

COM-BYTC2

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-BYTC2	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	○	○	○	○	○	○
<p>○: 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。</p> <p>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。</p> <p>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。</p>						

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 Compact Size
CPU	Onboard Intel® Atom™ Processor SoC
CPU Frequency	Up to J1900 1.91 GHz, Quad core
Chipset	Intel® Atom™ SoC
Memory Type	DDR3L 1066/1333, SODIMM x 1
Max. Memory Capacity	8GB
BIOS	AMI BIOS, Legacy Free
Wake on LAN	Yes
Watchdog Timer	255 levels
Power Requirement	Standard: +12V
Power Supply Type	AT/ATX Selection
Power Consumption (Typical)	1A@ 12V with J1900, full load
Dimension (L x W)	3.75" x 3.75" (95mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
Operating Humidity	10% ~90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE/FCC Class A

Display

VGA/LCD Controller	Intel® Atom™ SoC
Video Output	VGA, LVDS, eDP

I/O

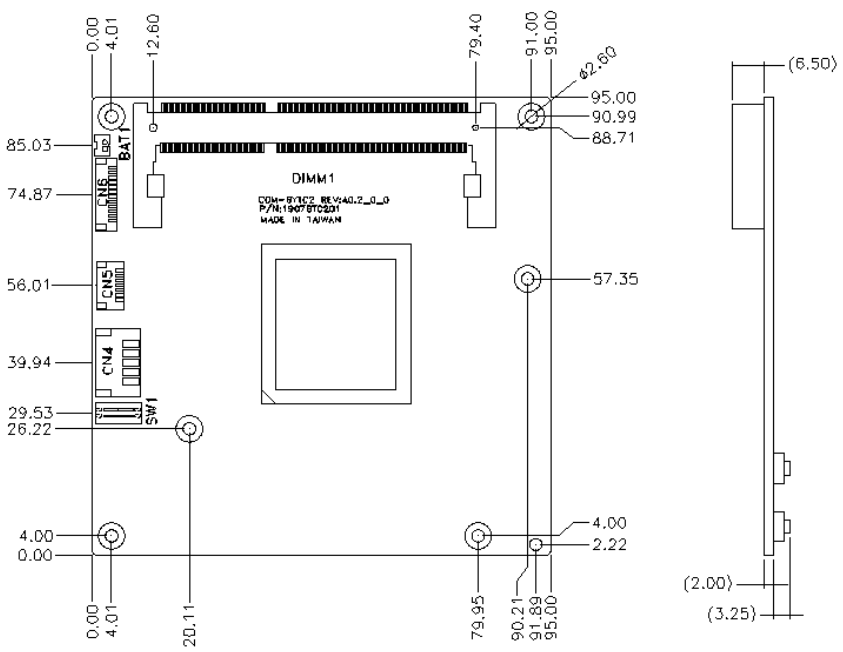
Ethernet	Intel® I210IT, Gigabit Ethernet
Audio	HD Audio
USB Port	USB 2.0 x 7
Serial Port	—
HDD Interface	SATA x 1, PATA x 1
Onboard SSD	—
Expansion Slot	PCIe[x1] x 2 PCI x 4 I2C LPC SMBus
GPIO	GPIO 8-bit
TPM	Optional

Chapter 2

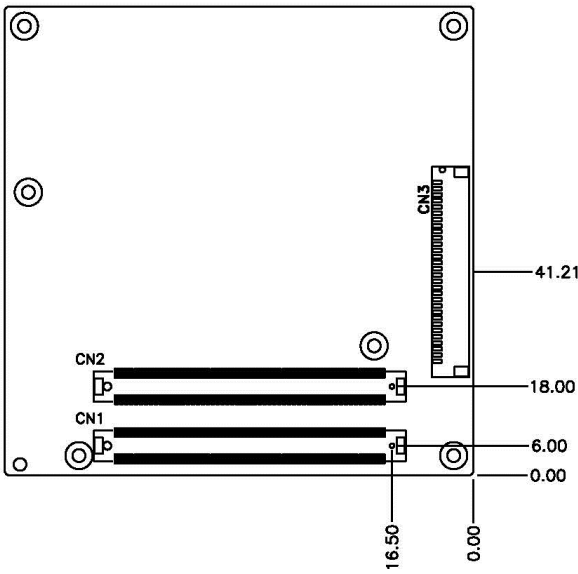
Hardware Information

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	Auto Power Button Selection and clear CMOS

