SIOData #define void IOWriteByte(byte IOPort, byte Value); byte IOReadByte(byte IOPort); #define // Watch Dog relative definition (Please reference to Table 2) #define byte TimerLDN //This parameter is represented from Note3 #define byte TimerReg //This parameter is represented from Note4 #define byte TimerVal // This parameter is represented from Note24 #define byte UnitLDN //This parameter is represented from Note5 #define byte UnitReg //This parameter is represented from **Note6** #define byte UnitBit //This parameter is represented from Note7 //This parameter is represented from Note8 #define byte UnitVal //This parameter is represented from #define byte EnableLDN Note9 #define byte //This parameter is represented from EnableReg Note10 #define byte EnableBit //This parameter is represented from Note11 #define byte EnableVal //This parameter is represented from Note12 #define byte StatusLDN // This parameter is represented from Note13 StatusReg // This parameter is represented from #define byte Note14 #define byte StatusBit // This parameter is represented from **Note15** #define byte ModeLDN // This parameter is represented from Note16 #define byte ModeReg // This parameter is represented from Note17 #define byte ModeBit // This parameter is represented from **Note18** #define byte ModeVal // This parameter is represented from Note19 WDTRstLDN // This parameter is represented from #define byte Note20 #define byte WDTRstReg // This parameter is represented from Note21

#### Embedded Controller

#### A E C - 6 9 6 7

#define byte WDTRstBit // This parameter is represented from Note22 #define byte WDTRstVal // This parameter is represented from Note23 ىلەر بىلەر بىلە \*\*\* VOID Main(){ // Procedure : AaeonWDTConfig // (byte)Timer : Time of WDT timer.(0x00~0xFF) // (boolean)Unit : Select time unit(0: second, 1: minute). AaeonWDTConfig(): // Procedure : AaeonWDTEnable // This procudure will enable the WDT counting. AaeonWDTEnable(); \*\*\* \*\*\* // Procedure : AaeonWDTEnable VOID AaeonWDTEnable (){ WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 1); } // Procedure : AaeonWDTConfig VOID AaeonWDTConfig (){ // Disable WDT counting WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 0); // Clear Watchdog Timeout Status WDTClearTimeoutStatus(); // WDT relative parameter setting WDTParameterSetting(); }

```
Embedded Controller
```

```
byte Value){
     SIOBitSet(LDN, Register, BitNum, Value);
}
VOID WDTParameterSetting(){
      // Watchdog Timer counter setting
     SIOByteSet(TimerLDN, TimerReg, TimerVal);
     // WDT counting unit setting
     SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
     // WDT output mode setting, level / pulse
     SIOBitSet(ModeLDN, ModeReg, ModeBit, ModeVal);
     // Watchdog timeout output via WDTRST#
     SIOBitSet(WDTRstLDN, WDTRstReg, WDTRstBit,
WDTRstVal);
}
VOID WDTClearTimeoutStatus(){
     SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);
   ***
******
                     ***************
***
VOID SIOEnterMBPnPMode(){
     IOWriteByte(SIOIndex, 0x87);
     IOWriteByte(SIOIndex, 0x87);
}
VOID SIOExitMBPnPMode(){
     IOWriteByte(SIOIndex, 0xAA);
}
VOID SIOSelectLDN(byte LDN){
     IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
     IOWriteByte(SIOData, LDN);
}
```

VOID WDTEnableDisable(byte LDN, byte Register, byte BitNum,

# VOID SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){

Byte TmpValue;

```
SIOEnterMBPnPMode();
SIOSelectLDN(byte LDN);
IOWriteByte(SIOIndex, Register);
TmpValue = IOReadByte(SIOData);
TmpValue &= ~(1 << BitNum);
TmpValue |= (Value << BitNum);
IOWriteByte(SIOData, TmpValue);
SIOExitMBPnPMode();
```

}

#### VOID SIOByteSet(byte LDN, byte Register, byte Value){

```
SIOEnterMBPnPMode();
SIOSelectLDN(LDN);
IOWriteByte(SIOIndex, Register);
IOWriteByte(SIOData, Value);
SIOExitMBPnPMode();
```

\*\*\*

}

# Appendix B

## I/O Information

Appendix B I/O Information B-1

#### B.1 I/O Address Map

a 📳 Inp	ut/output (IO)	
Þ 👰	[00000000 - 00000CF7]	PCI bus
Þ 💻	[00000D00 - 0000FFFF]	PCI bus

