

COM-KB

COM Express Module

User's Manual 2nd Ed

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● COM-KB	1
● M2.5 screws	5
● Product DVD with User's Manual (in pdf) and drivers	1

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

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - iv. Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device
18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

Warning!



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.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	○	○	○	○	○	○
外部信号 连接器及线材	○	○	○	○	○	○

○: 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: 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。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	○	○	○	○	○	○
Wires & Connectors for External Connections	○	○	○	○	○	○
<p>O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.</p> <p>X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.</p> <p>Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p>						

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Chapter 1

Product Specifications

1.1 Specifications

System

- **Form Factor** COM Express Basic module, Pin-out Type 6, COM. 0 Rev. 2.1
- **CPU** AMD Embedded G-series SoC APU
- **CPU Frequency** Quad (2 GHz), Dual (1.6 GHz)
- **Chipset** AMD® Embedded G-Series SoC
AMD GX-420CA SoC with AMD Radeon™ HD 8400E Graphics(Quad)
GX-217GA SoC with AMD Radeon™ HD 8280E Graphics (Dual)
- **Memory Type** DDR3/DDR3L 1333/1600, SODIMM x 1
- **Max Memory Capacity** 8 GB
- **BIOS** AMI BIOS
- **Wake On LAN** Yes
- **Watchdog Timer** 255 Levels
- **Power Requirement** Nominal: +12V,
Optional: +8.5V ~ +19V
- **Power Supply Type** AT/ATX
- **Power Consumption (Typical)** AMD GX-420CA 2.0GHz, 8GB memory, 100% load, 1.2A@12V
- **Dimensions (L x W)** 95 x 95 mm (3.74 x 3.74")
- **Operating Temperature** 0 ~ 60°C (32 ~ 140°F)

- **Storage Temperature** -40 ~ 80°C (-40 ~ 176°F)
- **Operation Humidity** 0 ~ 90% relative humidity, non-condensing
- **MTBF** 80,000
- **Certification** CE/FCC Class A

Display

- **VGA/LCD Controller** AMD® eKabini integrated
- **Video Output** CRT, 24-bit dual channel LVDS (24 x 2), eDP/LVDS (18 x 1), DDI x 2

I/O

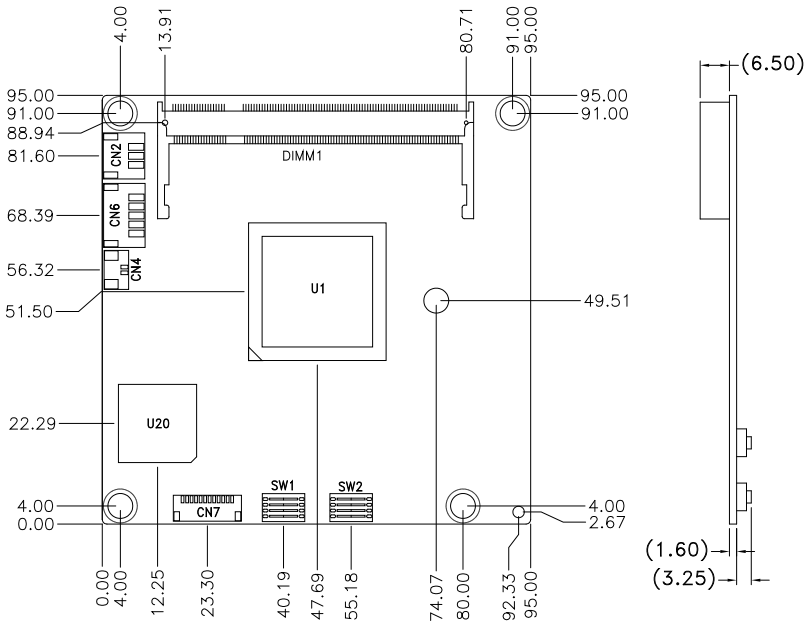
- **Ethernet** Realtek® 8111E, Gigabit Ethernet
- **Audio** HD audio
- **USB** USB 3.0 x 2, USB 2.0 x 8
- **Serial Port** 2-wire UART (Tx/Rx) x 2
- **HDD Interface** SATA x 2
- **Onboard SSD** -
- **Expansion Slot** PCI-Express [x1] x 5
LPC bus x 1
SMBus x 2
PCI-Express[x4] x 1 (PEG)
- **DI/O** GPIO 8-bit
- **TPM** -

Chapter 2

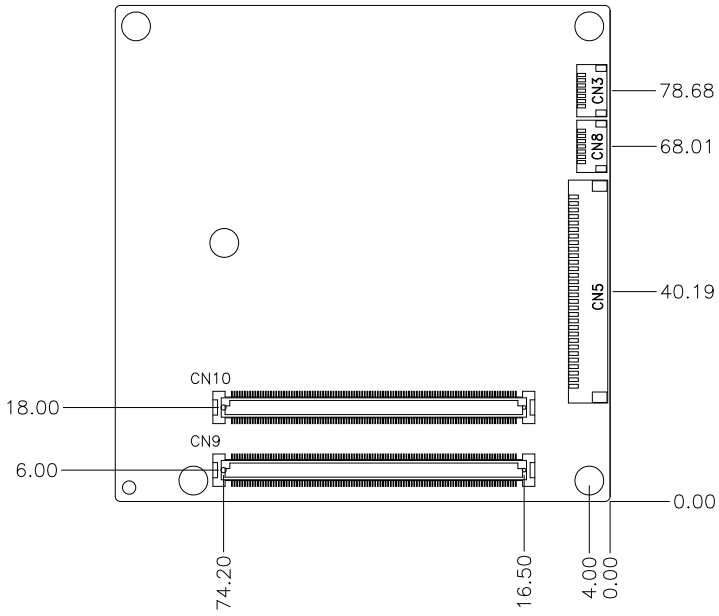
Hardware Information

2.1 Dimensions, Jumpers and Connectors

Component Side



Solder Side



2.2 List of Jumpers

Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
SW1	DP0 selection/DP1 selection
SW2	Power type selection/RTC Clear/DDR3 Voltage

2.2.1 DP0 (DDI1) Selection/DP1 (DDI2) Selection (SW1)

DP0

Function	1	2
DP	Off	Off
HDMI/DVI	Off	On
eDP	On	Off
18 bit Single CH LVDS	On	On

DP1

Function	3	4
CH7511B (24 bit dual CH LVDS)	Off	Off
DP	On	Off
HDMI/DVI	On	On

2.2.2 Power Type Selection/RTC Clear/DDR3 Voltage Selection/LVDS Backlight Selection (SW2)

SW2	Function
1 On	ATX (Default)
1 Off	AT
2 On	RTC Clear
2 Off	RTC reserved (Default)
3 On	DDR3 +1.35V (Default)
3 Off	DDR3 +1.5V
4 On	18BIT LVDS PWM Control Backlight
4 Off	18BIT LVDS Voltage Control Backlight (Default)

2.3 List of Connectors

Label	Function
CN1	AMD Debug Connector
CN2	FAN Connector
CN3	SPI BIOS Program Connector
CN4	Battery Connector
CN5	EDP/LVDS Connector
CN6	LVDS Backlight Connector
CN7	LPC Connector
CN8	SPI EC Program Connector
CN9	ROW_AB Connector
CN10	ROW_CD Connector
DIMM1	DDR3 SODIMM Connector

2.3.1 AMD Debug Connector (CN1)

Reserved for advanced debug

2.3.2 FAN connector (CN2)

Pin	Signal
1	FAN_TACH0
2	FAN POWER (+12V)
3	GND

2.3.3 SPI BIOS Program connector (CN3)

Pin	Signal
1	SPI_DATAIN_F
2	GND
3	SPI_CLK_F
4	+3V3_SPI
5	SPI_DATAOUT_F
6	SPI_CS#_F
7	NC

2.3.4 Battery Connector (CN4)

Pin	Signal
1	+3V From battery
2	GND

2.3.5 EDP/18BIT LVDS Connector (CN5)

Pin	Signal
1	+3.3V with Fuse
2	+3.3V with Fuse
3	GND
4	GND
5	EDP_TX2_N (18BIT LVDS: L0N)
6	EDP_TX2_P (18BIT LVDS: L0P)
7	GND

8	EDP_TX1_N (18BIT LVDS: L1N)
9	EDP_TX1_P (18BIT LVDS: L1P)
10	GND
11	EDP_TX0_N (18BIT LVDS: L2N)
12	EDP_TX0_P (18BIT LVDS: L2P)
13	GND
14	EDP_TX3_N (18BIT LVDS: CLKN)
15	EDP_TX3_P (18BIT LVDS: CLKP)
16	GND
17	EDP_AUX_N (18BIT LVDS: NC)
18	EDP_AUX_P (18BIT LVDS: NC)
19	GND
20	PWM
21	VOL_CON
22	BLON
23	EDP_HPD
24	GND
25	GND
26	GND
27	+12V with Fuse
28	+12V with Fuse
29	+12V with Fuse
30	+12V with Fuse

2.3.6 18BIT LVDS Connector (CN6)

Pin	Signal
1	+12V with Fuse

2	VOL_PWM (SW2 POS 4)
3	GND
4	GND
5	BLON

2.3.7 LPC Connector (CN7)

Pin	Signal
1	LPC AD0
2	LPC AD1
3	LPC AD2
4	LPC AD3
5	+3.3V
6	LPC FRAME#
7	LPC_RST#
8	GND
9	LPC CLK1
10	LPC DRQ0
11	NC
12	SERIRQ

2.3.8 SPI EC Program connector (CN8)

Pin	Signal
1	FMISO_F
2	GND
3	FSCK_F
4	+3V3_EC

5	FMOSI_F
6	FSCE#_F
7	NC

2.3.9 ROW_AB connector (CN9)

Row A	Type 6 Rev. 2.1	Row B	Type 6 Rev. 2.1
A1	GND	B1	GND
A2	GBE0_MDI3-	B2	GBE0_ACT#
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LNIK100#	B4	LPC_AD0
A5	GBE0_LNIK1000#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	GBE0_LINK#	B8	LPC_DRQ0#
A9	GBE0_MDI1-	B9	LPC_DRQ1#
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND	B11	GND
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CK
A14	GBE0_CTREF	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-

A21	GND	B21	GND
A22	NC	B22	NC
A23	NC	B23	NC
A24	SUS_S5#	B24	PWR_OK
A25	NC	B25	NC
A26	NC	B26	NC
A27	BATLOW#	B27	WDT
A28	(S)ATA_ACT#	B28	HDA_SDIN2
A29	HDA_SYNC	B29	HDA_SDIN1
A30	HDA_RST#	B30	HDA_SDIN0
A31	GND	B31	GND
A32	HDA_BITCLK	B32	SPKR
A33	HDA_SDOOUT	B33	I2C_CK
A34	BIOS_DIS0#	B34	I2C_DAT
A35	THRMTRIP#	B35	THRM#
A36	USB6-	B36	USB7-
A37	USB6+	B37	USB7+
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND	B41	GND
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-
A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	EXCD1_PERST#

