### AEC-VS01

Embedded Controller

4-Channel PoE for Surveillance

Intel<sup>®</sup> Atom<sup>™</sup> D2550 1.86GHz Processor

Dual LAN, 4 USB2.0, 4 COM, 1 VGA

8 DIO, 1 Mini Card

AEC-VS01 Manual 2<sup>nd</sup> Ed. January 8<sup>th</sup>, 2014

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# Packing List

Before you begin operating your PC, please make sure that the following materials are enclosed:

- 1 AEC-VS01 Embedded Controller
- 2 Wallmount Brackets
- 1 Screw Package
- 1 CD-ROM for manual (in PDF format) and drivers
- 1 Phoenix Power Connector

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.

#### A E C - V S 0 1

# 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	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
印刷电路板	~		0		0	0
及其电子组件	^	0	0		0	0
外部信号	~		0		0	0
连接器及线材		0	0	0	0	0
外壳	×	0	0	0	0	0
中央处理器	~		0			0
与内存			0			0
硬盘	×	0	0	0	0	0
电源	×	0	0	0	0	0
O: 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。

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# Chapter

# General Information

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#### **1.1 Introduction**

AAEON introduces the newest product in for entry level fanless boxer, AEC-VS01, which utilizes the Intel® Atom<sup>TM</sup> D2550 processor and 4-channel PoE ports for video surveillance applications. With compact, and aluminum case easily for customers install in the customer's own housing, or as a stand-alone application where space is limited and the environment harsh.

With PoE(Power Over Ethernet ) function, customer can easy install their IP Camera anywhere which cable install limitation issue and extra cost for system maintenance.

Also test by 3rd party surveillance software, customers can remote management and maintenance their system.

The AEC-VS01 supports a rich I/O capability, including four serial ports, four USB 2.0 ports, digital I/Os, expand storage, and 4 channel PoE ports, which make AEC-VS01 ideal to integrate, deploy, and manage for system development, and further accelerate time to video surveillance market.

In this era of information explosion, the advertising of consumer products will not be confined to the family television, but will also spread to high-traffic public areas, like department stores, the bus, transportation station, the supermarket etc. The advertising marketing industry will resort to every conceivable mean to transmit product information to consumers. System integrators will need a multifunction device to satisfy commercial needs for such public advertising.

The AEC-VS01 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

- Intel<sup>®</sup> Atom<sup>™</sup> D2550 1.86 GHz Processor
- Intel® NM10 Express chipset
- USB2.0 x 4
- COM x 4
- Dual Gigabit Ethernet LAN
- DIO x 8
- USB type 4-CH PoE
- Power input: 24~30V
- VGA Output
- Fanless System Design

#### 1.3 Specifications

#### System

•	CPU	Intel <sup>®</sup> Atom <sup>™</sup> D2550 1.86 GHz Processor
•	Memory	DDR3 800/1066 SODIMM x 1, Max. 4GB)
•	VGA	VGA x 1
•	Ethernet	Gigabit Ethernet, RJ-45 connector x 2
•	Hard Disk Storage	2.5" SATA HDD Bay x 1
•	Expansion	Mini Card Slot x 1 DIO x 8
		4-Channel PoE
•	LCD/CRT Controller	Integrated in Processor, shared system memory by Intel® DVMT Technology
•	Solid Storage Disk	CFast <sup>™</sup> slot x 1 (w/ cover protection)
•	Serial Port	RS-232/422/485 x 1, RS-232 x 3 (optional x 2)
•	USB	USB 2.0 x 4
•	System Control	Power ON/OFF
•	LED Indicator	Power LED x 1, Hard disk active LED x 1, CFast <sup>™</sup> slot x 1, Antenna hole x 2
•	Power Supply	DC power input 12V/ DC 24-30V w/ 3-pin terminal block
•	OS Support	Windows® 7, Linux Fedora Core, Windows® XP

#### Mechanical and Environmental

<ul> <li>Construction Alur</li> </ul>	minum Alloy Chassis
---------------------------------------	---------------------

Embedded Controller		r	A E C - V S 0 1
•	Color	Darl	Gray
•	Mounting	Wal	mount
•	Dimension	7.76"(W) x 4.02"(H) x 4.80"(D) (197 mm x 102 mm x 122 mm)	
•	Gross Weight	9.9	b (4.5 kg)
•	Net Weight	7.26	i lb (3.3 kg)
•	Operating Temperature	32°F	F ~ 113°F (0°C ~ 45°C)
•	Storage Temperature	32°F	F ~ 158°F (0°C ~ 70°C)
•	Storage Humidity	5~	95% @ 40°C, non-condensing
•	Vibration	1 g i opei	rms/ 5~500Hz/ random ration –HDD
•	Shock	20 C dura	B peak acceleration (11msec. ttion) –HDD
•	EMC	CE/	FCC Class A



# Hardware Installation

Chapter 2 Hardware Installation 2-1

#### 2.1 Dimension and I/O of AEC-VS01



#### **Front View**



#### **Rear View**



#### 2.2 Connectors and Jumpers of The Main Board

#### **Component Side**



#### Solder Side



#### 2.3 List of Jumpers

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

Label Function JP1 Auto Power Button Selection JP2 Clear CMOS COM2 RI/+5/+12V Selection JP3 Touch Screen 4/5/8-wires Mode Selection JP4 Brightness Control for 2<sup>nd</sup> LVDS JP5 2<sup>nd</sup> LVDS Backlight Bias/PWM Mode Selection JP6 JP7 2<sup>nd</sup> LVDS Operating Voltage Selection 2<sup>nd</sup> LVDS Inverter Voltage Selection JP8 1<sup>st</sup> LVDS Inverter Voltage Selection JP9 1<sup>st</sup> LVDS Backlight Bias/PWM Mode Selection **JP10** 1<sup>st</sup> LVDS Operating Voltage Selection JP11

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

#### 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 board's connectors:

Label	Function	
CN1	Front Panel	
CN2	External +5VSB Input	
CN3	CPU FAN	
CN4	+5VSB Output w/ SMBus	
CN5	SATA Port	
CN6	External 12V Input	
CN7	Digital I/O	
CN8	Parallel Port	
CN9	+5V Output for SATA HDD using	
CN10	USB Port #6	
CN11	COM Port #6	
CN12	USB Port #5	
CN13	COM Port #5	
CN14	USB Port #4	
CN15	USB Port #3	
CN16	COM Port #4	
CN17	LPC Expansion I/F	
CN18	COM Port #3	
CN19	COM Port #2	
CN20	Touch Screen	
CN21	Stereo-R Channel	
CN22	2 <sup>nd</sup> LVDS (Dual channel 18/24bit)	
CN23	PS/2 Keyboard & Mouse	
CN24	2 <sup>nd</sup> LVDS Inverter	