#### **B.2 Memory Address Map**

A 📲 Memory
⊳ 📲 [000A0000 - 000BFFFF] PCI bus
19 [000E0000 - 000E3FFF] PCI bus
INTERPORT PCI bus
🕞 📜 [FF000000 - FFFFFFF] Intel(R) 82802 Firmware Hub Device

#### AEC-6967

#### **B.3 IRQ Mapping Chart**

4	Interrupt request (IRQ)	
	(ISA) 0x00000000 (00)	System timer
	(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
1		Communications Port (COM2)
	(ISA) 0x00000004 (04)	Communications Port (COM1)
	(ISA) 0x00000005 (05)	Communications Port (COM3)
	(ISA) 0x00000005 (05)	Communications Port (COM4)
		Communications Port (COM5)
	(ISA) 0x00000005 (05)	Communications Port (COM6)
	19 (ISA) 0x0000008 (08)	System CMOS/real time clock
	🖄 (ISA) 0x0000000C (12)	Microsoft PS/2 Mouse
	19 (ISA) 0x0000000D (13)	Numeric data processor
	19 (ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
	<b>1</b> ] (ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
	<b>1</b> ] (ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
	19 (ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
	19 (ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
	19 (ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
	ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
	ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
	ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
	(ISA) 0x000005B (91)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
	(ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
	(ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
	(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
	(ISA) 0x0000063 (99)	Microsoft ACPI-Compliant System
	(ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
	(ISA) 0x0000065 (101)	Microsoft ACPI-Compliant System
	(ISA) 0x0000066 (102)	Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
	(ISA) 0x0000068 (104)	Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
	(ISA) 0x000006C (108)	Microsoft ACPI-Compliant System
	(ISA) 0x000006D (109)	Microsoft ACPI-Compliant System
1	(ISA) 0x000006E (110)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
1	(ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
		Microsoft ACPI-Compliant System
1	(ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
	ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
	ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
	(ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
	(ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
	(ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
	(ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
-		

#### Embedded Controller

#### A E C - 6 9 6 7

	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
[ISA] 0x0000007B (123)	Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
(ISA) 0x000007D (125)	Microsoft ACPI-Compliant System
(ISA) 0x000007E (126)	Microsoft ACPI-Compliant System
(ISA) 0x000007F (127)	Microsoft ACPI-Compliant System
(ISA) 0x0000080 (128)	Microsoft ACPI-Compliant System
(ISA) 0x0000081 (129)	Microsoft ACPI-Compliant System
(ISA) 0x0000082 (130)	Microsoft ACPI-Compliant System
(ISA) 0x0000083 (131)	Microsoft ACPI-Compliant System
(ISA) 0x0000084 (132)	Microsoft ACPI-Compliant System
(ISA) 0x0000085 (133)	Microsoft ACPI-Compliant System
(ISA) 0x0000086 (134)	Microsoft ACPI-Compliant System
(ISA) 0x0000087 (135)	Microsoft ACPI-Compliant System
(ISA) 0x0000088 (136)	Microsoft ACPI-Compliant System
(ISA) 0x0000089 (137)	Microsoft ACPI-Compliant System
(ISA) 0x000008A (138)	Microsoft ACPI-Compliant System
(ISA) 0x000008B (139)	Microsoft ACPI-Compliant System
(ISA) 0x000008C (140)	Microsoft ACPI-Compliant System
(ISA) 0x000008D (141)	Microsoft ACPI-Compliant System
(ISA) 0x000008E (142)	Microsoft ACPI-Compliant System
(ISA) 0x000008F (143)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
19 (ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
19 (ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
19 (ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
19 (ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
19 (ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
19 (ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
19 (ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
19 (ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
19 (ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
19 (ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
19 (ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
19 (ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
19 (ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
19 (ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
1 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
1 (ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x00000A4 (164)	Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
(ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
(ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System