A48	EXCD0_PERST#	B48	EXCD1_CPPE#
A49	EXCD0_CPPE#	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND	B51	GND
A52	NC	B52	NC
A53	NC	B53	NC
A54	GPI0	B54	GPO1
A55	PCIE_TX4+	B55	PCIE_RX4+
A56	PCIE_TX4-	B56	PCIE_RX4-
A57	GND	B57	GPO2
A58	PCIE_TX3+	B58	PCIE_RX3+
A59	PCIE_TX3-	B59	PCIE_RX3-
A60	GND	B60	GND
A61	PCIE_TX2+	B61	PCIE_RX2+
A62	PCIE_TX2-	B62	PCIE_RX2-
A63	GPI1	B63	GPO3
A64	PCIE_TX1+	B64	PCIE_RX1+
A65	PCIE_TX1-	B65	PCIE_RX1-
A66	GND	B66	WAKE0#
A67	GPI2	B67	WAKE1#
A68	PCIE_TX0+	B68	PCIE_RX0+
A69	PCIE_TX0-	B69	PCIE_RX0-
A70	GND	B70	GND
A71	LVDS_A0+	B71	LVDS_B0+
A72	LVDS_A0-	B72	LVDS_B0-
A73	LVDS_A1+	B73	LVDS_B1+
A74	LVDS_A1-	B74	LVDS_B1-

A75	LVDS_A2+	B75	LVDS_B2+
A76	LVDS_A2-	B76	LVDS_B2-
A77	LVDS_VDD_EN	B77	LVDS_B3+
A78	LVDS_A3+	B78	LVDS_B3-
A79	LVDS_A3-	B79	LVDS_BKLT_EN
A80	GND	B80	GND
A81	LVDS_A_CK+	B81	LVDS_B_CK+
A82	LVDS_A_CK-	B82	LVDS_B_CK-
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY
A85	GPI3	B85	VCC_5V_SBY
A86	RSVD	B86	VCC_5V_SBY
A87	RSVD	B87	VCC_5V_SBY
A88	PCIE_CLK_REF+	B88	BIOS_DIS1#
A89	PCIE_CLK_REF-	B89	VGA_RED
A90	GND	B90	GND
A91	SPI_POWER	B91	VGA_GRN
A92	SPI_MISO	B92	VGA_BLU
A93	GPO0	B93	VGA_HSYNC
A94	SPI_CLK	B94	VGA_VSYNC
A95	SPI_MOSI	B95	VGA_I2C_CK
A96	TPM_PP	B96	VGA_I2C_DAT
A97	TYPE10#	B97	SPI_CS#
A98	SER0_TX	B98	RSVD
A99	SER0_RX	B99	RSVD
A100	GND	B100	GND
A101	SER1_TX	B101	FAN_PWMOUT

A102	SER1_RX	B102	FAN_TACHIN
A103	LID#	B103	SLEEP#
A104	VCC_12V	B104	VCC_12V
A105	VCC_12V	B105	VCC_12V
A106	VCC_12V	B106	VCC_12V
A107	VCC_12V	B107	VCC_12V
A108	VCC_12V	B108	VCC_12V
A109	VCC_12V	B109	VCC_12V
A110	GND	B110	GND

2.3.10 ROW_CD connector (CN10)

Row C	Type 6 Rev. 2.1	Row D	Type 6 Rev. 2.1
C1	GND	D1	GND
C2	GND	D2	GND
C3	USB_SSRX0-	D3	USB_SSTX0-
C4	USB_SSRX0+	D4	USB_SSTX0+
C5	GND	D5	GND
C6	USB_SSRX1-	D6	USB_SSTX1-
C7	USB_SSRX1+	D7	USB_SSTX1+
C8	GND	D8	GND
C9	NC	D9	NC
C10	NC	D10	NC
C11	GND	D11	GND
C12	NC	D12	NC
C13	NC	D13	NC
C14	GND	D14	GND

C15	NC	D15	DDI1_CTRLCLK_AUX+
C16	NC	D16	DDI1_CTRLDATA_AUX-
C17	RSVD	D17	RSVD
C18	RSVD	D18	RSVD
C19	NC	D19	NC
C20	NC	D20	NC
C21	GND	D21	GND
C22	NC	D22	NC
C23	NC	D23	NC
C24	DDI1_HPD	D24	RSVD
C25	NC	D25	RSVD
C26	NC	D26	DDI1_PAIR0+
C27	RSVD	D27	DDI1_PAIR0-
C28	RSVD	D28	RSVD
C29	NC	D29	DDI1_PAIR1+
C30	NC	D30	DDI1_PAIR1-
C31	GND	D31	GND
C32	DDI2_CTRLCLK_AUX+	D32	DDI1_PAIR2+
C33	DDI2_CTRLDATA_AUX-	D33	DDI1_PAIR2-
C34	DDI2_DDC_AUX_SEL	D34	DDI1_DDC_AUX_SEL
C35	RSVD	D35	RSVD
C36	NC	D36	DDI1_PAIR3+
C37	NC	D37	DDI1_PAIR3-
C38	NC	D38	RSVD
C39	NC	D39	DDI2_PAIR0+
C40	NC	D40	DDI2_PAIR0-
C41	GND	D41	GND

C42	NC	D42	DDI2_PAIR1+
C43	NC	D43	DDI2_PAIR1-
C44	NC	D44	DDI2_HPD
C45	RSVD	D45	RSVD
C46	NC	D46	DDI2_PAIR2+
C47	NC	D47	DDI2_PAIR2-
C48	RSVD	D48	RSVD
C49	NC	D49	DDI2_PAIR3+
C50	NC	D50	DDI2_PAIR3-
C51	GND	D51	GND
C52	PEG_RX0+	D52	PEG_TX0+
C53	PEG_RX0-	D53	PEG_TX0-
C54	NC	D54	PEG_LANE_RV#
C55	PEG_RX1+	D55	PEG_TX1+
C56	PEG_RX1-	D56	PEG_TX1-
C57	NC	D57	GND
C58	PEG_RX2+	D58	PEG_TX2+
C59	PEG_RX2-	D59	PEG_TX2-
C60	GND	D60	GND
C61	PEG_RX3+	D61	PEG_TX3+
C62	PEG_RX3-	D62	PEG_TX3-
C63	RSVD	D63	RSVD
C64	RSVD	D64	RSVD
C65	NC	D65	NC
C66	NC	D66	NC
C67	RSVD	D67	GND
C68	NC	D68	NC

C69	NC	D69	NC
C70	GND	D70	GND
C71	NC	D71	NC
C72	NC	D72	NC
C73	GND	D73	GND
C74	NC	D74	NC
C75	NC	D75	NC
C76	GND	D76	GND
C77	RSVD	D77	RSVD
C78	NC	D78	NC
C79	NC	D79	NC
C80	GND	D80	GND
C81	NC	D81	NC
C82	NC	D82	NC
C83	RSVD	D83	RSVD
C84	GND	D84	GND
C85	NC	D85	NC
C86	NC	D86	NC
C87	GND	D87	GND
C88	NC	D88	NC
C89	NC	D89	NC
C90	GND	D90	GND
C91	NC	D91	NC
C92	NC	D92	NC
C93	GND	D93	GND
C94	NC	D94	NC
C95	NC	D95	NC

C96	GND	D96	GND
C97	RSVD	D97	RSVD
C98	NC	D98	NC
C99	NC	D99	NC
C100	GND	D100	GND
C101	NC	D101	NC
C102	NC	D102	NC
C103	GND	D103	GND
C104	VCC_12V	D104	VCC_12V
C105	VCC_12V	D105	VCC_12V
C106	VCC_12V	D106	VCC_12V
C107	VCC_12V	D107	VCC_12V
C108	VCC_12V	D108	VCC_12V
C109	VCC_12V	D109	VCC_12V
C110	GND	D110	GND

2.3.11 DDR3 SODIMM Connector (DIMM1)

Standard DDR3 SODIMM Connector

Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The board uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will 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:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press or <ESC> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Enable/ Disable boot option for legacy network devices

Chipset – For hosting bridge parameters

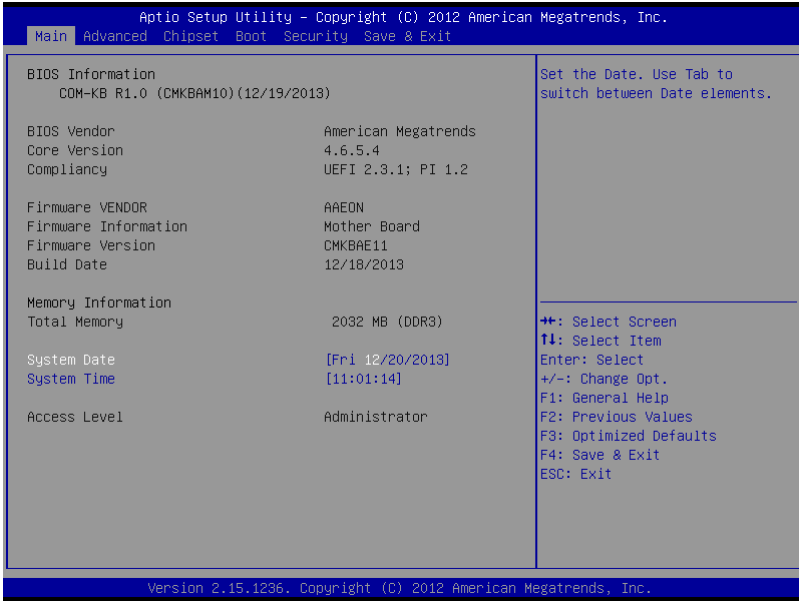
Boot – Enable/ Disable quiet Boot Option

Security – The setup administrator password can be set here

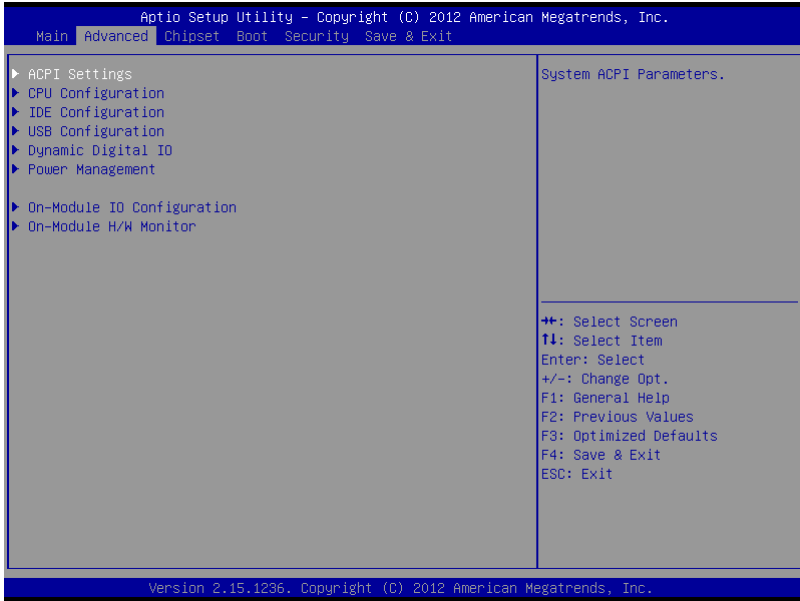
Save & Exit – Save your changes and exit the program