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CN25	Stereo-L Channel	
CN26	1 <sup>st</sup> LVDS Inverter	
CN27	1 <sup>st</sup> LVDS (Single channel 18/24bit)	
CN28	2 <sup>nd</sup> RJ-45 Ethernet	
CN29	1 <sup>st</sup> RJ-45 Ethernet	
CN30	USB Port #1 and #2	
CN31	Audio Line In/Out and MIC	
CN32	CRT/DVI (Configured by manufacturing)	
CN33	COM Port #1	
CN34	SIM Card Socket	
CFD1	CFAST™	
PCIE1	Mini Card/ mSATA (Configured by manufacturing)	
DIMM1	DDR3 SODIMM Slot	

#### 2.5 DIO Pin Definition



Pin	Signal	Pin	Signal
1	Port 1	2	Port 2
3	Port 3	4	Port 4
5	Port 5	6	Port 6
7	Port 7	8	Port 8
9	+3.3 Volt.	10	Ground

#### 2.6 PoE1~4 Port Pin Definition (MID-SPAN)



Green LED: PoE Power Link Yellow LED: 10/100M Link/Act

Pin	Signal	Pin	Signal
1	Tx+	2	Tx-
3	Rx+	4	48V+
5	48V+	6	Rx-
7	48V-	8	48V-

#### 2.7 Hard Disk Drive Installation

Step 1: Unfasten two screws of the safety bracket



Step 2: Push to open the HDD cover



Chapter 2 Hardware Installation 2 - 10

Step 3: Insert the HDD to the HDD slot



Step 4: Close the HDD cover and push to lock the cover



Step 5: Fasten two screws of the safety bracket to lock the HDD cover



#### 2.8 RAM Installation

Step 1: Loosen the three screws of the front case



Step 2: Loosen the three screws of the rear case







Step 4: Press the RAM and make sure that it has been inserted properly. P.S. If you are going to remove the RAM, you have to release the two latches on two sides of the memory slot.



#### 2.9 CFast Card Installation

Step 1: Loosen the two screws to release the baffle board on CFast slot



Step 2: Insert the CFast Card to the CFast slot



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#### 2.10 Wallmount Installation

Step 1: Get the two brackets and four screws ready



Step 2: Fasten the brackets with the four screws.



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# Chapter 3

# AMI BIOS Setup

Chapter 3 Award BIOS Setup 3-1

#### 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 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 AEC-VS01 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it 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 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.

#### Main

Set the date, use tab to switch between date elements.

#### Advanced

Advanced BIOS Features Setup including TPM, ACPI, etc.

#### Chipset

Host bridge parameters.

#### Boot

Enables/disable quiet boot option.

#### Security

Set setup administrator password.

#### Save&Exit

Exit system setup after saving the changes.

#### **BIOS Setup Menu**

Press 'Delete' Key to enter Setup

#### Main



#### A E C - V S 0 1

#### Advanced

Aptio Setup Utility – Copyright (C) 2011 American Main Advanced Chipset Boot Security Save & Exit	Megatrends, Inc.
<ul> <li>ACPI Settings</li> <li>CPU Configuration</li> <li>Dynamic Digital IO Configration</li> <li>SATA Configuration</li> <li>USB Configuration</li> <li>Super IO Configuration</li> <li>H/W Monitor</li> </ul>	System ACPI Parameters.
	<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 2.14.1219. Copyright (C) 2011 American M	egatrends, Inc.

#### **ACPI Settings**

Aptio Setup Utility – Advanced	Copyright (C) 2011 American	Megatrends, Inc.
CPU Configuration		Enabled for Windows XP and
Processor Type EMT64 Processor Speed System Bus Speed Ratio Status Actual Ratio System Bus Speed Processor Stepping	Intel(R) Atom(TM) CPU Supported 1065 MHz 533 MHz 14 533 MHz 30661	Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).
Microcode Revision L1 Cache RAM L2 Cache RAM	269 2x56 k 2x512 k	
Processor Core Hyper-Threading	Dual Supported	++: Select Screen 14: Select Item Enter: Select
Hyper-Threading		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. D	opyright (C) 2011 American M	egatrends, Inc.

#### Options summary:

Suspend mode	Suspend Disabled					
	S1 (CPU Stop Clock)					
	S3 (Suspend to RAM)	Optimal Default, Failsafe Default				
Select the ACPI state used for System Suspend						
#### A E C - V S 0 1

#### **CPU Configuration**

Aptio Setup Utility – Advanced	Copyright (C) 2011 American	Megatrends, Inc.
CPU Configuration		Enabled for Windows XP and Linux (OS optimized for
Processor Type	Intel(R) Atom(TM) CPU	Hyper-Threading Technology)
EMT64	Supported	and Disabled for other OS (OS
Processor Speed	1865 MHZ	not optimized for
System Bus Speed	533 MHZ	Hyper-Inreading (echnology).
Actual Ratio	14	
System Bus Speed	533 MHz	
Processor Stepping	30661	
Microcode Revision	269	
L1 Cache RAM	2x56 k	
L2 Cache RAM	2x512 k	
Processor Core	Dual	++: Select Screen
Hyper-Threading	Supported	T∔: Select Item
luner Threading		Enter: Select
Hyper-Inreauting		+/-: Change opt.
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.14.1219. Co	pyright (C) 2011 American Me	egatrends, Inc.

Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default
En/Disable CPU Hyper-Threading function		

#### **Dynamic Digital IO Configuration**

Aptio Setup Utility – ( Advanced	Copyright (C) 2011 American	Megatrends, Inc.
Base Address:F000h Slave address:6E Digital Port 1(GP20) Direction	l [Input]	Set digital IO port as Input or Output
Digital Port 2(GP21) Direction	[Input]	
Digital Port 3(GP22) Direction	[Input]	
Digital Port 4(GP23) Direction	[Input]	
Digital Port 5(GP24) Direction Digital Port 5(GP24) Level	[Output] [Hi]	
Digital Port 6(GP25) Direction Digital Port 6(GP25) Level	[Output] [Hi]	
Digital Port 7(GP26) Direction Digital Port 7(GP26) Level	[Output] [Hi]	Enter: Select +/-: Change Opt.
Digital Port 8(GP27) Direction Digital Port 8(GP27) Level	[Output] [Hi]	F1: Arevious Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Co	oyright (C) 2011 American Mu	egatrends, Inc.

Digital Port	Input	
Direction	Output	
Set digital IO port as Input or Output		
Digital Port Level	Hi	
	Lo	
Set digital IO level as High or Low		

#### **SATA Configuration**

Aptio Setup Ut Advanced	ility – Copyright (C) 2011 f	American Megatrends, Inc.
SATA Port0 SATA Port1	Not Present Not Present	SATA Ports (0–3) Device Names if Present and Enabled.
SATA Controller(s)		
Configure SATA as	[IDE]	
Misc Configuration for hard	disk	<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 2.14.	1219. Copyright (C) 2011 Ame	erican Megatrends, Inc.