2.2.1 Auto Power Button Switch (SW1)

	1	2
Auto Power Button Disable (Default)	OFF	OFF
Auto Power Button Enable	ON	OFF
Clear CMOS	OFF	ON

2.3 List of Connectors

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

Label	Function
CN1	TYPE2 ROW A/B Connector
CN2	TYPE2 ROW C/D Connector
CN3	eDP Connector
CN4	Backlight
CN5	SPI FLASH tool
CN6	LPC
BAT1	RTC Battery connector
DIMM1	DDR3L SO-DIMM

2.3.1 TYPE2 Row A/B Connector (CN1)

Row A		Row B	
Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	AN1_MDI3N	B2	LAN1_LED_LINK#
A3	LAN1_MDI3P	B3	LPC_FRAME#
A4	LAN1_LED_100#	B4	LPC_AD0
A5	LAN1_LED_1000#	B5	LPC_AD1
A6	LAN1_MDI2N	B6	LPC_AD2
A7	LAN1_MDI2P	B7	LPC_AD3
A8	LAN1_LED_LINK#	B8	None
A9	LAN1_MDI1N	B9	None
A10	LAN1_MDI1P	B10	PCI_CLK_LPC
A11	GND	B11	GND
A12	LAN1_MDI0N	B12	FPANSWH#
A13	LAN1_MDI0P	B13	SMB_CK_3.3S
A14	LAN1_CTREF	B14	SMB_DAT_3.3S
A15	CB_SLP_S3#	B15	SMB_ALERT#_3.3S
A16	SATA0_TX+	B16	SATA_TXP1_CB
A17	SATA0_TX	B17	SATA_TXN1_CB
A18	CB_SLP_S4#	B18	PM_SUS_STAT#
A19	SATA0_RX+	B19	SATA_RXP1_CB
A20	SATA0_RX-	B20	SATA_RXN1_CB
A21	GND	B21	GND
A22	None	B22	None
A23	None	B23	None

A24	CB_SLP_S4#	B24	PWRGD_CB
A25	None	B25	None
A26	None	B26	None
A27	PM_BATLOW#	B27	CB_WDT
A28	CB_SATA_LED#	B28	None
A29	HDA_SYNC_3.3S	B29	HDA_SDI1_3.3S
A30	HDA_RST#_3.3S	B30	HDA_SDI0_3.3S
A31	GND	B31	GND
A32	HDA_CLK_3.3S	B32	SOC_SPKR
A33	HDA_SDO_3.3S	B33	EC_SMB_CLK
A34	BIOS_DIS0#	B34	EC_SMB_DATA
A35	EC_THRMTRIP#	B35	EC_THRM#
A36	USB_DN6_CB	B36	None
A37	USB_DP6_CB	B37	None
A38	USB_OC#_6_7	B38	USB_OC#_4_5
A39	USB_DN4_CB	B39	USB_DN5_CB
A40	USB_DP4_CB	B40	USB_DP5_CB
A41	GND	B41	GND
A42	USB_DN2_CB	B42	USB_DN3_CB
A43	USB_DP2_CB	B43	USB_DP3_CB
A44	USB_OC#_2_3_3.3S	B44	USB_OC#_0_1_3.3S
A45	USB_DN0_CB	B45	USB_DN1_CB
A46	USB_DP0_CB	B46	USB_DP1_CB
A47	V3.3A_RTC	B47	BUF_PLT_RST#
A48	BUF_PLT_RST#	B48	PCIE_CPPE1#
A49	PCIE_CPPE0#	B49	CARRY_SYSRST#
A50	INT_SERIRQ	B50	CB_RESET#