3.3 Setup submenu: Main

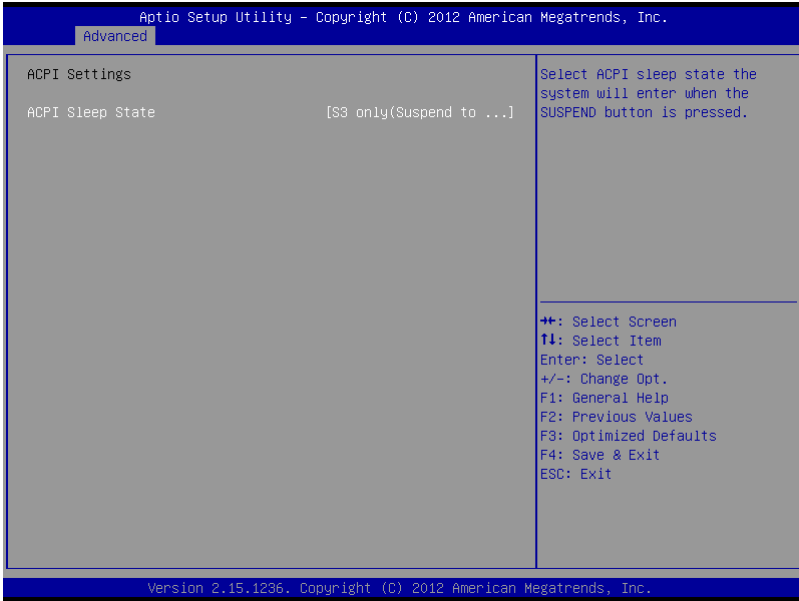
Press **Delete** to enter Setup



3.4 Setup submenu: Advanced



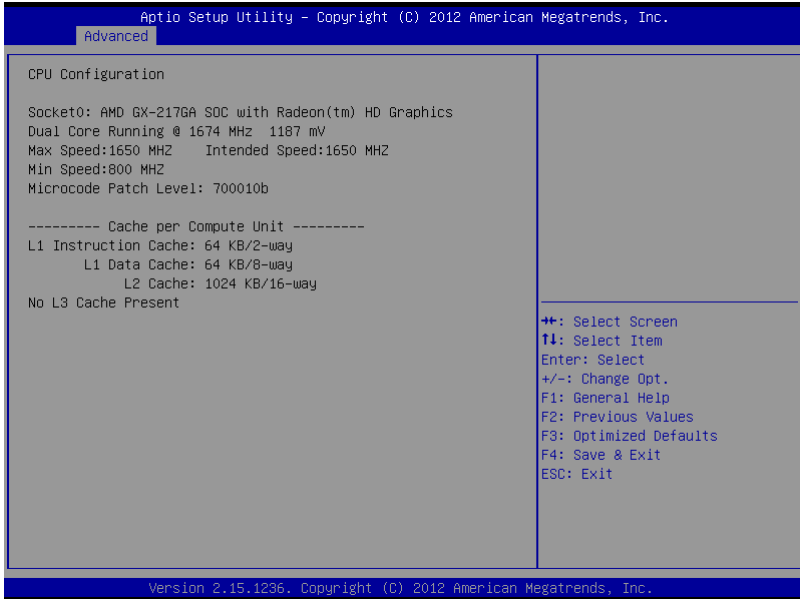
3.4.1 ACPI Setting



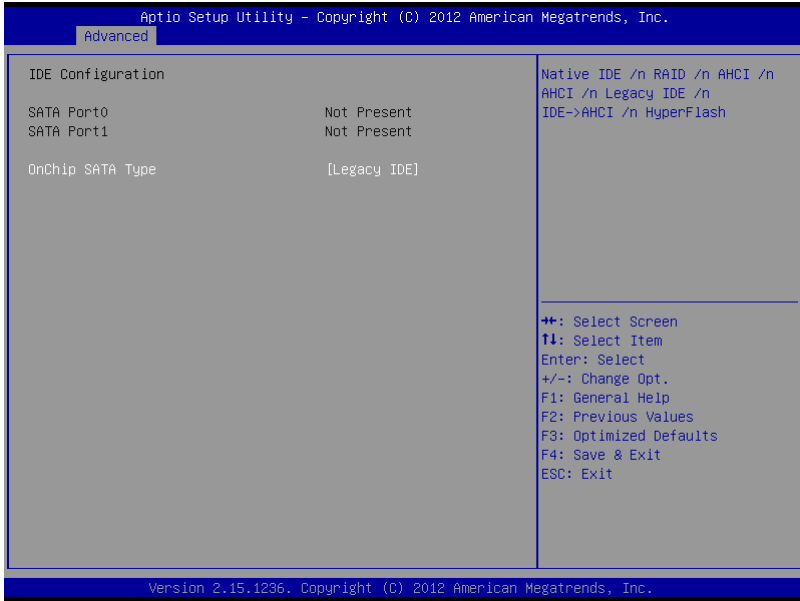
Options summary:

ACPI Sleep State	S3 only (Suspend to RAM)	Optimal Default, Failsafe Default
Select the ACPI state used for System Suspend		

3.4.2 Advanced: CPU Configuration



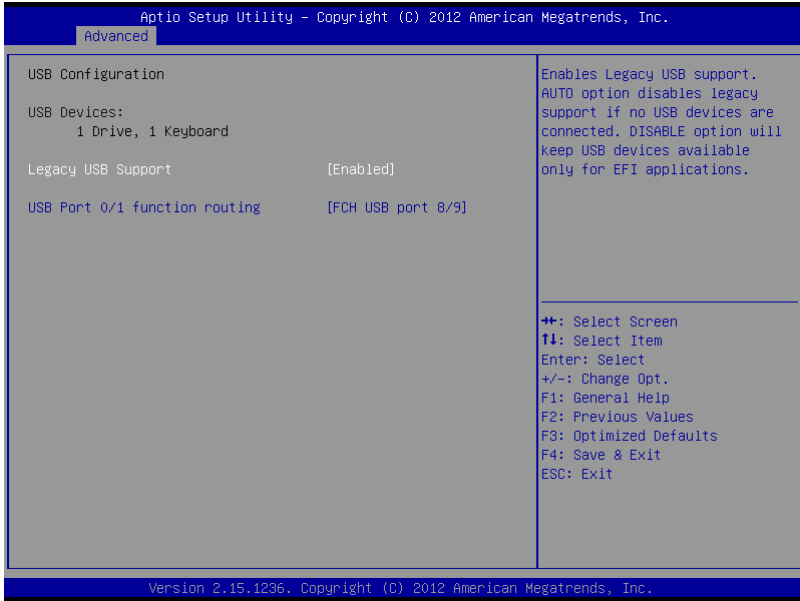
3.4.3 Advanced: IDE Configuration



Options summary:

OnChip SATA Type	Legacy IDE	Optimal Default, Failsafe Default
	AHCI	

3.4.4 Advanced: USB Configuration



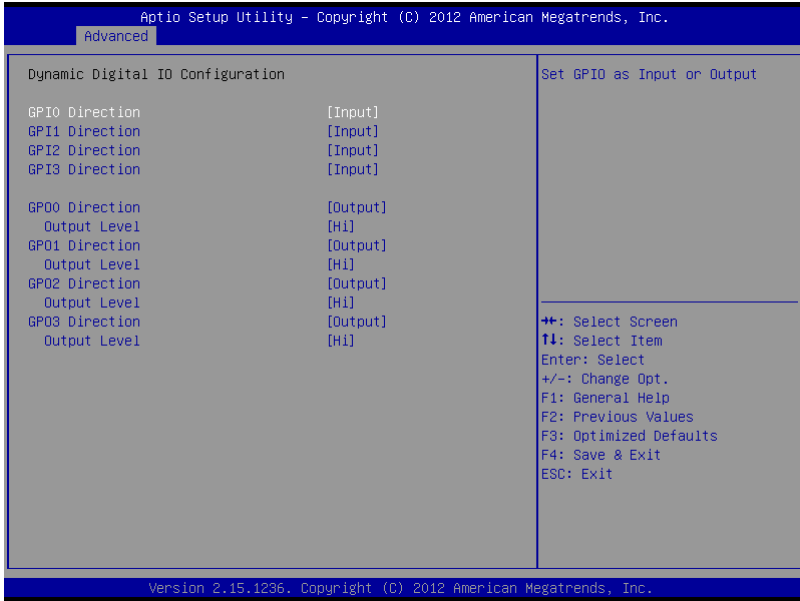
Options summary:

Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
<p>Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS.</p> <p>AUTO option disables legacy support if no USB devices are connected</p>		
Device Name (Emulation Type)	Auto	Optimal Default, Failsafe 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)

USB Port 0/1 function	FCH USB port 8/9	Optimal Default, Failsafe Default
routing	FCH USB port 0/1	

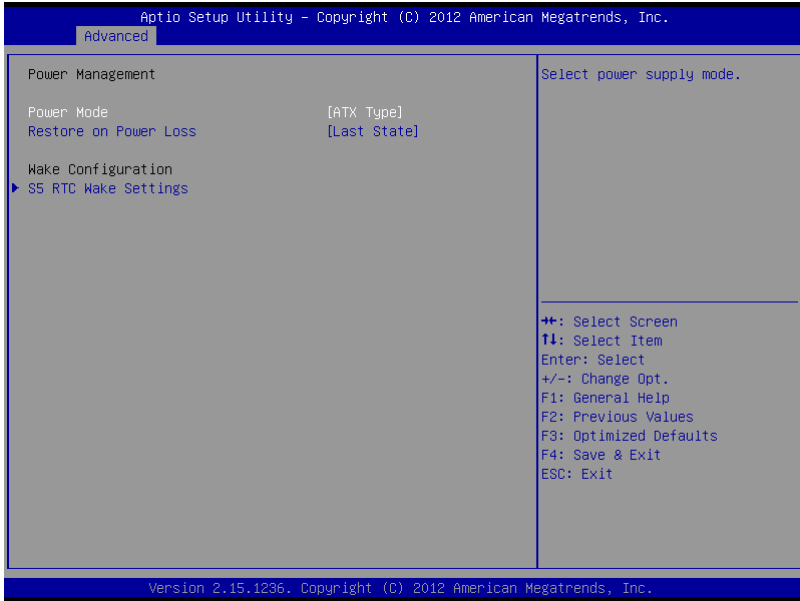
3.4.5 Advanced: Dynamic Digital IO



Options summary:

GPIO~GPI3 Direction	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output		
GPO0~GPI3 Direction	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output		
Output Level	Hi	Optimal Default, Failsafe Default
	Low	
Set GPIO Output as Hi or Low		

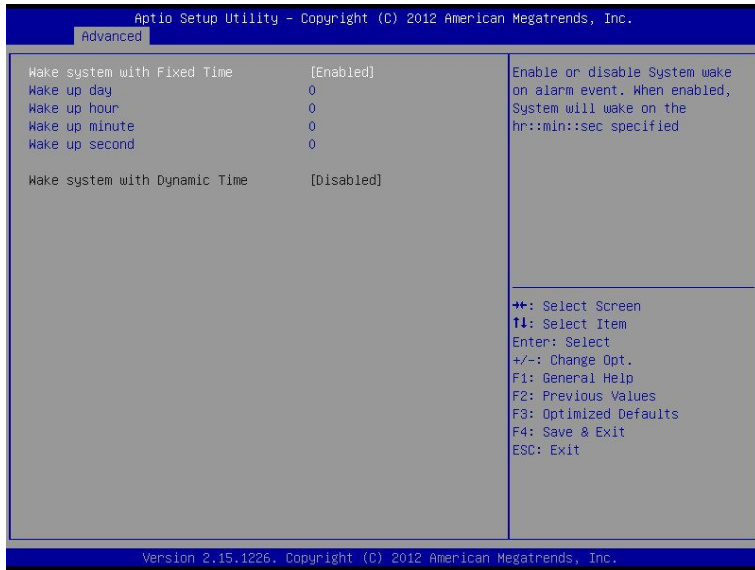
3.4.6 Advanced: Power Management



Options summary:

Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
Restore on Power Loss	Last State	Optimal Default, Failsafe Default
	Power On	
	Power Off	
Select power state when power is re-applied after a power failure.		