Appendix B I/O Information B-4

#### Embedded Controller

#### AEC-6967

	(ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
	ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
	ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
	ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
	ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
	ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
	ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
	ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
	ISA) 0x00000BC (188)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
	ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
	(PCI) 0x000000B (11)	Intel(R) 6 Series/C200 Series Chipset Family SMBus Controller - 1C22
	(PCI) 0x00000010 (16)	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C2D
	(PCI) 0x00000010 (16)	Intel(R) Management Engine Interface
	PCI) 0x00000013 (19)	Standard Dual Channel PCI IDE Controller
	PCI) 0x00000013 (19)	Standard Dual Channel PCI IDE Controller
	(PCI) 0x00000016 (22)	High Definition Audio Controller
	(PCI) 0x00000017 (23)	Intel(R) 6 Series/C200 Series Chipset Family USB Enhanced Host Controller - 1C26
	PCI) 0xFFFFFFF8 (-8)	Realtek PCIe GBE Family Controller #8
	PCI) 0xFFFFFFF9 (-7)	Intel(R) 82579LM Gigabit Network Connection #2
	PCI) 0xFFFFFFFA (-6)	Intel(R) HD Graphics
····1	(PCI) 0xFFFFFFB (-5)	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 2 - 1C12
	(PCI) 0xFFFFFFFC (-4)	Intel(R) 6 Series/C200 Series Chipset Family PCI Express Root Port 1 - 1C10
	(PCI) 0xFFFFFFFD (-3)	PCI Express standard Root Port
	(PCI) 0xFFFFFFFE (-2)	PCI Express standard Root Port

#### **B.4 DMA Channel Assignments**

Direct memory access (DMA)
 June 4 Direct memory access controller



# RAID & AHCI Settings

Appendix C RAID & AHCI Settings C-1

AEC-6967

#### C.1 Setting RAID

OS installation to setup RAID mode

Step 1: Copy the files below from the Driver CD: STEP 6 -

RAID&AHCI\WINXP\_32 to Disk.



Step 2: Connect the USB Floppy (Disk with the RAID&AHCI files) to the board.



Step 3: The setting procedures "In BIOS Setup Menu": Select Advanced -> SATA Configuration -> SATA Mode Selection -> RAID

	Aptio Setup Uti	llity – Copyright (C) 2010 Amer	ican Megatrends, In
SATA Contro CATA Hode	oller(s) Selection	(Enabled) [RAID]	Determines how controller(s)
Serial AT Port 1 Hot Pho Serial AT Port 2 Hot Pho Dist Size Hot Pho	K Port 1 6 A Port 2 nt nt	MAXIOR SIM3808 (80.06 [Enabled] [Disabled] Hitachi HOS721 (320.0 [Enabled] [Disabled] Empty [Enabled] [Disabled]	

Step 4: Select Advanced -> Launch Storage OpROM -> Enabled

Aptio Setup Utility	– Copyright (C) 2010	American Megatrends, Inc.
Legacy OpROM Support Launch FXE OpROM Launch Storage OpRom ACPI Settings Trusted Computing CPU Configuration SATA Configuration Sata Configuration Intel(R) anti-Theft Technology Con ART Configuration	[Disabled] [Enabled]	Disabling Intel(R) AT A user to login to platfor This is strictly for te only. This does not disa Services in ME.
GSB Configuration     His Monitor     Super ID Configuration     Super ID Configuration		+: Select Screen 11: Select Item Enter: Select

#### Step 5: Select Boot -> Boot Option #1 -> DVD ROM Type

Boot Configuration		Sets the sustee boot
Setup Prompt Timeout	E CARACTER STATE	
Bootigs NumLock State		
Quiet Boot		
CSH16 Hodule Version	07.65	11 Jacques
	(Upon Request)	
Option ROM Messages	[Force 8100]	
Interrupt 19 Capture	(Disabled)	
Boot Option Priorities		
Boot Option #1	[TEAC DV-H28S-V D.OA]	++: Select Screen
eout Option #2	(HIIISLMI USB FOD 1050)	TI: Select Item
Boot Option #3	TUEFT: FAIL FILE System	Change Opt.
BOOT UDITION #4	Entre Pres Avenue of the	E1- Ceneral Help

Step 6: Select Save & Exit -> Save Changes and Exit



Step 7: Press "Ctrl-I" to enter MAIN MENU



Step 8: Select "1. Create RAID Volume"



Step 9: Select RAID Level -> RAID0(Stripe)

10000		REATE VOLUME MENU J
CONTRACTOR -	Name:	VolumeØ
Contraction of the second	RAID Level:	RIDB(Stripe)
	Disks:	Select Disks
5 B. 199	Strip Size:	128KB
	Capacity:	298.1 GB
A State State	Sync:	N/A
		Create Volume

Step 10: Select "Create Volume"

Intel(R) Rapid Storage Technology - Opti Copyright(C) 2003-10 Intel Corporation. CREATE VOLUME MENU	on ROM - 10.1.0.1008 All Rights Reserved. ]
Name: Volume0 RAID Level: RAID0(Stripe) Disks: Select Disks Strip Size: 128KB Capacity: 298.1 GB Sync: N/A	