A51	GND	B51	GND
A52	None	B52	None
A53	None	B53	None
A54	GPI0	B54	GPO1
A55	None	B55	None
A56	None	B56	None
A57	GND	B57	GPO2
A58	PCIE_TXP3_CB	B58	PCIE_RXP3_CB
A59	PCIE_TXN3_CB	B59	PCIE_RXN3_CB
A60	GND	B60	GND
A61	PCIE_TXP2_CB	B61	PCIE_RXP2_CB
A62	PCIE_TXN2_CB	B62	PCIE_RXN2_CB
A63	GPI1	B63	GPO3
A64	PCIE_TXP1	B64	PCIE_RXP1
A65	PCIE_TXN1	B65	PCIE_RXN1
A66	GND	B66	PCIE_WAKE#
A67	GPI2	B67	GP_WAKE#
A68	PCIE_TXP0	B68	PCIE_RXP0
A69	PCIE_TXN0	B69	PCIE_RXN0
A70	GND	B70	GND
A71	LVDSA_DATA0	B71	LVDSB_DATA0
A72	LVDSA_DATA0#	B72	LVDSB_DATA0#
A73	LVDSA_DATA1	B73	LVDSB_DATA1
A74	LVDSA_DATA1#	B74	LVDSB_DATA1#
A75	LVDSA_DATA2	B75	LVDSB_DATA2
A76	LVDSA_DATA2#	B76	LVDSB_DATA2#
A77	LVDS_VDD_EN	B77	LVDSB_DATA3

A78	LVDSA_DATA3	B78	LVDSB_DATA3#
A79	LVDSA_DATA3#	B79	LVDS_BKLT_EN
A80	GND	B80	GND
A81	LVDSA_CLK	B81	LVDSB_CLK
A82	LVDSA_CLK#	B82	LVDSB_CLK#
A83	LVDS_DDC_CLK	B83	LVDS_BKLT_CTRL
A84	LVDS_DDC_DATA	B84	V5ALW
A85	GPI3	B85	V5ALW
A86	None	B86	V5ALW
A87	None	B87	V5ALW
A88	PCIE_CLKP0_CB	B88	BIOS_DIS1#
A89	PCIE_CLKN0_CB	B89	VGA_R
A90	GND	B90	GND
A91	V3.3A_SPI	B91	VGA_G
A92	SPI_SO_F	B92	VGA_B
A93	GPO0	B93	VGA_Z_HSYNC
A94	SPI_CLK_F	B94	VGA_Z_VSYNC
A95	SPI_SI_F	B95	VGA_DDCCLK
A96	PP_TPM	B96	VGA_DDCDATA
A97	None	B97	CARRY_SPI_CS#
A98	CB_STXD1X	B98	SMI#
A99	CB_SRXD1X	B99	SCI#
A100	GND	B100	GND
A101	CB_STXD2X	B101	CB_FAN_PWM (Option)
A102	CB_SRXD2X	B102	CB_FAN_TACH (Option)
A103	PCH_LID#	B103	PCH_SLEEP#
A104	VIN	B104	VIN

A105	VIN	B105	VIN
A106	VIN	B106	VIN
A107	VIN	B107	VIN
A108	VIN	B108	VIN
A109	VIN	B109	VIN
A110	GND	B110	GND

2.3.2 TYPE2 Row C/D Connector (CN2)

Row C		Row D	
Pin	Signal	Pin	Signal
C1	GND	D1	GND
C2	IDE_D7_R	D2	IDE_D5_R
C3	IDE_D6_R	D3	IDE_D10_R
C4	IDE_D3_R	D4	IDE_D11_R
C5	IDE_D15_R	D5	IDE_D12_R
C6	IDE_D8_R	D6	IDE_D4_R
C7	IDE_D9_R	D7	IDE_D0_R
C8	IDE_D2_R	D8	IDE_DRQ_R
C9	IDE_D13_R	D9	IDE_IOW#_R
C10	IDE_D1_R	D10	IDE_ACK#_R
C11	GND	D11	GND
C12	IDE_D14_R	D12	IDE_INTRQ_R
C13	IDE_RDY_R	D13	IDE_A0_R
C14	IDE_IOR#_R	D14	IDE_A1_R
C15	LPC_PME#	D15	IDE_A2_R
C16	PCI_GNT2#	D16	IDE_CS1#_R