SATA Controller(s)	Enable	Default	
	Disable		
SATA Ports (0-3) Device Names if present and Enable			
Configure SATA as	IDE	Default	
	AHCI		
IDE: Configure SATA controllers as legacy IDE			
AHCI: Configure SATA controllers to operate in AHCI mode			

#### **USB** Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2011 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support.
USB Devices: 1 Drive, 1 Keyboard		support if no USB devices are connected. DISABLE option will keep USB devices available
Legacy USB Support		only for EFI applications.
Mass Storage Devices: JetFlashTranscend 166B 1.00	[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 2.14.1219. Co	pyright (C) 2011 American M	egatrends, Inc.

Options summary:

Legacy USB Support	Enabled	Optimal Default, Failsafe
		Default
	Disabled	
	Auto	

Enables BIOS Support for Legacy USB Support. When enabled, USB can

be functional in legacy environment like DOS.

AUTO option disables legacy support if no USB devices are connected

Device Name	Auto	Optimal Default, Failsafe
(Emulation Type)		Default

	Floppy	
	Forced FDD	
	Hard Disk	
	CDROM	
If Auto. USB devices less than 530MB will be emulated as Floppy and		

remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)

#### Super IO Configuration

Aptio Setup Utility – Advanced	Copyright (C) 2011 American	Megatrends, Inc.
Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
Super IO Chip ▶ Serial Port 1 Configuration ▶ Serial Port 2 Configuration ▶ Serial Port 3 Configuration ▶ Serial Port 4 Configuration	IT8783F	
Restore AC Power Loss	[Power Off]	
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Co	opyright (C) 2011 American M	egatrends, Inc.

#### **Serial Port 1 Configuration**

Aptio Setup Utility Advanced	ı – Copyright (C) 2011 Amer	rican 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
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Detaults F4: Save & Exit FSC: Exit
Version 2.14.1219.	Copyright (C) 2011 Americ	an Megatrends, Inc.

#### **Serial Port 2 Configuration**

Aptio Setup Utility - Advanced	- Copyright (C) 2011 Americar	n Megatrends, Inc.
Serial Port 2 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
Change Settings	[Auto]	
COM2 Type Select	[RS232]	
		++: Select Screen
		Enter: Select
		F1: General Help
		F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.14.1219. (	Copyright (C) 2011 American ⊧	legatrends, Inc.

#### **Serial Port 3 Configuration**

Aptio Setup Utility – Advanced	Copyright (C) 2011 Americar	ח Megatrends, Inc.
Serial Port 3 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3E8h; IRQ=10;	(604)
Change Settings Device Mode	[Auto] [Standard Serial Po]	
		<pre>++: Select Screen 11: Select Item Enter: Select 4/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
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#### **Serial Port 4 Configuration**

Aptio Setup Utility — Advanced	Copyright (C) 2011 American	Megatrends, Inc.
Serial Port 4 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2E8h; IRQ=11;	(COM)
Change Settings Device Mode	[Auto] [Standard Serial Po]	
		↔: Select Screen ↓: Select Item Enter: Select
		+/-: Change Opt. F1: General Help
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.14.1219. Co	pyright (C) 2011 American M	egatrends, Inc.

Serial Port		Disabled	
		Enabled	Default
Allows BIOS to En/Disable correspond serial po			rt.
Change Settings	Auto		Default
(Serial Port 1)	IO=3F8h; IRQ=4;		
	IO=3F8h; IRQ=3,4;		
	IO=2F8h; IRQ=3,4;		
	IO=3E8h; IRQ=10,11;		
	IO=2E8h; IRQ=10,11		

Allows BIOS to Select S	Serial Port resource.	
Change Settings	Auto	Default
(Serial Port 2)	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11	
COM2 Type Select	RS232	Default
	RS422	
	RS485	
Allows BIOS to Select S	Serial Port resource.	
Change Settings	Auto	Default
(Serial Port 3)	IO=3E8h; IRQ=11;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11	
Device Mode	Standard Serial Port	Default
Mode		
	IrDA 1.0 (HP SIR)	
	Mode	
	ASKIR Mode	
Change Settings	Auto	Default
(Serial Port 4)	IO=3E8h; IRQ=11;	

	IO=3E8h; IRQ=10,11;		
	IO=2E8h; IRQ=10,11;		
	IO=3E8h; IRQ=10,11;		
	IO=2E8h; IRQ=10,11		
Device Mode	Standard Serial Port	Default	
	Mode		
	IrDA 1.0 (HP SIR)		
	Mode		
Restore on AC Power	Power Off	Default	
Loss	Power On		
	Last State		
Select the action system to take when restoring from power loss.			

#### A E C - V S 0 1

#### H/W Monitor

#### A E C - V S 0 1

#### Chipset

Aptio Setup Utility – Copyright (C) 2011 American Main Advanced <mark>Chipset</mark> Boot Security Save & Exit	Megatrends, Inc.
Main Advanced Chipset Boot Security Save & Exit  Host Bridge South Bridge	Host Bridge Parameters ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
	F3: Optimized Defaults F4: Save & Exit ESC: Exit
version 2.14.1219. Copyright (C) 2011 American Ma	egatrenos, inc.

#### **Host Bridge**

Aptio Setup Utility - Chipset	Copyright (C) 2011 American	Megatrends, Inc.
Aprio Setup Utility - Chipset • Intel IGD Configuration ********** Memory Information ********* Memory Frequency Total Memory DIMM#0 DIMM#1	Lopyright (C) 2011 American 1067 MHz(DDR3) 2048 MB Not Present 2048 MB	<pre>Hegatrends, Inc. Config Intel IGD Settings. ++: Select Screen I4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults</pre>
Version 2,14,1219, Co	puright (D) 2011 American M	F4: Save & Exit ESC: Exit exatrends. Inc.

#### **Intel IGD Configuration**

Apt	io Setup Utility — ) Chipset	Copyright (C)	) 2011 American	Megatrends, Inc.
Intel IGD Configu Auto Disable IGD IGFX - Boot Type Fixed Graphics Men	ration mory Size	[Enabled] [CRT] [256MB]		Auto disable IGD upon external GFX detected. ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Vei	rsion 2.14.1219. Co	pyright (C) :	2011 American Me	egatrends, Inc.

#### Options summary:

Auto Disable IGE	Disable		
	Enable	Default	
Atuo disable IGE upon exte	ernal GFX detected		
IGFX – Boot Type	/BIOS Default		
C	CRT	Default	
1	<sup>st</sup> LVDS		

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CRT+1 <sup>st</sup> LVDS		
9		
automatically accord	ding	to VBIOS algorithm
1	1	
128MB		
256MB	Defa	ault
Memory Size		
	CRT+1 <sup>ax</sup> LVDS automatically accord 128MB 256MB Memory Size	CRT+1 <sup>™</sup> LVDS automatically according 128MB 256MB Defa Memory Size

#### A E C - V S 0 1

#### South Bridge

Aptio Setup U Chipset	tility – Copyright (C) 2011 Ameri	can Megatrends, Inc.
Power Mode > TPT Devices > PCI Express Root Port 0 > PCI Express Root Port 1 > PCI Express Root Port 2 > PCI Express Root Port 3	[ATX Type]	Enable or disable 'It is now safe to turn off gour computer.' string
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14	.1219. Copyright (C) 2011 America	an Megatrends, Inc.