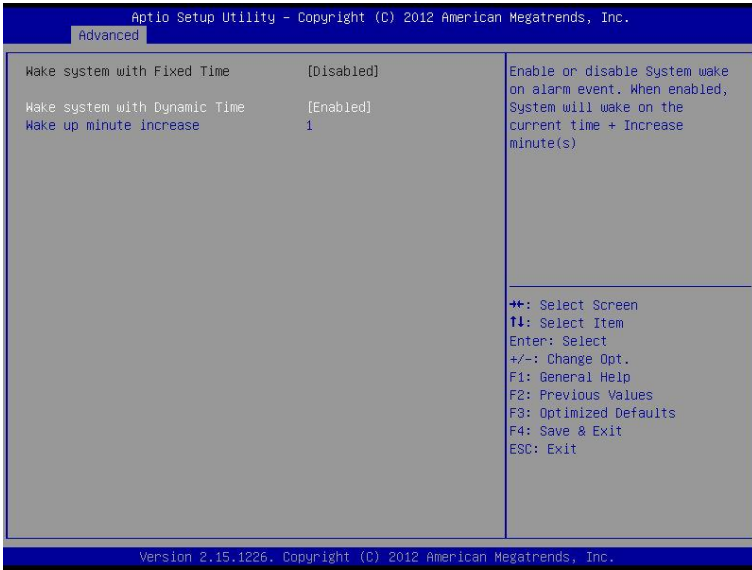
3.4.6.1 Power Management: S5 RTC Wake Settings (Fixed Time)



Options summary:

Wake system with Fixed Time	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable System wake on alarm event. When enabled, System will wake on the hr:min:sec specified		
Wake up day	0-31	Default 0
Select 0 for daily system wake up, 1-31 for witch day of the moth that you would like the system to wake up.		
Wake up day	0-23	Default 0
Select 0-23 For example enter 3 for 3am and 15 for 3pm		
Wake up day	0-59	Default 0
Select 0-59		
Wake up day	0-59	Default 0
Select 0-59		

3.4.6.2 Power Management: S5 RTC Wake Settings (Dynamic Time)



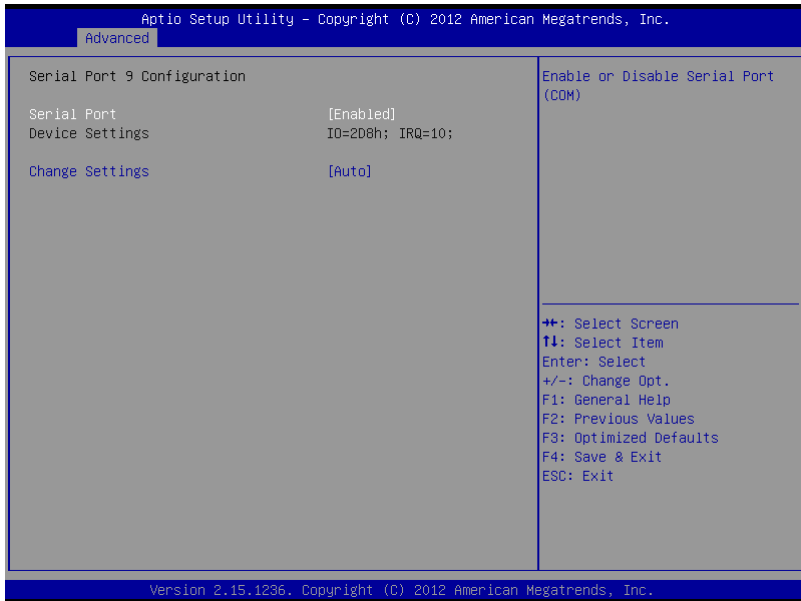
Options summary:

Wake system with	Disabled	Optimal Default, Failsafe Default
Dynamic Time	Enabled	
En/Disable System wake on alarm event. When enabled, System will wake on current time + Increases minutese(s)		
Wake up day	1-5	Default 1
Select 1-5		

3.4.7 Advanced: On-Module IO Configuration



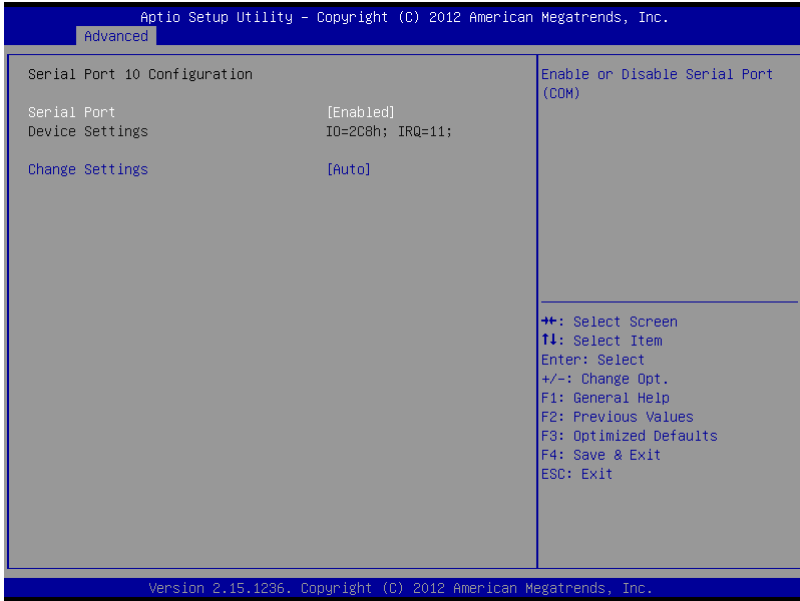
3.4.7.1 On-Module IO Configuration: Serial Port 9 Configuration



Options summary:

Serial Port	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Serial Port (COM)		
Change Settings	Auto	Optimal Default, Failsafe Default
	IO=2D8; IRQ=10;	
	IO=2C8; IRQ=11;	
Select an optimal setting for IO device		

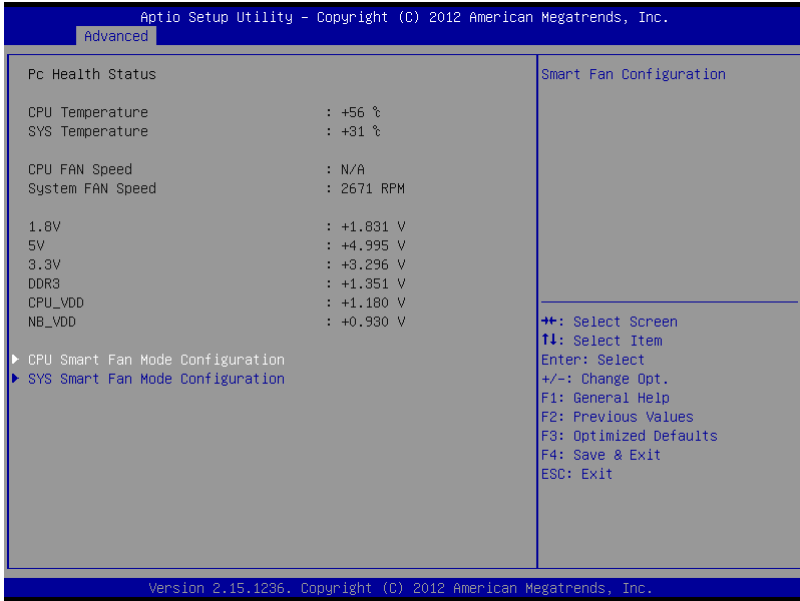
3.4.7.2 On-Module IO Configuration: Serial Port 10 Configuration



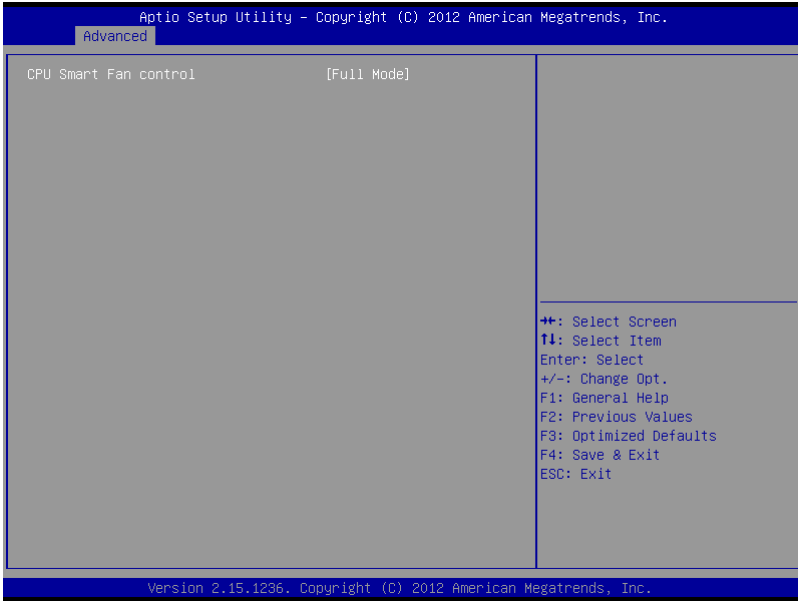
Options summary:

Serial Port	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Serial Port (COM)		
Change Settings	Auto	Optimal Default, Failsafe Default
	IO=2C8; IRQ=11;	
	IO=2D8; IRQ=10;	
Select an optimal setting for IO device		

3.4.8 Advanced: On-Module H/W Monitor



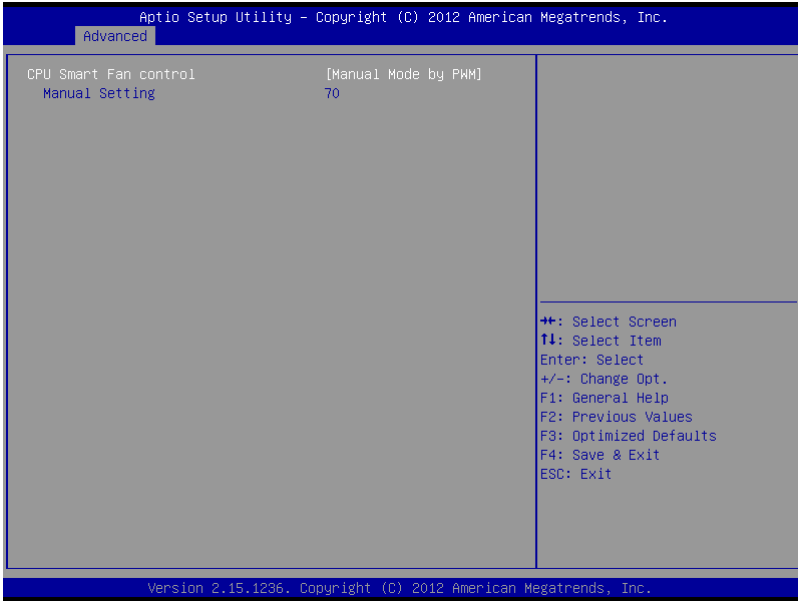
3.4.8.1 On-Module H/W Monitor: CPU Smart Fan Mode Configuration (Full Mode)