C17	PCI_REQ2#	D17	IDE_CS3#_R
C18	PCI_GNT1#	D18	IDE_RST#_R
C19	PCI_REQ1#	D19	PCI_GNT3#
C20	PCI_GNT0#	D20	PCI_REQ3#
C21	GND	D21	GND
C22	PCI_REQ0#	D22	PCI_AD1
C23	PCI_RESET#	D23	PCI_AD3
C24	PCI_AD0	D24	PCI_AD5
C25	PCI_AD2	D25	PCI_AD7
C26	PCI_AD4	D26	PCI_C_BE0#
C27	PCI_AD6	D27	PCI_AD9
C28	PCI_AD8	D28	PCI_AD11
C29	PCI_AD10	D29	PCI_AD13
C30	PCI_AD12	D30	PCI_AD15
C31	GND	D31	GND
C32	PCI_AD14	D32	PCI_PAR
C33	PCI_C_BE1#	D33	PCI_SERR#
C34	PCI_PERR#	D34	PCI_STOP#
C35	PCI_LOCK#	D35	PCI_TRDY#
C36	PCI_DEVSEL#	D36	PCI_FRAME#
C37	PCI_IRDY#	D37	PCI_AD16
C38	PCI_C_BE2#	D38	PCI_AD18
C39	PCI_AD17	D39	PCI_AD20
C40	PCI_AD19	D40	PCI_AD22
C41	GND	D41	GND
C42	PCI_AD21	D42	PCI_AD24
C43	PCI_AD23	D43	PCI_AD26

C44	PCI_C_BE3#	D44	PCI_AD28
C45	PCI_AD25	D45	PCI_AD30
C46	PCI_AD27	D46	PCI_IRQC#
C47	PCI_AD29	D47	PCI_IRQD#
C48	PCI_AD31	D48	LPC_CLKRUN#
C49	PCI_IRQA#	D49	PCI_M66EN
C50	PCI_IRQB#	D50	PCI_CLK
C51	GND	D51	GND
C52	None	D52	None
C53	None	D53	None
C54	None	D54	None
C55	None	D55	None
C56	None	D56	None
C57	None	D57	TYPE2#
C58	None	D58	None
C59	None	D59	None
C60	GND	D60	GND
C61	None	D61	None
C62	None	D62	None
C63	None	D63	None
C64	None	D64	None
C65	None	D65	None
C66	None	D66	None
C67	None	D67	GND
C68	None	D68	None
C69	None	D69	None
C70	GND	D70	GND

C71	None	D71	None
C72	None	D72	None
C73	None	D73	None
C74	None	D74	None
C75	None	D75	None
C76	GND	D76	GND
C77	None	D77	IDE_CBLID#
C78	None	D78	None
C79	None	D79	None
C80	GND	D80	GND
C81	None	D81	None
C82	None	D82	None
C83	None	D83	None
C84	GND	D84	GND
C85	None	D85	None
C86	None	D86	None
C87	GND	D87	GND
C88	None	D88	None
C89	None	D89	None
C90	GND	D90	GND
C91	None	D91	None
C92	None	D92	None
C93	GND	D93	GND
C94	None	D94	None
C95	None	D95	None
C96	GND	D96	GND
C97	None	D97	None

C98	None	D98	None
C99	None	D99	None
C100	GND	D100	GND
C101	None	D101	None
C102	None	D102	None
C103	GND	D103	GND
C104	VIN	D104	VIN
C105	VIN	D105	VIN
C106	VIN	D106	VIN
C107	VIN	D107	VIN
C108	VIN	D108	VIN
C109	VIN	D109	VIN
C110	GND	D110	GND

2.3.3 EDP Function from DDI to EDP (CN3)

Pin	Pin Name	Signal Type
1	+VLCD	PWR
2	+VLCD	PWR
3	GND	GND
4	GND	GND
5	TX0-	DIFF
6	TX0+	DIFF
7	GND	GND
8	TX1-	DIFF
9	TX1+	DIFF
10	GND	GND
11	TX2-	DIFF

12	TX2+	DIFF
13	GND	GND
14	CLK-	DIFF
15	CLK+	DIFF
16	GND	GND
17	AUX-	DIFF
18	AUX+	DIFF
19	GND	GND
20	BKLT_CTRL_3.3S	IN
21	NC	
22	BKLT_EN_3.3S	IN
23	EPC_HPD	
24	GND	GND
25	GND	GND
26	GND	GND
27	+VLED	PWR
28	+VLED	PWR
29	+VLED	PWR
30	+VLED	PWR

2.3.4 Backlight (CN4)

Pin	Pin Name	Signal Type
1	+VLED	PWR
2	BKL_CTRL_3.3S	IN
3	GND	GND
4	GND	GND
5	BKL_EN_3.3S	IN

2.3.5 SPI FLASH tool (CN5)

Pin	Pin Name	Signal Type
1	SPI_SO_F	IN
2	GND	GND
3	SPI_CLK_F	OUT
4	+V3.3A_SPI	PWR
5	SPI_SI_F	OUT
6	SPI_CE0#_F	OUT
7	NC	