#### **TPT Device**

Aptio Setup Uti Chipset	lity – Copyright (C) 2011 Am	merican Megatrends, Inc.
Azalia Controller R8111E #1 Controller R8111E #2 Controller	[HD Audio] [Enabled] [Enabled]	Azalia Controller ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: OptImized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1	219. Copyright (C) 2011 Amer	rican Megatrends, Inc.

Aptio Setup Chipset	Utility – Copyright (C) 2011 Amer:	ican Megatrends, Inc.
PCI Express Port O	[Enabled]	Enable / Disable PCI Express Root Port 0.
		<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>
Version 2.1	l4.1219. Copyright (C) 2011 America	an Megatrends, Inc.

	Aptio Setup Utility – Chipset	Copyright (C) 2011 American	Megatrends, Inc.
PCI Express Po	nt 1	[Auto]	Enable / Disable PCI Express Root Port 1.
	Version 2.14.1219. Co	pyright (C) 2011 American M	egatrends, Inc.

Aptio Setu Chipset	ə Utility — Copyright (C) 2011 A	merican Megatrends, Inc.
PCI Express Port 2	[Auto]	Enable / Disable PCI Express Root Port 2.
Version 2	.14.1219. Copyright (C) 2011 Ame	rican Megatrends, Inc.

Aptio Setup Chipset	Utility – Copyright (C) 2011 Ar	merican Megatrends, Inc.
PCI Express Port 3	(Auto)	Enable / Disable PCI Express Root Port 3.
Version 2.	14.1219. Copyright (C) 2011 Amer	rican Megatrends, Inc.

Power Mode	АТХ Туре	Optimal Default,	
		Failsafe Default	
	АТ Туре		
Select Power Mode:			
ATX Type: Normal ACPI support			
AT Type: Suspend/Sleep disabled, and Always On when restoring from power			
failure.			
Azalia HD Audio	Disabled		

A E C - V S 0 1

	HD Audio	Optimal Default,	
		Failsafe Default	
Enabling/Disabling HD Audio contro	ller.		
R8111 #x Controller	Disabled		
	Enabled	Optimal Default,	
		Failsafe Default	
Enabling/Disabling 8111E controller			
PCI Express Root Port 0	Disabled		
	Enabled	Optimal Default,	
		Failsafe Default	
Enabling/Disabling PCI Express root ports			
PCI Express Root Port x	Disabled Enabled		
	Auto	Optimal Default,	
		Failsafe Default	
Enabling/Disabling PCI Express roo	t ports		

#### A E C - V S 0 1

#### Boot

Aptio Setup U Main Advanced Chipset B	tility – Copyright (C) 2011 America oot Security Save & Exit	an Megatrends, Inc.
Boot Configuration Quiet Boot Launch 8111E PXE OpROM	[Enabled] [Disabled]	Enables or disables Quiet Boot option
Boot Option Priorities Boot Option #1 Boot Option #2	[UEFI: JetFlashTran] [Disabled in BBS Order]	
Hard Drive BBS Priorities		
		++: Select Screen
		↑↓: Select Item Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Vancian 0.44	1949 - Requirest (R) - 9644 - American	Worstoorde Teo
VELSIUN 2.14	. 1219. Copyright (C) 2011 Hild Itali	negati chus, inc.

Quiet Boot	Disabled		
	Enabled	Default	
En/Disable showing boot logo.			
Launch 8111E PXE	Disabled	Default	
OpROM	Enabled		
En/Disable PXE boot for 8111E LAN			

#### Security

Aptio Setup U Main Advanced Chipset B	tility – Copyright (C) 2011 Americar oot Security Save & Exit	n Megatrends, Inc.
Password Description		Set Administrator Password
If ONLY the Administrator's then this only limits acces only asked for when enterin If ONLY the User's password is a power on password and boot or enter Setup. In Set have Administrator rights. The password length must be in the following range: Minimum length	password is set, s to Setup and is g Setup. is set, then this must be entered to up the User will 3	
Administrator Password User Password	20	<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>
Version 2-14	1219 Conuright (C) 2011 American k	lerateende Toe

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.

#### Save & Exit

Aptio Setup Utility – Copyright (C) 2011 American Main Advanced Chipset Boot Security <mark>Save &amp; Exit</mark>	Megatrends, Inc.
Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset	Exit system setup after saving the changes.
Save Options Save Changes Discard Changes	
Restore Defaults Save as User Defaults Restore User Defaults	
Boot Override UEFI: JetFlashTranscend 16GB 1.00 Disabled in BBS Order	++: Select Screen †4: Select Item Enter: Select +/-: Change Ont.
Launch EFI Shell from filesystem device	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C)_2011 American Me	egatrends, Inc.

# Chapter

### Driver Installation

Chapter 4 Driver Installation 4 - 1

The AEC-VS01 comes with a DVD-ROM that contains all drivers and utilities that meet your needs.

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

- Step 1 Install Chipset Driver
- Step 2 Install VGA Driver
- Step 3 Install LAN Driver
- Step 4 Install Audio Driver
- Step 5 Install AHCI Driver
- Step 6 Install Serial Port Driver (Optional)
- Step 7 Install PER-T263 Driver

#### 4.1 Installation:

Insert the AEC-VS01 DVD-ROM into the DVD-ROM drive, and then install the drivers from Step 1 to Step 7 in order.

Step 1 – Install Chipset Driver

- 1. Click on the **STEP1-CHIPEST** 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 2 Install VGA Driver

#### For Windows<sup>®</sup> 7

- Click on the STEP2-VGA folder and select the folder of WIN7\_32
- 2. Double click on the **Setup.exe** file
- 3. Follow the instructions that the window shows
- 4. The system will help you install the driver automatically

#### For Windows<sup>®</sup> XP

- Click on the STEP2-VGA folder and select the folder of WINXP\_32
- 2. Double click on the WindowsDriverSETUP.cmd
- 3. Follow the instructions that the window shows
- 4. The system will help you install the driver automatically

Embedded Controller		A E C - V S 0 1			
Ð			Ð	Ð	-
Documents	Driver	License	sdk	Utilities	WindowsDriverSETUP

Step 3 – Install LAN Driver

- 1. Click on the **STEP3-LAN** folder and select the OS folder your system is
- 2. Double click on the *setup.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 4 Install Audio Driver
  - 1. Click on the **STEP4-AUDIO** folder and select the OS folder your system is
  - 2. Double click on the **Setup.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 AHCI Driver

Please refer to Appendix D AHCI Settings

Step 6 – Install Serial Port Driver (Optional)

Chapter 4 Driver Installation 4 - 4

- 1. Click on the **STEP6-Serial Port Driver (Optional)** folder and select the OS folder your system is
- 2. Double click on the **Serial Patch v1.0.1\_Eng.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

<u>Note</u>: If the OS is Chinese version, you may click on *Serial Patch v1.0.1. exe* file located in each OS folder.