Options summary:

CPU Smart Fan control	Full Mode	Optimal Default, Failsafe Default
	Manual Mode by PWM	
	Auto Mode by PWM	

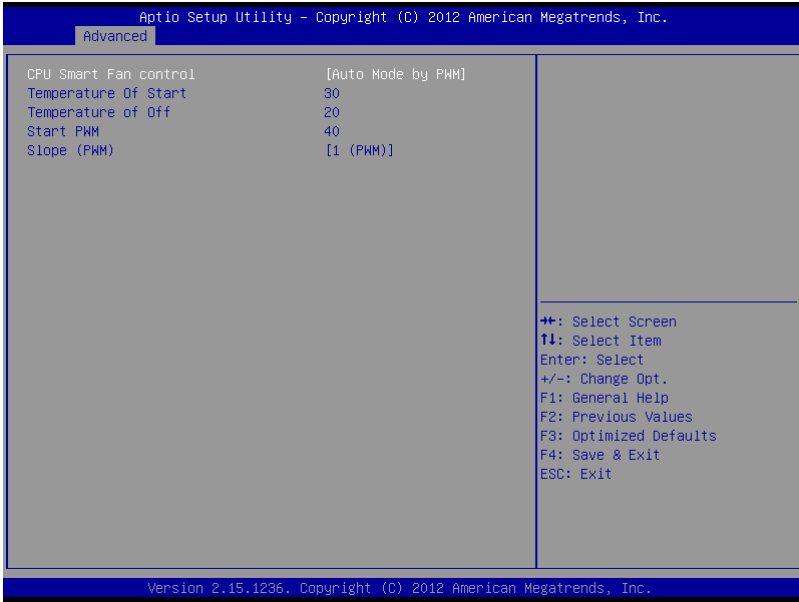
3.4.8.2 On-Module H/W Monitor: CPU Smart Fan Mode Configuration (Manual Mode by PWM)



Options summary:

Manual Setting	70	Optimal Default, Failsafe Default
	0 - 100	
Set Fan at fixed Duty-Cycle Min=0 Max=100 Please input Decimal number		

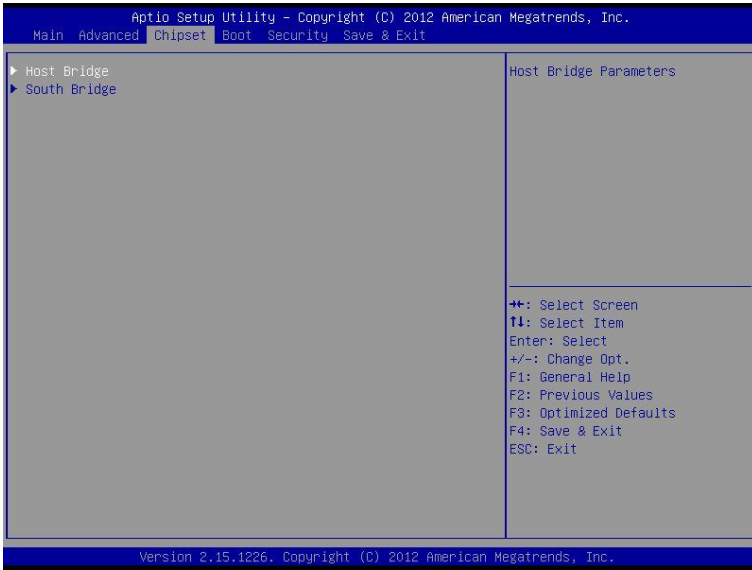
3.4.8.3 On-Module H/W Monitor: CPU Smart Fan Mode Configuration (Auto Mode by PWM)



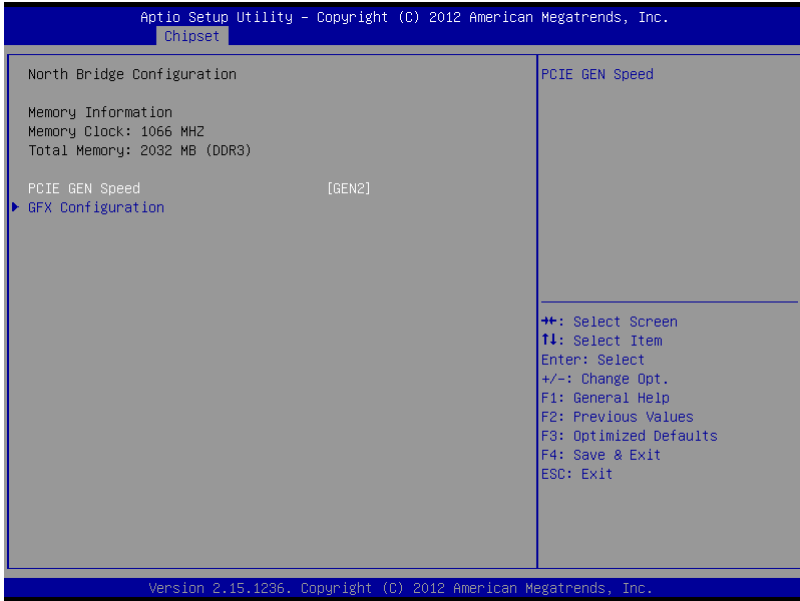
Options summary:

Temperature Of Start	30	Optimal Default, Failsafe Default
Temperature Of Off	20	Optimal Default, Failsafe Default
Start PWM	40	Optimal Default, Failsafe Default
Slop (PWM)	1 (PWM)	Optimal Default, Failsafe Default

3.5 Setup submenu: Chipset



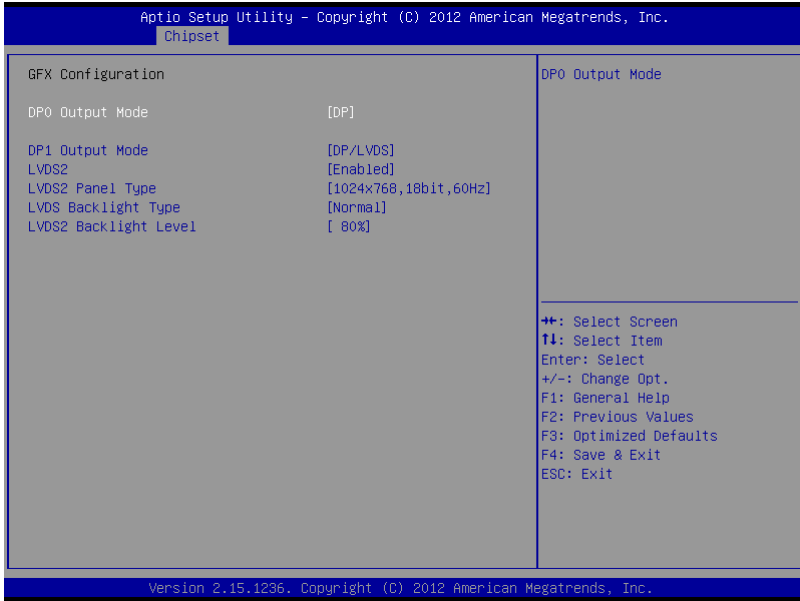
3.5.1 Chipset: North Bridge



Options summary:

PCIE GEN Speed	GEN1	Optimal Default, Failsafe Default
	GEN2	
PCIE GEN speed		

3.5.1.1 North Bridge: GFX Configuration



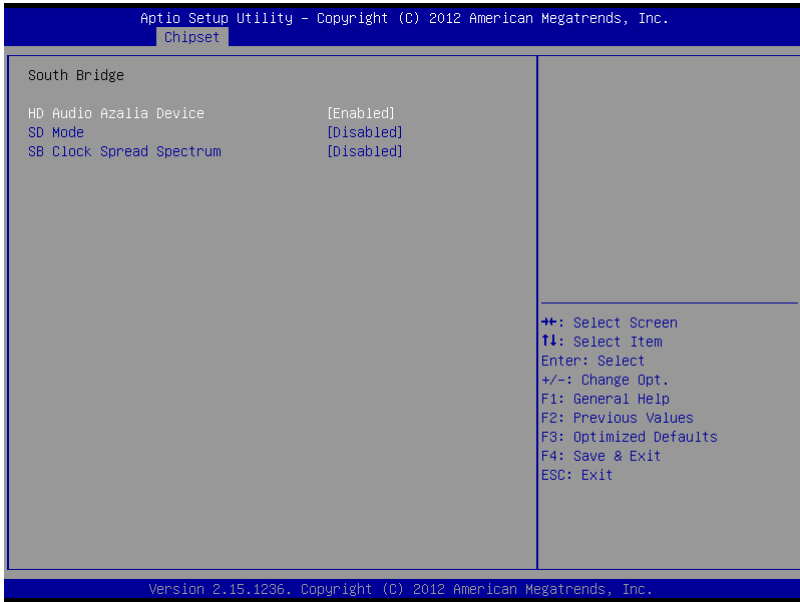
Options summary:

DPO Output Mode	DP	Optimal Default, Failsafe Default
	eDP	
	Single Link DVI-D	
	HDMI	
	LVDS	
EDID Panel Support	Disabled	Optimal Default, Failsafe Default
(When DPO Output Mode set to LVDS)	Enabled	
DP1 Output Mode	DP/LVDS	Optimal Default, Failsafe Default

	Single Link DVI-D	
	HDMI	
LVDS (LVDS2)	Disabled	Optimal Default, Failsafe Default
	Enabled	
LVDS (LVDS2) Panel Type	640x480,18bit,60Hz	Optimal Default, Failsafe Default
	800x480,18bit,60Hz	
	800x600,18bit,60Hz	
	1024x600,18bit,60Hz	
	1024x768,18bit,60Hz	
	1024x768,24bit,60Hz	
	1280x768,24bit,60Hz	
	1280x1024,48bit,60Hz	
	1366x768,24bit,60Hz	
	1440x900,48bit,60Hz	
	1600x1200,48bit,60Hz	
	1920x1080,48bit,60Hz	
	1920x1200,48bit,60Hz	
LVDS (LVDS2) Backlight Type	Normal	Optimal Default, Failsafe Default
	Inverted	
LVDS (LVDS2) Backlight Level	100%	Optimal Default, Failsafe Default
	90%	
	80%	
	70%	