2.3.6 LPC (CN6)

Pin	Pin Name	Signal Type
1	LPC_AD0	I/O
2	LPC_AD1	I/O
3	LPC_AD2	I/O
4	LPC_AD3	I/O
5	+V3.3S	PWR
6	LPC_FRAME#	IN
7	BUF_PLT_RST#	OUT
8	GND	GND
9	PCI_CLK_SIO	OUT
10	NC	IN
11	NC	IN
12	INT_SERIRQ_3P3	I/O

2.3.7 RTC Battery (BAT1)

Pin	Pin Name	Signal Type
1	+V3.3A_RTC	PWR
2	GND	GND

2.4 List of LEDs

Please refer to the table below for all of the board's LEDs that you can find the status

Label	Function
LED1	SATA Detect
LED2 (Blue)	S0 Voltage
LED3 (Red)	S5 Voltage

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 <F2> 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

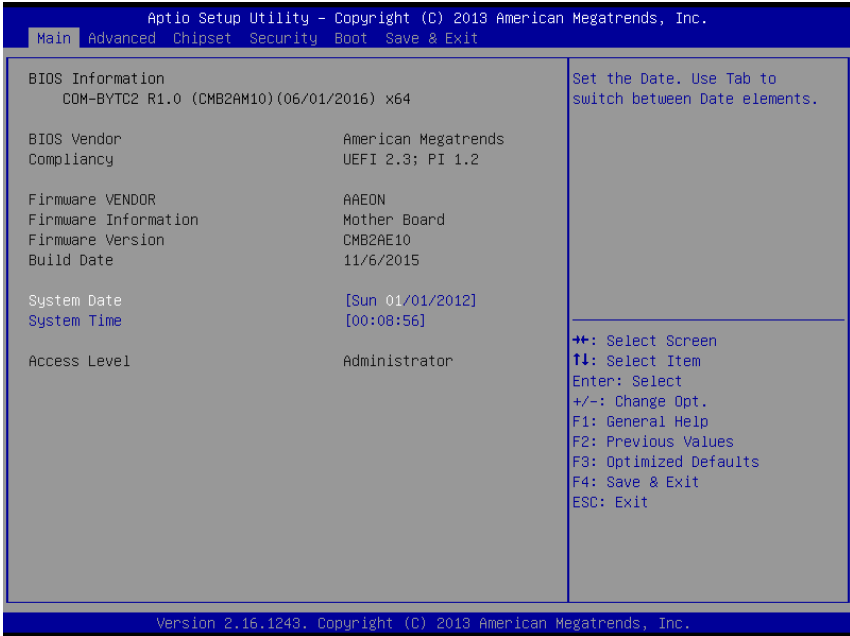
Boot – Enable/ Disable quiet Boot Option

Security – The setup administrator password can be set here

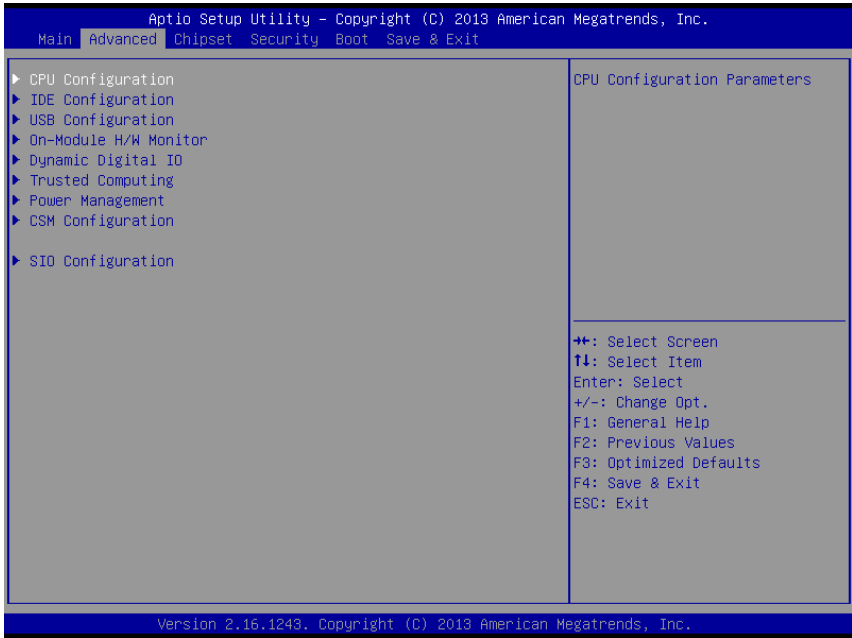
Save & Exit – Save your changes and exit the program