Step 11: Type "Y" for confirmation



Step 12: Select "5. Exit"

1. Create R 2. Delete R	AID Volume AID Volume	3. 4.	Reset Disks to Non- Recovery Volume Opt	-RAID tions
RAID Volumes: ID Name 8 Volume0	Level RAIDO(Stripe)	Strip 128KB	Size Status 298.168 Normal	Bootabl Yes
Physical Devices: Port Device Model 8 MAXTOR STM3164 1 Hitachi HDS72	Serial # 981 GPT39VGE 103 JP1421HH0ESM9E		Size Type/Status 149.868 Member Disk 298.868 Member Disk	(Vol ID) (8) (8)

#### Step 13: Choose "Y"



Step 14: Setup OS



#### Step 15: Press "F6"



#### Step 16: Choose "S"



Step 17: Select the "Intel® Mobile Express Chipset SATA RAID Controller"



Step 18: Select "ENTER" after choosing the model number.



Step 19: Setup is loading files.



A E C - 6 9 6 7

#### C.2 Setting AHCI

OS Installation to Setup AHCI mode

Step 1: Copy the files below from the Driver CD: STEP 6 -

RAID&AHCI\WINXP\_32 to Disk.



Step 2: Connect the USB Floppy Disk with the RAID&AHCI files to the board.


Step 3: To install "In BIOS Setup Menu", select Advanced -> SATA Configuration -> SATA Mode Selection -> AHCI

Aptio Setup Uti	lity – Copyright (C) 2010 Ameri	can Megatrends, Inc.
SATA Controller(s) SATA Mode Selection	[Enabled] [AHCI]	Determines how SATA controller(s) operate.
Serial ATA Port 1 Port 1 Nat Plug Berlai ATA Port 2 Port 2 Not Plug Ofast Slat Slat Nat Plug	WWATTOR STM3808 (80.0G [Enabled] [Disabled] Empty [Enabled] [Bisabled] Empty [Enabled] [Disabled]	
A CONTRACTOR OF A CONTRACTOR		++: Select Screen

Step 4: Next, select Boot -> Boot Option #1 -> DVD ROM Type

Actic Setup Utility	- Copyright (C) 2010 Ameri	can Megatrends, Inc.
Boot Configuration		Sets the system boot are
Rootup Numicock State	1 [0n]	
Quiet Boot		
CSM16 Module Version	07.65	A CONTRACTOR OF
	(Upon Request)	
Option ROM Hessages Interrupt 19 Capture	(Force 8105) (Disabled)	
Boot Option Priorities		
Soot Option #1	[TEAC DV-H28S-V D.CA]	++: Select Screen
Boot Option #2	(HITSLAT COR FOR 1950)	Teters Splect
Boot Option #4	(SATA PM: MAXTOR S]	+/-: Change Opt. F1: General Help
Finners Grive BBS Priorities and Drive BBS Priorities Children and Drive BBS Priorities		F2: Previous Values F3: Optimized Defaults F4: Save & Exit

Step 5: To save, select Save & Exit -> Save Changes and Exit



# Step 6: Setup OS



#### Step 7: Press "F6"



## Step 8: Choose "S"



Step 9: Choose "Intel® Mobile Express Chipset SATA AHCI Controller



#### Step 10: Select "ENTER" to choose the model number



Step 11: Setup is loading files





# Electrical Specifications for I/O Ports

Appendix D Electrical Specifications for I/O Ports D-1

#### **D.1 DIO Programming**

AEC-6967 utilizes FINTEK F81866 chipset as its Digital I/O controller.

Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application. There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.(These three steps are the same as programming WDT)

Please be noted, the Isolation protection DIO is fixed 4 Input / 4 Output type.