	60%
	50%
	40%
	30%
	20%
	10%
	0%

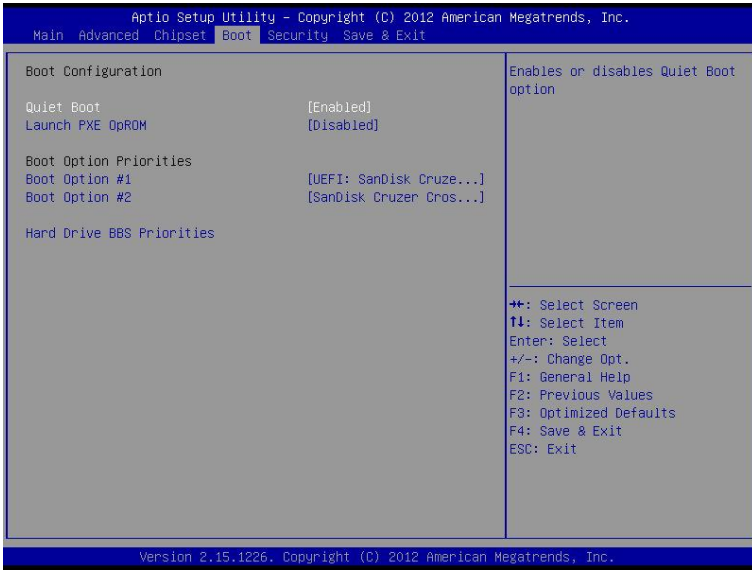
3.5.2 Chipset: South Bridge



Options summary:

HD Audio Azalia Device	Enabled	Optimal Default, Failsafe Default
	Disabled	
SD Mode	Disabled	Optimal Default, Failsafe Default
	ADMA	
	DMA	
	PIO	
SB Clock Spread Spectrum	Disabled	Optimal Default, Failsafe Default
	Enabled	

3.6 Setup submenu: Boot

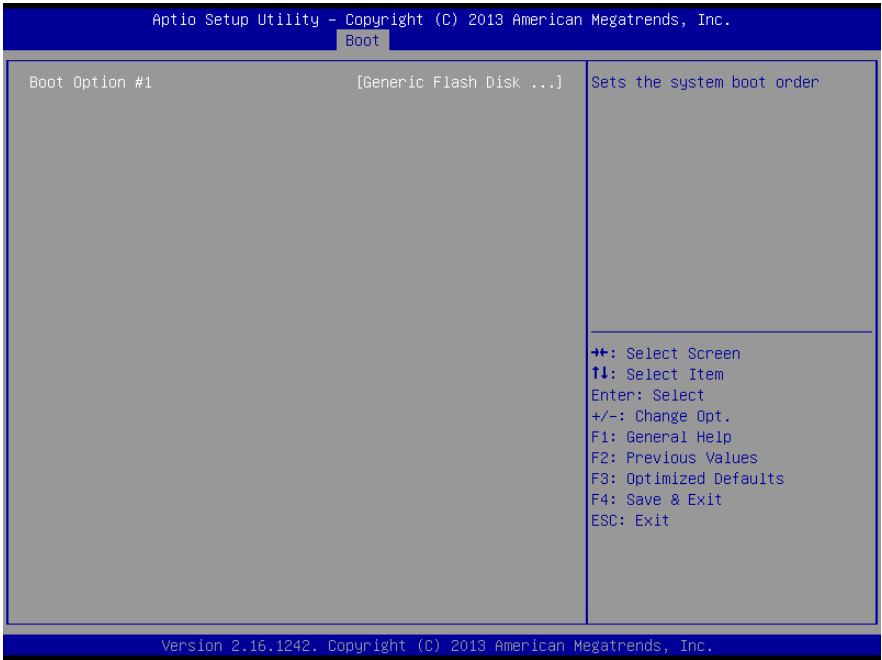


Options summary:

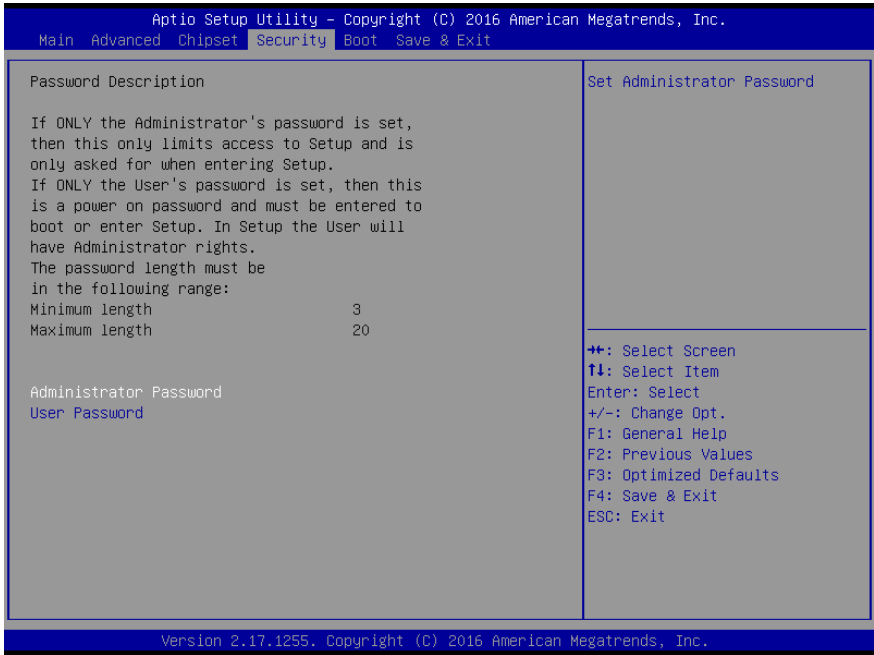
Bootup NumLock State	On	Default
	Off	
Select the keyboard NumLock state		
Quiet Boot	Disabled	Default
	Enabled	
En/Disable showing boot logo.		
Launch I82579LM PXE OpROM	Disabled	Default
	Enabled	
En/Disable Legacy Boot Option for I82579LM.		
Launch I82583V PXE OpROM	Disabled	Default
	Enabled	
En/Disable Legacy Boot Option for I82583V.		

Option ROM Messages	Force BIOS	Default
	Keep Current	
Set display mode for Option ROM.		
INT19 Trap Response	Immediate	Default
	Postponed	
BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the trap during legacy boot.		

3.6.1 Setup submenu: BBS Priorities



3.7 Setup submenu: Security



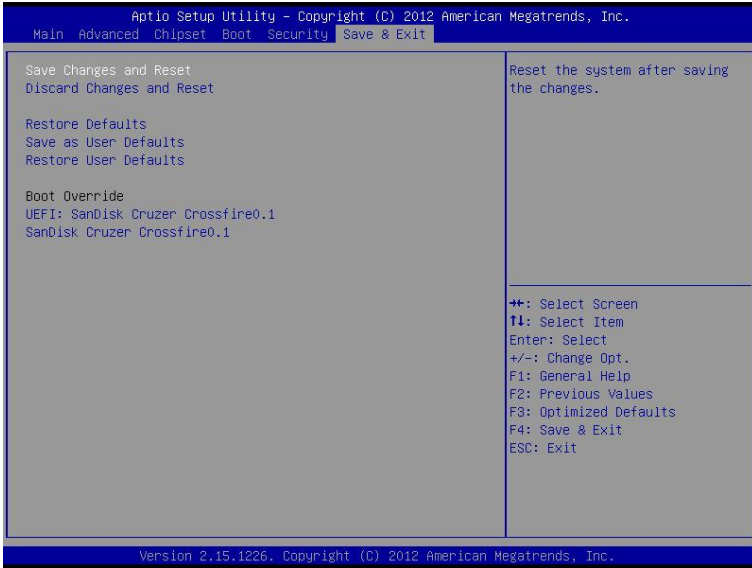
Change User/Administrator Password

You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility. Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

Removing the Password

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

3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Product CD/DVD

The COM-KB comes with a product DVD that contains all the drivers and utilities you need to setup your product. Insert the DVD and follow the steps in the autorun program to install the drivers.

In case the program does not start, follow the sequence below to install the drivers.

Step 1 – Install Chipset & Display Driver

1. Open the **Step1 – Chipset & Display** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install LAN Driver

1. Open the **Step 2 - LAN** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3 – Install Audio Driver

1. Open the **Step 3 - Audio** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

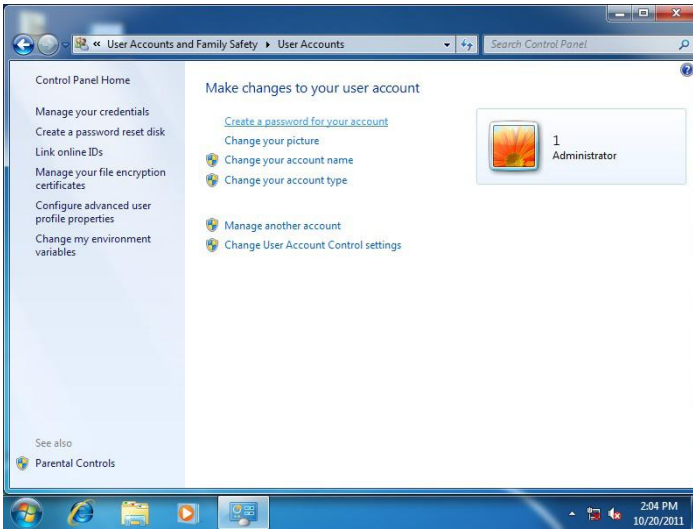
Step 4 – Install Serial Port Drivers

For Windows XP 32 bit:

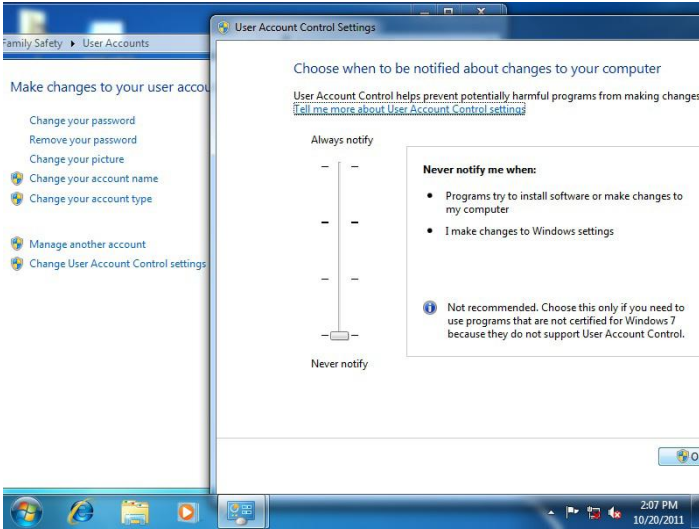
1. Select the WINXP_32 folder and open the patch.bat file

For Windows® 7:

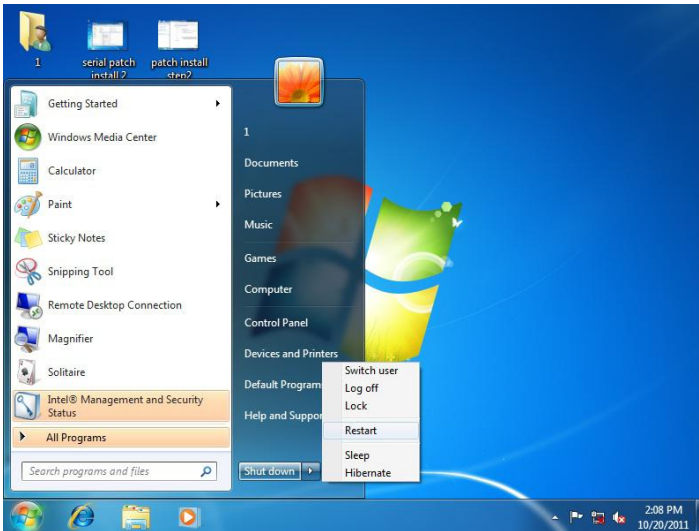
1. Create a password for Administrator account.