- Step 7 Install PER-T263 Driver
  - 1. Click on the **STEP7-PER-T263** 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

# Appendix A

## Programming the Watchdog Timer

Appendix A Programming the Watchdog Timer A-1

#### A.1 Programming

AEC-VS01 utilizes the ITE 8783 chipset as its watchdog timer 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.

#### **Configuring Sequence Description**

After the hardware reset or power-on reset, the ITE 8783 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit ) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) *Appendix A Programming the Watchdog Timer* A-2 Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

#### (1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write opera-tions to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

#### (2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

#### (3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

#### WatchDog Timer Configuration Registers
LDN	Index	R/W	Reset	Configuration Register or Action
All	02h	W	NA	Configure Control

07h	71h	R/W	00h	Watch Dog Timer Control Register
07h	72h	R/W	001s0000b	Watch Dog Timer Configuration Register
07h	73h	R/W	38h	Watch Dog Timer Time-out Value (LSB) Register
07h	74h	R/W	00h	Watch Dog Timer Time-out Value (MSB) Register

#### Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description	
7-2	Reserved	
1	Returns to the "Wait for Key" state. This bit is used when the configuration sequence is completed.	
0	Resets all logical devices and restores configuration registers to their power-on states.	

# Watch Dog Timer 1, 2, 3 Control Register (Index=71h,81h,91h Default=00h)

Bit	Description
7	WDT Timeout Enable(WTE)
	1: Disable.
	0: Enable.
6	WDT Reset upon Mouse Interrupt(WRKMI)
	0: Disable.
	1: Enable.
5	WDT Reset upon Keyboard Interrupt(WRKBI)
	0: Disable.
	1: Enable.
4	Reserved
3-2	Reserved
1	Force Time-out(FTO)
	This bit is self-clearing.
0	WDT Status(WS)
	1: WDT value reaches 0.
	0: WDT value is not 0.

#### Watch Dog Timer 1, 2, 3 Configuration Register (Index=72h,

Appendix A Programming the Watchdog Timer A-4

#### 82h, 92h Default=001s0000b)

Bit	Description
7	WDT Time-out Value Select 1 (WTVS)
	1: Second
	0: Minute
6	WDT Output through KRST (Pulse) Enable(WOKE)
	1: Enable
	0: Disable
5	WDT Time-out value Extra select(WTVES)
	1: 64ms x WDT Timer-out value (default = 4s)
	0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	WDT Output through PWROK (Pulse) Enable(WOPE)
	1: Enable
	0: Disable
	During LRESET#, this bit is selected by JP7 power-on strapping option
3-0	Select interrupt level Note1 for WDT(SIL)

#### Watch Dog Timer 1,2,3 Time-Out Value (LSB) Register

#### (Index=73h,83h,93h, Default=38h)

Bit	Description
7-0	WDT Time-out Value 7-0(WTV)

#### Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register

#### (Index=74h,84h,94h Default=00h)

Bit	Description
7-0	WDT Time-out Value 15-8(WTV)

#### A.2 ITE8783 Watchdog Timer Initial Program

.MODEL SMALL

.CODE

Main:

CALL Enter\_Configuration\_mode

CALL Check\_Chip

mov cl, 7

call Set\_Logic\_Device

;time setting

mov cl, 10 ; 10 Sec

dec al

Watch\_Dog\_Setting:

;Timer setting

mov al, cl

mov cl, 73h

call Superio\_Set\_Reg

;Clear by keyboard or mouse interrupt

mov al, 0f0h

mov cl, 71h

call Superio\_Set\_Reg

;unit is second.

mov al, 0C0H

mov cl, 72h

call Superio\_Set\_Reg ; game port enable mov cl, 9 call Set\_Logic\_Device

Initial\_OK: CALL Exit\_Configuration\_mode MOV AH,4Ch INT 21h

Enter\_Configuration\_Mode PROC NEAR MOV SI,WORD PTR CS:[Offset Cfg\_Port]

MOV DX,02Eh MOV CX,04h Init\_1: MOV AL,BYTE PTR CS:[SI] OUT DX,AL INC SI LOOP Init\_1 RET Enter\_Configuration\_Mode ENDP

Exit\_Configuration\_Mode PROC NEAR MOV AX,0202h

CALL Write\_Configuration\_Data

RET

Exit\_Configuration\_Mode ENDP

Check\_Chip PROC NEAR

MOV AL,20h CALL Read\_Configuration\_Data CMP AL,87h JNE Not Initial

MOV AL,21h CALL Read\_Configuration\_Data CMP AL,81h JNE Not\_Initial

Need\_Initial: STC RET Not\_Initial: CLC RET Check\_Chip ENDP Read\_Configuration\_Data PROC NEAR MOV DX,WORD PTR CS:[Cfg\_Port+04h]

Appendix A Programming the Watchdog Timer A-8

OUT DX,AL

MOV DX,WORD PTR CS:[Cfg\_Port+06h]

IN AL,DX

RET

Read\_Configuration\_Data ENDP

Write\_Configuration\_Data PROC NEAR

MOV DX,WORD PTR CS:[Cfg\_Port+04h]

OUT DX,AL

XCHG AL,AH

MOV DX,WORD PTR CS:[Cfg\_Port+06h]

OUT DX,AL

RET

Write\_Configuration\_Data ENDP

Superio\_Set\_Reg proc near

push ax

MOV DX,WORD PTR CS:[Cfg\_Port+04h]

mov al,cl

out dx,al

pop ax

inc dx

out dx,al

ret

Superio\_Set\_Reg endp.Set\_Logic\_Device proc near

A E C - V S 0 1

Set\_Logic\_Device proc near push ax push cx xchg al,cl mov cl,07h call Superio\_Set\_Reg pop cx pop ax ret Set\_Logic\_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port Cfg\_Port DB 087h,001h,055h,055h DW 02Eh,02Fh

#### END Main

.