DIO\_P#1~4 : Input

DIO\_P#5~8 : Output

# D.2 Digital I/O Register

Table 1 : SuperIO relative register table		
	Default Value	Note
Index 0x2	0-25	SIO MB PnP Mode Index Register
	UX2E(Note1)	0x2E or 0x4E
Data	<b>0x2F</b> (Note2)	SIO MB PnP Mode Data Register
		0x2F or 0x4F

Table 2 : Digital Input relative register table					
	LDN	Register	BitNum	Value	Note
DIO_P#1 Pin Status	<b>0x06</b> (Note3)	<b>0x8A</b> (Note4)	<b>0</b> (Note5)		GPIO80
DIO_P#2 Pin Status	<b>0x06</b> (Note6)	<b>0x8A</b> (Note7)	<b>1</b> (Note8)		GPIO81
DIO_P#3 Pin Status	<b>0x06</b> (Note9)	<b>0x8A</b> (Note10)	<b>2</b> (Note11)		GPIO82
DIO_P#4 Pin Status	<b>0x06</b> (Note12)	<b>0x8A</b> (Note13)	<b>3</b> (Note14)		GPIO83
DIO_P#5 Pin Status	<b>0x06</b> (Note15)	<b>0x8A</b> (Note16)	<b>4</b> (Note17)		GPIO84
DIO_P#6 Pin Status	<b>0x06</b> (Note18)	<b>0x8A</b> (Note19)	<b>5</b> (Note20)		GPIO85
DIO_P#7 Pin Status	<b>0x06</b> (Note21)	<b>0x8A</b> (Note22)	<b>6</b> (Note23)		GPIO86
DIO_P#8 Pin Status	<b>0x06</b> (Note24)	<b>0x8A</b> (Note25)	<b>7</b> (Note26)		GPIO87

Table 3 : Digital Output relative register table					
	LDN	Register	BitNum	Value	Note
DIO_P#5 Output Data	<b>0x06</b> (Note43)	<b>0x89</b> (Note44)	<b>4</b> (Note45)	(Note46)	GPIO84
DIO_P#6 Output Data	<b>0x06</b> (Note47)	<b>0x89</b> (Note48)	<b>5</b> (Note49)	(Note50)	GPIO85
DIO_P#7 Output Data	<b>0x06</b> (Note51)	<b>0x89</b> (Note52)	<b>6</b> (Note53)	(Note54)	GPIO86
DIO_P#8 Output Data	<b>0x06</b> (Note55)	<b>0x89</b> (Note56)	<b>7</b> (Note57)	(Note58)	GPIO87

## D.3 Digital I/O Sample Program

// SuperIO rela	tive definition (Please reference to Table 1)
#define byte	SIOIndex //This parameter is represented from Note1
#define byte	SIOData //This parameter is represented from Note2
#define void	IOWriteByte(byte IOPort, byte Value);
#define byte	IOReadByte( <b>byte</b> IOPort);
// Digital Input	Status relative definition (Please reference to Table 2)
#define byte	DInput1LDN // This parameter is represented from Note3
#define byte	DInput1Reg // This parameter is represented from Note4
#define byte	DInput1Bit // This parameter is represented from <b>Note5</b>
#define byte	DInput2LDN // This parameter is represented from <b>Note6</b>
#define byte	DInput2Reg // This parameter is represented from <b>Note7</b>
#define byte	DInput2Bit // This parameter is represented from <b>Note8</b>
#define byte	DInput3LDN // This parameter is represented from <b>Note9</b>
#define byte	DInput3Reg // This parameter is represented from Note10
#define byte	DInput3Bit // This parameter is represented from Note11
#define byte	DInput4LDN // This parameter is represented from <b>Note12</b>
#define byte	DInput4Reg // This parameter is represented from <b>Note13</b>
#define byte	DInput4Bit // This parameter is represented from <b>Note14</b>
#define byte	DInput5LDN // This parameter is represented from <b>Note15</b>
#define byte	DInput5Reg // This parameter is represented from <b>Note16</b>
#define byte	DInput5Bit // This parameter is represented from <b>Note17</b>
#define byte	DInput6LDN // This parameter is represented from <b>Note18</b>
#define byte	DInput6Reg // This parameter is represented from <b>Note19</b>
#define byte	DInput6Bit // This parameter is represented from <b>Note20</b>
#define byte	DInput7LDN // This parameter is represented from <b>Note21</b>
#define byte	DInput7Reg // This parameter is represented from Note22
#define byte	DInput7Bit // This parameter is represented from <b>Note23</b>
#define byte	DInput8LDN // This parameter is represented from Note24
#define byte	DInput8Reg // This parameter is represented from <b>Note25</b>
#define byte	DInput8Bit // This parameter is represented from <b>Note26</b>
************	***************************************