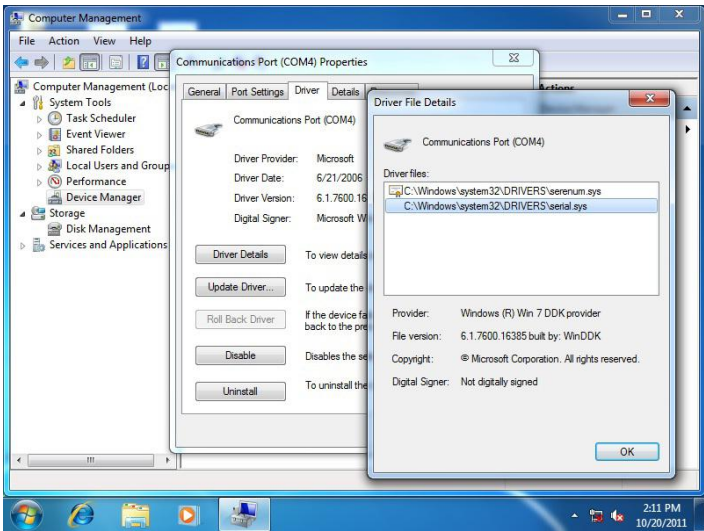
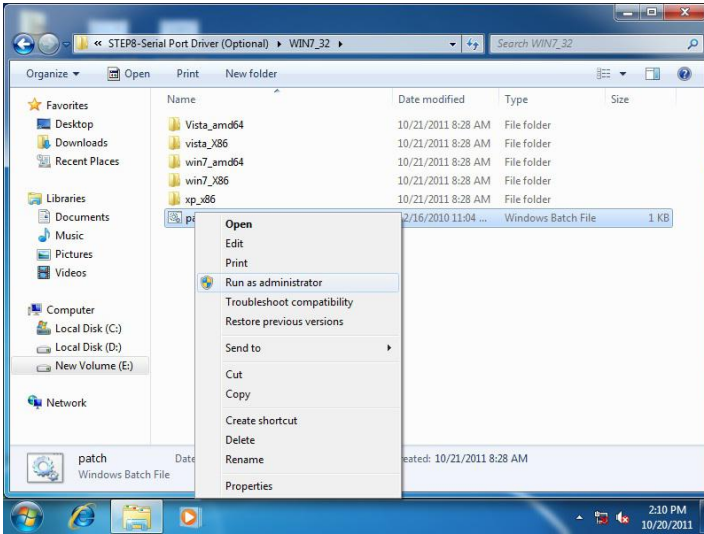
2. Change User Account Control Settings to [Never notify]



3. Reboot the system and login as Administrator



4. Open the patch.bat with [Run as administrator].



Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Initial Program

Table 1 : Embedded BRAM relative register table		
	Default Value	Note
Index	0x284(Note1)	BRAM Index Register
Data	0x285(Note2)	BRAM Data Register
Logical Device Number	0xA8(Note3)	Watch dog Logical Device Number
Function and Device Number	0x00(Note4)	Watch dog Function/Device Number

Table 2 : Watchdog relative register table				
	Option Register	BitNum	Value	Note
Timer Counter	0x00(Note5)		(Note10)	Time of watchdog timer (0~255)
Counting Unit	0x01(Note6)	0(Note7)	0(Note11)	Select time unit. 0: second 1: minute
Watchdog RST pulse width	0x01(Note8)	[3:2](Note9)	0(Note12)	0: 20ms 1: 60ms 2: 100ms 3: 250ms

```
*****
// Embedded BRAM relative definition (Please reference to Table 1)
#define byte EcBRAMIndex //This parameter is represented from Note1
#define byte EcBRAMData //This parameter is represented from Note2
#define byte BRAMLDNReg //This parameter is represented from Note3
#define byte BRAMFnDataReg //This parameter is represented from Note4
#define void EcBRAMWriteByte(byte Offset, byte Value);
#define byte EcBRAMReadByte(byte Offset);
#define void IOWriteByte(byte Offset, byte Value);
#define byte IOReadByte(byte Offset);
// Watch Dog relative definition (Please reference to Table 2)
#define byte TimerReg //This parameter is represented from Note5
#define byte TimerVal // This parameter is represented from Note10
#define byte UnitReg //This parameter is represented from Note6
#define byte UnitBit //This parameter is represented from Note7
#define byte UnitVal //This parameter is represented from Note11
#define byte RSTReg //This parameter is represented from Note8
#define byte RSTBit //This parameter is represented from Note9
#define byte RSTVal //This parameter is represented from Note12
*****
```

```
*****  
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 procedure will enable the WDT counting.  
    AaeonWDTEnable();  
}  
*****
```

```
*****
// Procedure : AaeonWDTEnable
VOID AaeonWDTEnable (){
    WDTEnableDisable(1);
}

// Procedure : AaeonWDTConfig
VOID AaeonWDTConfig (){
    // Disable WDT counting
    WDTEnableDisable(0);
    // WDT relative parameter setting
    WDTParameterSetting();
}

VOID WDTEnableDisable(byte Value){
    ECBRAMWriteByte(TimerReg , Value);
}

VOID WDTParameterSetting(){
    Byte TempByte;

    // Watchdog Timer counter setting
    ECBRAMWriteByte(TimerReg , TimerVal);
    // WDT counting unit setting
    TempByte = ECBRAMReadByte(UnitReg);
    TempByte |= (UnitVal << UnitBit);
    ECBRAMWriteByte(UnitReg , TempByte);
    // WDT RST pulse width setting
    TempByte = ECBRAMReadByte(RSTReg);
    TempByte |= (RSTVal << RSTBit);
    ECBRAMWriteByte(RSTReg , TempByte);
}
*****
```

```

*****
VOID  ECBRAMWriteByte(byte OPReg, byte OPBit, byte Value){
    IOWriteByte(EcBRAMIndex, 0x10);
    IOWriteByte(EcBRAMData, BRAMLDNReg);
    IOWriteByte(EcBRAMIndex, 0x11);
    IOWriteByte(EcBRAMData, BRAMFnDataReg);

    IOWriteByte(EcBRAMIndex, 0x13 + OPReg);
    IOWriteByte(EcBRAMData, Value);

    IOWriteByte(EcBRAMIndex, 0x12);
    IOWriteByte(EcBRAMData, 0x30);           //Write start
}

Byte  ECBRAMReadByte(byte OPReg){
    IOWriteByte(EcBRAMIndex, 0x10);
    IOWriteByte(EcBRAMData, BRAMLDNReg);
    IOWriteByte(EcBRAMIndex, 0x11);
    IOWriteByte(EcBRAMData, BRAMFnDataReg);

    IOWriteByte(EcBRAMIndex, 0x12);
    IOWriteByte(EcBRAMData, 0x10);         //Read start

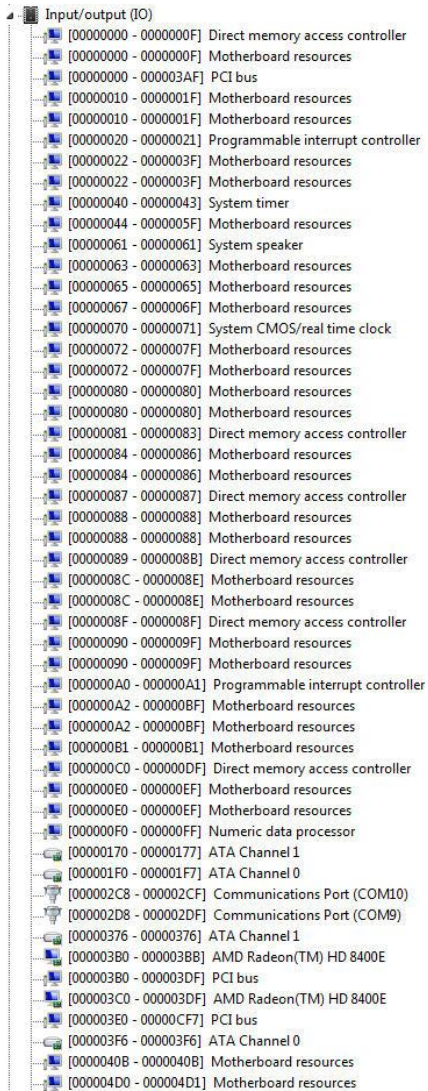
    IOWriteByte(EcBRAMIndex, 0x13 + OPReg);
    Return    IORedByte(EcBRAMData, Value);
}
*****

```

Appendix B

I/O Information

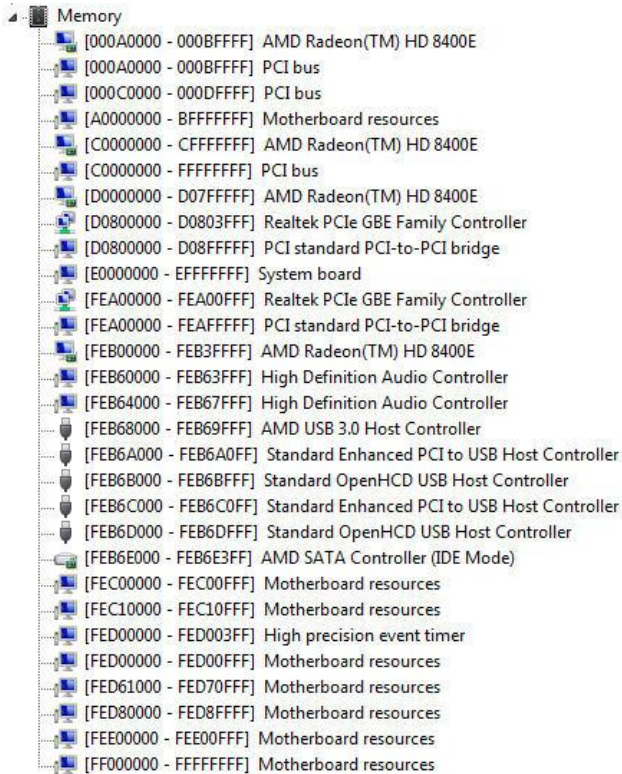
B.1 I/O Address Map



Address Range	Device Name
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 0000000F]	Motherboard resources
[00000000 - 000003AF]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000061 - 00000061]	System speaker
[00000063 - 00000063]	Motherboard resources
[00000065 - 00000065]	Motherboard resources
[00000067 - 0000006F]	Motherboard resources
[00000070 - 00000071]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000083]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000084 - 00000086]	Motherboard resources
[00000087 - 00000087]	Direct memory access controller
[00000088 - 00000088]	Motherboard resources
[00000088 - 00000088]	Motherboard resources
[00000089 - 0000008B]	Direct memory access controller
[0000008C - 0000008E]	Motherboard resources
[0000008C - 0000008E]	Motherboard resources
[0000008F - 0000008F]	Direct memory access controller
[00000090 - 0000009F]	Motherboard resources
[00000090 - 0000009F]	Motherboard resources
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000A2 - 000000BF]	Motherboard resources
[000000B1 - 000000B1]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	ATA Channel 1
[000001F0 - 000001F7]	ATA Channel 0
[000002C8 - 000002CF]	Communications Port (COM10)
[000002D8 - 000002DF]	Communications Port (COM9)
[00000376 - 00000376]	ATA Channel 1
[000003B0 - 000003BB]	AMD Radeon(TM) HD 8400E
[000003B0 - 000003DF]	PCI bus
[000003C0 - 000003DF]	AMD Radeon(TM) HD 8400E
[000003E0 - 000003F7]	PCI bus
[000003F6 - 000003F6]	ATA Channel 0
[0000040B - 0000040B]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources

[00000088 - 00000088]	Motherboard resources
[00000089 - 0000008B]	Direct memory access controller
[0000008C - 0000008E]	Motherboard resources
[0000008C - 0000008E]	Motherboard resources
[0000008F - 0000008F]	Direct memory access controller
[00000090 - 0000009F]	Motherboard resources
[00000090 - 0000009F]	Motherboard resources
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000A2 - 000000BF]	Motherboard resources
[000000B1 - 000000B1]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	ATA Channel 1
[000001F0 - 000001F7]	ATA Channel 0
[000002C8 - 000002CF]	Communications Port (COM10)
[000002D8 - 000002DF]	Communications Port (COM9)
[00000376 - 00000376]	ATA Channel 1
[000003B0 - 000003BB]	AMD Radeon(TM) HD 8400E
[000003B0 - 000003DF]	PCI bus
[000003C0 - 000003DF]	AMD Radeon(TM) HD 8400E
[000003E0 - 00000CF7]	PCI bus
[000003F6 - 000003F6]	ATA Channel 0
[0000040B - 0000040B]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[000004D0 - 000004D1]	Motherboard resources
[000004D6 - 000004D6]	Motherboard resources
[00000800 - 0000089F]	Motherboard resources
[00000900 - 0000090F]	Motherboard resources
[00000910 - 0000091F]	Motherboard resources
[00000B20 - 00000B3F]	Motherboard resources
[00000C00 - 00000C01]	Motherboard resources
[00000C14 - 00000C14]	Motherboard resources
[00000C50 - 00000C51]	Motherboard resources
[00000C52 - 00000C52]	Motherboard resources
[00000C6C - 00000C6C]	Motherboard resources
[00000C6F - 00000C6F]	Motherboard resources
[00000CD0 - 00000CD1]	Motherboard resources
[00000CD2 - 00000CD3]	Motherboard resources
[00000CD4 - 00000CD5]	Motherboard resources
[00000CD6 - 00000CD7]	Motherboard resources
[00000CD8 - 00000CDF]	Motherboard resources
[00000D00 - 0000FFFF]	PCI bus
[0000E000 - 0000E0FF]	Realtek PCIe GBE Family Controller
[0000E000 - 0000EFFF]	PCI standard PCI-to-PCI bridge
[0000F000 - 0000F0FF]	AMD Radeon(TM) HD 8400E
[0000F100 - 0000F10F]	AMD SATA Controller (IDE Mode)
[0000FE00 - 0000FEFE]	Motherboard resources





















































B.2 Memory Address Map



Memory Address Range	Device Name
[000A0000 - 000BFFFF]	AMD Radeon(TM) HD 8400E
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[A0000000 - BFFFFFFF]	Motherboard resources
[C0000000 - CFFFFFFF]	AMD Radeon(TM) HD 8400E
[C0000000 - FFFFFFFF]	PCI bus
[D0000000 - D07FFFFF]	AMD Radeon(TM) HD 8400E
[D0800000 - D0803FFF]	Realtek PCIe GBE Family Controller
[D0800000 - D08FFFFF]	PCI standard PCI-to-PCI bridge
[E0000000 - EFFFFFFF]	System board
[FEA00000 - FEA00FFF]	Realtek PCIe GBE Family Controller
[FEA00000 - FEAFFFFF]	PCI standard PCI-to-PCI bridge
[FEB00000 - FEB3FFFF]	AMD Radeon(TM) HD 8400E
[FEB60000 - FEB63FFF]	High Definition Audio Controller
[FEB64000 - FEB67FFF]	High Definition Audio Controller
[FEB68000 - FEB69FFF]	AMD USB 3.0 Host Controller
[FEB6A000 - FEB6A0FF]	Standard Enhanced PCI to USB Host Controller
[FEB6B000 - FEB6BFFF]	Standard OpenHCD USB Host Controller
[FEB6C000 - FEB6C0FF]	Standard Enhanced PCI to USB Host Controller
[FEB6D000 - FEB6DFFF]	Standard OpenHCD USB Host Controller
[FEB6E000 - FEB6E3FF]	AMD SATA Controller (IDE Mode)
[FEC00000 - FEC00FFF]	Motherboard resources
[FEC10000 - FEC10FFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED00000 - FED00FFF]	Motherboard resources
[FED61000 - FED70FFF]	Motherboard resources
[FED80000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FF000000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

IRQ	Device
(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000008 (08)	System CMOS/real time clock
(ISA) 0x0000000A (10)	Communications Port (COM9)
(ISA) 0x0000000B (11)	Communications Port (COM10)
(ISA) 0x0000000D (13)	Numeric data processor
(ISA) 0x0000000E (14)	ATA Channel 0
(ISA) 0x0000000F (15)	ATA Channel 1
(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
(ISA) 0x00000053 (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
(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
(ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94)	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
(ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
(ISA) 0x00000064 (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) 0x00000068 (104)	Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
(ISA) 0x0000006F (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) 0x00000077 (119)	Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System

 (ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
 (ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
 (ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
 (ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
 (ISA) 0x00000083 (131)	Microsoft ACPI-Compliant System
 (ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
 (ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
 (ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
 (ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
 (ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
 (ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008B (139)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008D (141)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
 (ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
 (ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
 (ISA) 0x00000092 (146)	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) 0x00000097 (151)	Microsoft ACPI-Compliant System
 (ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
 (ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A4 (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
 (ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
 (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

Appendix C

Programming Digital I/O

C.1 Digital I/O Register

Table 1 : Embedded BRAM relative register table

	Default Value	Note
Index	0x284(Note1)	BRAM Index Register
Data	0x285(Note2)	BRAM Data Register
Logical Device Number	0xA2(Note3)	Watch dog Logical Device Number
Input/Output Function and Device Number	0x00(Note4)	DIO Input/Output Function/Device Number
Output Data Function and Device Number	0x01(Note5)	DIO Output Data Function/Device Number

Table 2 : Digital I/O relative register table

	Register			
	Option Register	BitNum	Value	Note
GPI0 Pin Status	0x00(Note6)	0(Note7)	(Note15)	GPF0
GPI1 Pin Status	0x00(Note6)	1(Note8)	(Note16)	GPF1
GPI2 Pin Status	0x00(Note6)	2(Note9)	(Note17)	GPF2
GPI3 Pin Status	0x00(Note6)	3(Note10)	(Note18)	GPF3
GPO0 Pin Status	0x00(Note6)	4(Note11)	(Note19)	GPF4
GPO1 Pin Status	0x00(Note6)	5(Note12)	(Note20)	GPF5
GPO2 Pin Status	0x00(Note6)	6(Note13)	(Note21)	GPF6
GPO3 Pin Status	0x00(Note6)	7(Note14)	(Note22)	GPF7

C.2 Digital I/O Sample Program

```
*****
// Embedded BRAM relative definition (Please reference to Table 1)
#define byte EcBRAMIndex //This parameter is represented from Note1
#define byte EcBRAMData //This parameter is represented from Note2
#define byte BRAMLDNReg //This parameter is represented from Note3
#define byte BRAMFnData0Reg //This parameter is represented from Note4
#define byte BRAMFnData1Reg //This parameter is represented from Note5
#define void EcBRAMWriteByte(byte Offset, byte Value);
#define byte EcBRAMReadByte(byte Offset);
#define void IOWriteByte(byte Offset, byte Value);
#define byte IOReadByte(byte Offset);
// Digital Input Status relative definition (Please reference to Table 2)
#define byte DIO0ToDIO7Reg // This parameter is represented from Note6
#define byte DIO0Bit // This parameter is represented from Note7
#define byte DIO1Bit // This parameter is represented from Note8
#define byte DIO2Bit // This parameter is represented from Note9
#define byte DIO3Bit // This parameter is represented from Note10
#define byte DIO4Bit // This parameter is represented from Note11
#define byte DIO5Bit // This parameter is represented from Note12
#define byte DIO6Bit // This parameter is represented from Note13
#define byte DIO7Bit // This parameter is represented from Note14
#define byte DIO0Val // This parameter is represented from Note15
#define byte DIO1Val // This parameter is represented from Note16
#define byte DIO2Val // This parameter is represented from Note17
#define byte DIO3Val // This parameter is represented from Note18
#define byte DIO4Val // This parameter is represented from Note19
#define byte DIO5Val // This parameter is represented from Note20
#define byte DIO6Val // This parameter is represented from Note21
#define byte DIO7Val // This parameter is represented from Note22
*****
```

```
*****
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(DIO0ToDIO7Reg, DIO3Bit);

    // Procedure : AaeonSetOutputLevel
    // Input :
    //     Example, Set Digital I/O Pin 6 level
    AaeonSetOutputLevel(DIO0ToDIO7Reg, DIO6Bit, DIO6Val);
}
*****
```



```
*****
Boolean  AaeonReadPinStatus(byte OptionReg, byte BitNum){
    Byte TempByte;

    TempByte = ECBRAMReadByte(BRAMFnData1Reg, OptionReg);
    If (TempByte & BitNum == 0)
        Return 0;
    Return 1;
}
VOID  AaeonSetOutputLevel(byte OptionReg, byte BitNum, byte Value){
    Byte TempByte;

    TempByte = ECBRAMReadByte(BRAMFnData1Reg, OptionReg);
    TempByte |= (Value << BitNum);
    ECBRAMWriteByte(OptionReg, BitNum, Value);
}
*****
```

```

*****
VOID  ECBRAMWriteByte(byte OPReg, byte OPBit, byte Value){
    IOWriteByte(EcBRAMIndex, 0x10);
    IOWriteByte(EcBRAMData, BRAMLDNReg);
    IOWriteByte(EcBRAMIndex, 0x11);
    IOWriteByte(EcBRAMData, BRAMFnDataReg);

    IOWriteByte(EcBRAMIndex, 0x13 + OPReg);
    IOWriteByte(EcBRAMData, Value);

    IOWriteByte(EcBRAMIndex, 0x12);
    IOWriteByte(EcBRAMData, 0x30);          //Write start
}

Byte  ECBRAMReadByte(byte FnDataReg, byte OPReg){
    IOWriteByte(EcBRAMIndex, 0x10);
    IOWriteByte(EcBRAMData, BRAMLDNReg);
    IOWriteByte(EcBRAMIndex, 0x11);
    IOWriteByte(EcBRAMData, FnDataReg);

    IOWriteByte(EcBRAMIndex, 0x12);
    IOWriteByte(EcBRAMData, 0x10);        //Read start

    IOWriteByte(EcBRAMIndex, 0x13 + OPReg);
    Return    IOReadByte(EcBRAMData, Value);
}
*****

```