Note: Interrupt level mapping 0Fh-Dh: not valid 0Ch: IRQ12

03h: IRQ3 02h: not valid 01h: IRQ1 00h: no interrupt selected

Appendix A Programming the Watchdog Timer A-10

# Appendix B

# I/O Information

#### A E C - V S 0 1

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

<u>الل</u> ار ، ا	Inp	ut/output (IO)	
	1 <b>P</b>	[00000000 - 0000001F]	Direct memory access controller
-	- <b>1</b>	[00000000 - 00000CF7]	PCI bus
-	- <b>1</b>	[00000010 - 0000001F]	Motherboard resources
	1 <b>P</b>	[00000020 - 00000021]	Programmable interrupt controller
-	<b>j</b>	[00000022 - 0000003F]	Motherboard resources
-	- <b>1</b>	[00000024 - 00000025]	Programmable interrupt controller
	- <b>1</b>	[0000028 - 0000029]	Programmable interrupt controller
-	<b>j</b>	[0000002C - 0000002D]	Programmable interrupt controller
	1 <b>P</b>	[0000002E - 0000002F]	Motherboard resources
	- <b>1</b>	[00000030 - 00000031]	Programmable interrupt controller
-	- <b>1</b>	[00000034 - 00000035]	Programmable interrupt controller
	-1	[00000038 - 00000039]	Programmable interrupt controller
-	-1	[0000003C - 0000003D]	Programmable interrupt controller
	- <b>1</b>	[00000040 - 00000043]	System timer
-	-1	[00000044 - 0000005F]	Motherboard resources
-	- <b>1</b>	[0000004E - 0000004F]	Motherboard resources
	1 <b>P</b>	[00000050 - 00000053]	System timer
-		[00000060 - 00000060]	Standard PS/2 Keyboard
	- <b>1</b>	[00000061 - 00000061]	Motherboard resources
-	- <b>1</b>	[00000062 - 00000063]	Motherboard resources
-	-1	[00000063 - 00000063]	Motherboard resources
-		[00000064 - 00000064]	Standard PS/2 Keyboard
-	-1	[00000065 - 00000065]	Motherboard resources
	-1	[00000065 - 0000006F]	Motherboard resources
-	-1	[00000067 - 00000067]	Motherboard resources
-	-1	[00000070 - 00000070]	Motherboard resources
-	-1	[00000070 - 00000077]	System CMOS/real time clock
-	1 <b>-</b>	[00000072 - 0000007F]	Motherboard resources
	-15	[00000080 - 00000080]	Motherboard resources
ŀ	-15	[00000080 - 00000080]	Motherboard resources
	-15	[00000081 - 00000091]	Direct memory access controller
-	-15	[00000084 - 00000086]	Motherboard resources
	-12	[00000088 - 00000088]	Motherboard resources
-	-12	[000008C - 000008E]	Motherboard resources
	-12	[00000090 - 0000009F]	Motherboard resources
	-12	[00000092 - 00000092]	Motherboard resources
-	-12	[00000093 - 0000009F]	Direct memory access controller
	-12	[000000A0 - 000000A1]	Programmable interrupt controller
1	-15	[000000A2 - 000000BF]	Notherboard resources
	-15	[000000A4 - 000000A5]	Programmable interrupt controller
1	-15	[00000A8 - 000000A9]	Programmable Interrupt controller
	-12	[000000AC - 000000AD	Programmable interrupt controller
	-12	[00000080 - 00000081]	Programmable interrupt controller
	-19	[000000B2 - 000000B3]	Motherboard resources
	-12	[UUUUUUB4 - UUUUUUB5]	Programmable interrupt controller
	-12	[000000B8 - 000000B9]	Programmable interrupt controller
	-12	[000000C - 000000BD]	Programmable interrupt controller
ŀ	-1 <b>-</b>	[000000C0 - 000000DF]	Direct memory access controller

Appendix B I/O Information B - 2

#### A E C - V S 0 1

	[000000E0 - 000000EF] Motherboard resources
	[000000F0 - 000000F0] Numeric data processor
👕	[000002E0 - 000002E7] Communications Port (COM6)
	[000002E8 - 000002EF] Communications Port (COM4)
	[000002F0 - 000002F7] Communications Port (COM5)
	[000002F8 - 000002FF] Communications Port (COM2)
	[00000378 - 0000037F] Printer Port (LPT1)
	[000003B0 - 000003BB] Intel(R) Graphics Media Accelerator 3600 Series
	[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3600 Series
👎	[000003E8 - 000003EF] Communications Port (COM3)
🖓	[000003F8 - 000003FF] Communications Port (COM1)
	[00000400 - 0000047F] Motherboard resources
	[00000400 - 0000047F] Motherboard resources
	[000004D0 - 000004D1] Motherboard resources
	[000004D0 - 000004D1] Programmable interrupt controller
<b>j</b>	[00000500 - 0000053F] Motherboard resources
<b>j</b>	[00000500 - 0000057F] Motherboard resources
<b>1</b>	[00000600 - 0000061F] Motherboard resources
	[00000680 - 0000069F] Motherboard resources
( <b>L</b>	[000006A0 - 000006AF] Motherboard resources
( <b>L</b>	[000006B0 - 000006EF] Motherboard resources
j 🖳	[00000A00 - 00000A1F] Motherboard resources
, <b>I</b>	[00000A20 - 00000A2F] Motherboard resources
( <b>L</b>	[00000A30 - 00000A3F] Motherboard resources
	[00000D00 - 0000FFFF] PCI bus
1 <u>P</u>	[00001000 - 0000100F] Motherboard resources
····	[0000D000 - 0000D0FF] Realtek PCIe GBE Family Controller #2
1 <u>P</u>	[0000D000 - 0000DFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
···· 😰	[0000E000 - 0000E0FF] Realtek PCIe GBE Family Controller
1 <b>P</b>	[0000E000 - 0000EFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
1 <b>P</b>	[0000F000 - 0000F01F] Intel(R) N10/ICH7 Family SMBus Controller - 27DA
	[0000F020 - 0000F02F] Intel(R) NM10 Express Chipset
···· 🖳	[0000F040 - 0000F05F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
···· 🖳	[0000F060 - 0000F07F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
📱	[0000F080 - 0000F09F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
···· 🛡	[0000F0A0 - 0000F0BF] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
	[0000F0C0 - 0000F0C3] Intel(R) NM10 Express Chipset
	[0000F0D0 - 0000F0D7] Intel(R) NM10 Express Chipset
	[0000F0E0 - 0000F0E3] Intel(R) NM10 Express Chipset
	[0000F0F0 - 0000F0F7] Intel(R) NM10 Express Chipset
-	[0000F100 - 0000F107] Intel(R) Graphics Media Accelerator 3600 Series
1 <u>1</u>	[0000FFFF - 0000FFFF] Motherboard resources
<u>ı</u>	[0000FFFF - 0000FFFF] Motherboard resources