#### 

// Digital Outp	ut control relativ	ve definition (Please reference to Table 3)
#define byte	DOutput5LDN	// This parameter is represented from Note43
#define byte	DOutput5Reg	// This parameter is represented from Note44
#define byte	DOutput5Bit	// This parameter is represented from Note45
#define byte	DOutput5Val	// This parameter is represented from Note46
#define byte	DOutput6LDN	// This parameter is represented from Note47
#define byte	DOutput6Reg	// This parameter is represented from Note48
#define byte	DOutput6Bit	// This parameter is represented from Note49
#define byte	DOutput6Val	// This parameter is represented from Note50
#define byte	DOutput7LDN	// This parameter is represented from Note51
#define byte	DOutput7Reg	// This parameter is represented from Note52
#define byte	DOutput7Bit	// This parameter is represented from Note53
#define byte	DOutput7Val	// This parameter is represented from Note54
#define byte	DOutput8LDN	// This parameter is represented from Note55
#define byte	DOutput8Reg	// This parameter is represented from Note56
#define byte	DOutput8Bit	// This parameter is represented from Note57
#define byte	DOutput8Val	// This parameter is represented from Note58
***************************************		

#### Appendix D Electrical Specifications for I/O Ports D-5

# A E C - 6 9 6 7

#### VOID Main(){

#### Boolean PinStatus ;

// Procedure : AaeonReadPinStatus
// Input :
// Example, Read Digital I/O Pin 3 status
// Output :
// InputStatus :
// 0: Digital I/O Pin level is low
// 1: Digital I/O Pin level is High
PinStatus = AaeonReadPinStatus(DInput3LDN, DInput3Reg, DInput3Bit);
// Procedure : AaeonSetOutputLevel
// Input :

// Example, Set Digital I/O Pin 6 level

AaeonSetOutputLevel(DOutput6LDN, DOutput6Reg, DOutput6Bit, DOutput6Val);

}

******	***************************************
Boolea	n AaeonReadPinStatus(byte LDN, byte Register, byte BitNum){
	Boolean PinStatus ;
	DinStatus - SIORitRoad/IDN Register RitNum).
	Phistatus – Siobineau(LDN, negister, binnulli),
	Return PinStatus ;
}	
VOID	AaeonSetOutputLevel(byte LDN, byte Register, byte BitNum, byte Value){
	ConfigToOutputMode(LDN, Register, BitNum);
	SIOBitSet(LDN, Register, BitNum, Value);
}	
******	***************************************

# A E C - 6 9 6 7

\*\*\*\*\* VOID SIOEnterMBPnPMode(){ IOWriteByte(SIOIndex, 0x87); IOWriteByte(SIOIndex, 0x87); } VOID SIOExitMBPnPMode(){ IOWriteByte(SIOIndex, 0xAA); } VOID SIOSelectLDN(byte LDN){ IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07 IOWriteByte(SIOData, LDN); } VOID SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){ Byte TmpValue; SIOEnterMBPnPMode(); SIOSelectLDN(byte LDN); IOWriteByte(SIOIndex, Register); TmpValue = IOReadByte(SIOData); TmpValue  $\&= (1 \ll BitNum);$ TmpValue |= (Value << BitNum);</pre> IOWriteByte(SIOData, TmpValue); SIOExitMBPnPMode(); } VOID SIOByteSet(byte LDN, byte Register, byte Value){ SIOEnterMBPnPMode(); SIOSelectLDN(LDN); IOWriteByte(SIOIndex, Register); IOWriteByte(SIOData, Value); SIOExitMBPnPMode(); } 

# A E C - 6 9 6 7

#### Boolean SIOBitRead(byte LDN, byte Register, byte BitNum){

Byte TmpValue;

```
SIOEnterMBPnPMode();
SIOSelectLDN(LDN);
IOWriteByte(SIOIndex, Register);
TmpValue = IOReadByte(SIOData);
TmpValue &= (1 << BitNum);
SIOExitMBPnPMode();
If(TmpValue == 0)
Return 0;
Return 1;
```

}

#### VOID ConfigToOutputMode(byte LDN, byte Register, byte BitNum){

Byte TmpValue, OutputEnableReg;

```
OutputEnableReg = Register-1;
SIOEnterMBPnPMode();
SIOSelectLDN(LDN);
IOWriteByte(SIOIndex, OutputEnableReg);
TmpValue = IOReadByte(SIOData);
TmpValue |= (1 << BitNum);
IOWriteByte(SIOData, OutputEnableReg);
SIOExitMBPnPMode();
```

}