#### B.2 1<sup>st</sup> MB Memory Address Map

A I Memory
Image:
[00000000 - 00000FFF] Motherboard resources
I [00000000 - 00003FFF] Motherboard resources
[000A0000 - 000BFFFF] Intel(R) Graphics Media Accelerator 3600 Series
1000A0000 - 000BFFFF] PCI bus
1000C0000 - 000DFFFF] PCI bus
1000E0000 - 000EFFFF] PCI bus
1000F0000 - 000FFFFF] PCI bus
🚛 [3F800000 - 3FFFFFF] PCI bus
140000000 - FEBFFFFF] PCI bus
🖳 [DFC00000 - DFCFFFFF] Intel(R) Graphics Media Accelerator 3600 Series
[DFD00000 - DFD03FFF] Realtek PCIe GBE Family Controller #2
[DFD00000 - DFDFFFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
[DFD04000 - DFD04FFF] Realtek PCIe GBE Family Controller #2
[DFE00000 - DFE03FFF] Realtek PCIe GBE Family Controller
📲 [DFE00000 - DFEFFFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
📲 [DFE04000 - DFE04FFF] Realtek PCIe GBE Family Controller
🏺 [DFF05000 - DFF053FF] Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
IFED1C000 - FED1FFFF] Motherboard resources
📲 [FED20000 - FED8FFFF] Motherboard resources
📲 [FF000000 - FFFFFFF] Intel(R) 82802 Firmware Hub Device
📲 [FF000000 - FFFFFFFF] Intel(R) 82802 Firmware Hub Device
IFFC00000 - FFFFFFF] Motherboard resources

#### A E C - V S 0 1

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

Interrupt request (IRO)	
	System timer
(ISA) 0x0000000 (00)	Standard DS/2 Keyboard
(ISA) 0x00000001 (01)	Communications Port (COM2)
(ISA) 0x00000003 (03)	Communications Port (COM1)
(ISA) 0x00000005 (05)	Communications Port (COM5)
(ISA) 0x00000007 (07)	Communications Port (COM6)
(ISA) 0x0000008 (08)	System CMOS/real time clock
(ISA) 0x0000000A (10)	Communications Port (COM3)
(ISA) 0x0000000B (11)	Communications Port (COM4)
(ISA) 0x000000C (12)	Microsoft PS/2 Mouse
(ISA) 0x0000000D (13)	Numeric data processor
(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
(ISA) 0x0000053 (83)	Microsoft ACPI-Compliant System
(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
(ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
👰 (ISA) 0x000005C (92)	Microsoft ACPI-Compliant System
—🜉 (ISA) 0x000005D (93)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
🖳 (ISA) 0x000005F (95)	Microsoft ACPI-Compliant System
- 🖳 (ISA) 0x0000060 (96)	Microsoft ACPI-Compliant System
🖳 (ISA) 0x0000061 (97)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x0000063 (99)	Microsoft ACPI-Compliant System
(ISA) 0x0000064 (100)	Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
(ISA) 0x0000008 (104)	Microsoft ACPI-Compliant System
(ISA) 0x00000060 (IOS)	Microsoft ACPI-Compliant System
(ISA) 0x000000A (100)	Microsoft ACPI-Compliant System
(ISA) 0x0000006C (107)	Microsoft ACPI-Compliant System
(ISA) 0x0000000C (100)	Microsoft ACPI-Compliant System
(ISA) 0x00000000 (103)	Microsoft ACPI-Compliant System
(ISA) 0x000000E (111)	Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
(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) 0x0000077 (119)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
🖳 (ISA) 0x000007A (122)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	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)	Wicrosoft ACPI-Compliant System
:	iviicrosoft ACPI-Compliant System

	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 (I36)	Microsoft ACPI-Compliant System
(ISA) 0.00000000 (130)	Microsoft ACPI-Compliant System
(ISA) 0.00000009 (IS7)	Microsoft ACPI-Compliant System
(ISA) 0x000008A (IS8)	Microsoft ACPI-Compliant System
(ISA) 0x000008B (139)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
(ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System
(ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
(ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
(ISA) 0v0000097 (151)	Microsoft ACPI-Compliant System
(ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
(ISA) 0x00000000 (153)	Microsoft ACPI-Compliant System
(ISA) 0x0000000A (154)	Microsoft ACPI-Compliant System
(ISA) 0x0000005A (ISA)	Microsoft ACPI Compliant System
(ISA) 0.00000038 (ISS)	Microsoft ACPI-Compliant System
(ISA) 0x0000009C (ISO)	Microsoft ACPI-Compliant System
(ISA) 0x00000000 (IS7)	Microsoft ACPI-Compliant System
(ISA) 0x000009E (ISA)	Microsoft ACPI-Compliant System
(ISA) 0x000009F (IS9)	Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
	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) 0x00000B3 (179)	Microsoft ACPI-Compliant System
(ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
(ISA) 0x00000B5 (181)	Microsoft ACPI-Compliant System
(ISA) 0x00000000 (101)	Microsoft ACPI Compliant System
(ISA) 0,0000000 (102)	Microsoft ACPI-Compliant System
(ISA) 0x00000B7 (ISA)	Microsoft ACPI-Compliant System
(ISA) 0x00000088 (184)	Microsoft ACPI-Compliant System
(ISA) 0x000000B4 (185)	Microsoft ACPI-Compliant System
(ISA) 0x00000BB (186)	Mission ACPI-Compliant System
(ISA) 0X00000BB (187)	Wilcrosoft ACPI-Compliant System
(ISA) 0x00000BC (188)	iviicrosoft ACPI-Compliant System
(ISA) 0x00000BD (189)	Microsoft ACPI-Compliant System
(ISA) 0x00000BE (190)	Microsoft ACPI-Compliant System

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

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

Appendix B I/O Information B - 6

#### A E C - V S 0 1



### **Digital I/O**

#### C.1 Digital I/O

The F75111 provides one serial access interface, I2C Bus, to read/write internal registers. The address of Serial Bus is 0x6E (0110\_1110)

The related register for configuring DIO is list as follows:

#### **Configuration and Control Register-Index 01h**

Power-on default [7:0]=0000\_1000b

Bit	Name	R/W	PWR	Description
7	INIT	R/W	VSB3V	Software reset for all registers including Test Mode registers. Users use only.
6	Reserved	R/W	VSB3V	
5	EN_WDT10	R/W	VSB3V	Enable Reset Out. If set to 1, enable WDTOUT10# output. Default is disable.
4	Reserved	R/W	VSB3V	
3	Reserved	R/W	VSB3V	
2	Reserved	R/W	VSB3V	
1	SMART_P OWR_MAG EMENT	R/W	VSB3V	Set this bit to 1 will enable auto power down mode, when all function are idle then 20ms the chip will auto power down, it will wakeup when GPIO state change or read write register
0	SOFT_PO WR_DOW N	R/W	VSB3V	Set this bit to 1 will power down all of the analog block and stop internal clock, write 0 to clear this bit or when GPIO state change will auto clear this bit to 0.

#### A E C - V S 0 1

#### GPIO2x Output Control Register-Index 20h

Power-on default [7:0]=0000\_0000b

Bit	Name	R/W	PWR	Description
7	GP27_OCT RL	R/W	VSB3V	GPIO 27 output control. Set to 1 for output function. Set to 0 for input function (default).
6	GP26_OCT RL	R/W	VSB3V	GPIO 26 output control. Set to 1 for output function. Set to 0 for input function (default).
5	GP25_OCT RL	R/W	VSB3V	GPIO 25 output control. Set to 1 for output function. Set to 0 for input function (default).
4	GP24_OCT RL	R/W	VSB3V	GPIO 24 output control. Set to 1 for output function. Set to 0 for input function (default).
3	GP23_OCT RL	R/W	VSB3V	GPIO 23 output control. Set to 1 for output function. Set to 0 for input function (default).
2	GP22_OCT RL	R/W	VSB3V	GPIO 22 output control. Set to 1 for output function. Set to 0 for input function (default).
1	GP21_OCT RL	R/W	VSB3V	GPIO 21 output control. Set to 1 for output function. Set to 0 for input function (default).
0	GP20_OCT RL	R/W	VSB3V	GPIO 20 output control. Set to 1 for output function. Set to 0 for input function (default).

#### GPIO2x Output Data Register-Index 21h

Bit	Name	R/W	PWR	Description
7	GP27_ODA TA	R/W	VSB3V	GPIO 27 output data.
6	GP26_ODA TA	R/W	VSB3V	GPIO 26 output data.
5	GP25_ODA TA	R/W	VSB3V	GPIO 25 output data.

Power-on default [7:0]=0000\_0000b

4	GP24_ODA TA	R/W	VSB3V	GPIO 24 output data.
3	GP23_ODA TA	R/W	VSB3V	GPIO 23 output data.
2	GP22_ODA TA	R/W	VSB3V	GPIO 22 output data.
1	GP21_ODA TA	R/W	VSB3V	GPIO 21 output data.
0	GP20_ODA TA	R/W	VSB3V	GPIO 20 output data.

#### GPIO2x Input Status Register-Index 22h

Bit	Name	R/W	PWR	Description
7	GP27_PST S	RO	VSB3V	Read the GPIO27 data on the pin.
6	GP26_PST S	RO	VSB3V	Read the GPIO26 data on the pin.
5	GP25_PST S	RO	VSB3V	Read the GPIO25 data on the pin.
4	GP24_PST S	RO	VSB3V	Read the GPIO24 data on the pin.
3	GP23_PST S	RO	VSB3V	Read the GPIO23 data on the pin.
2	GP22_PST S	RO	VSB3V	Read the GPIO22 data on the pin.
1	GP21_PST S	RO	VSB3V	Read the GPIO21 data on the pin.
0	GP20_PST S	RO	VSB3V	Read the GPIO20 data on the pin.

Power-on default [7:0]=xxxx\_xxxb

The following is a sample code for 8 input

.MODEL SMALL

.CODE

begin:

mov	cl,01h
mov	al,80h
call	CT_I2CWriteByte
call	Delay5ms

#### moval,00h

mov	cl,20h
-----	--------

- call CT\_I2CWriteByte
- mov cl,22h
- call CT\_I2CReadByte
- ;Input : CL register index

	СН -	device ID
,	011-	uevice ID

;Output : AL - Value read

Ct_I2CReadByte		Proc	Near	
	mov	ch,06eh		
mov		dx, 0f000h + 00h ; Host Control Register		
	mov	al, Of	ffh	; Clear previous
commands				
	out	dx, al		

Emb	edded	Controller	A E C - V S 0 1	
	call	Delay5ms		
Register	mov	dx, 0f000h +	04h ; Transmit Slave Address	
- 3	inc	ch	; Set the slave address and	
	mov	al, ch	; prepare for a READ command	
	out	dx, al		
	mov	dx, 0f000h +	03h ; Host Command Register	
	mov	al, cl	; offset to read	
	out	dx, al		
	mov	dx, 0f000h + 05l	1	
	xor	al, al ; Clear old data		
	out	dx, al		
	mov	dx, 0f000h +	02h ; Host Control Reegister	
	mov	al, 48h ; S	start a byte access	
	out	dx, al		
		OT CHE SMRU	Poodu	
	mov		05b	
	in	al dx		
		и, ил		

ret

Embe	dded	Controller		A E C - V S 0 1
Ct_I2CRead	Byte	Endp		
;Input : CL -	registe	r index		
; CH	- device	e ID		
; AL -	Value	to write		
;Output: non	e			
Ct I2CWrite	Byte	Proc Near		
01_12011110	mov	ch 06eh		
	xcha	ah al		
	mov	dx 0f000h +	00h · Host	Control Register
r	nov	al Offh	0011,11001	· Clear previous
commands	110 V			, oldar previous
C	out	dx, al		
	call	Delay5ms		
Pogistor	mov	dx, 0f000h +	04h	; Transmit Slave Address
Register	mov	al, ch	; Set t	he slave address and
	out	dx, al		; prepare for a WRITE
command				
	mov	dx, 0f000h +	03h	; Host Command Register
	mov	al, cl		; offset to write

A E C - V S 0 1

	out	dx, al	
	mov	dx, 0f000h +	05h
	mov	al, ah	
0	ut	dx, al	
	mov	dx, 0f000ł	+ 00h ; Host Control Register
	mov	al, 48h	; Start a byte access
	out	dx, al	
	call	CT_Chk_SM	Bus_Ready
	ret		
Ct_I2CWrite	Byte	Endp	
; Wait until th	e busy	bit clears, ind	icating that the SMBUS
; activity has	conclu	ded.	
CT_Chk_SM	Bus_R	eady Proc	Near
	mov	dx,0f000h+ 0	;status port
	clc		
	mov	cx,0800h	
Chk_I2c_OK	:		
	in	al,dx	;get status
	call	Delay5ms	
•			

A E C - V S 0 1

	out	dx al	clear status
		DolovEmo	
	Call	Delayonis	
	test	al, 02H	;termination of command ?
	jnz	short Clear_final	
	and	al, NOT 40H ;mask INUSE bit	
	or	al,al	;status OK ?
	jz	short Clear_final	
	test	al,04h	;device error
	jnz	short SMBus_Err	
	loop	short Chk_I2	c_OK
;SMbus error due to timeout			
SMBus Err:			
—			
	stc		
	ret		
Clear final:	101		
	CIC		
	ret		

CT\_Chk\_SMBus\_Ready Endp

END begin

# Appendix

## **AHCI** Setting

#### **D.1 Setting AHCI**

OS installation to setup AHCI Mode.

Step 1: Copy the files below from "Driver CD -> STEP5-AHCI\WIN7\_32\F6

#### Install Floppy Create for 32 and 64 bit Windows" to Disk









#### Step 2: Connect the USB Floppy to the board



#### Step 3: Setup OS



Step 4: Press "F6"



#### Step 5: Choose "S"



Step 6: Choose "Intel(R) NM10 Express Chipset"



Appendix D AHCI Setting D-4

Step 7: It will show the model number you select and then press "ENTER Step 8: Setup is loading files