3.3 Setup submenu: Main

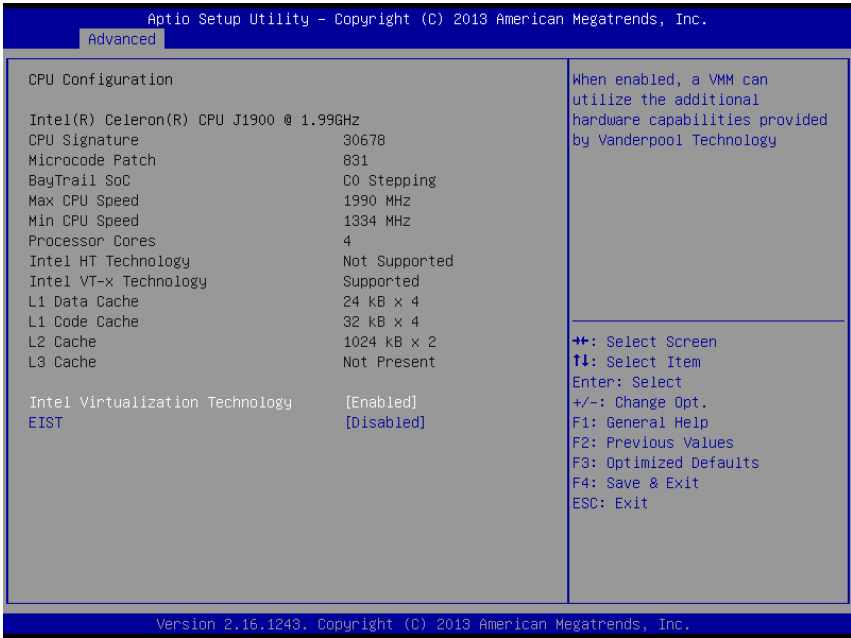
Press **Delete** to enter Setup



3.4 Setup submenu: Advanced



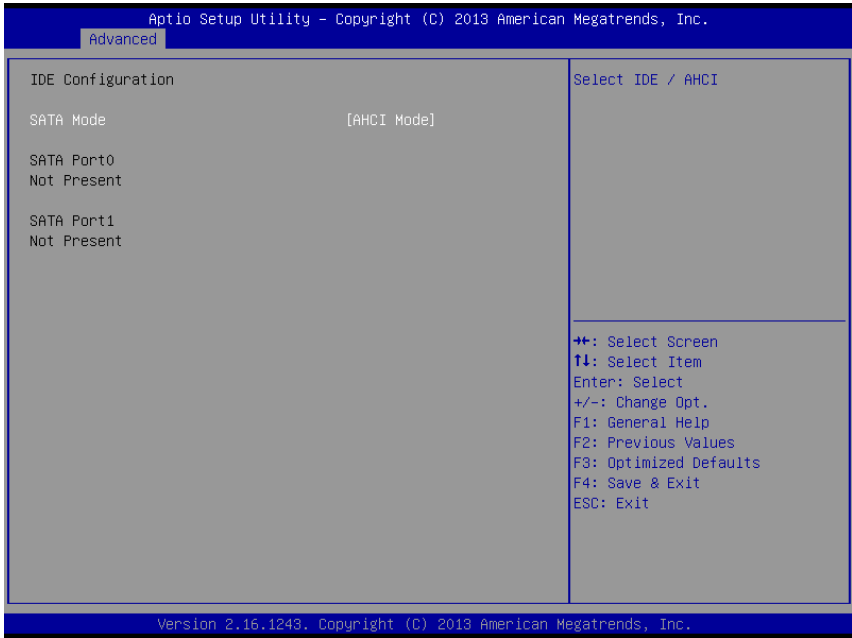
3.4.1 Advanced: CPU Configuration



Options summary:

Intel Virtualization Technology	Disabled	Optimal Default, Failsafe Default
	Enabled	
EIST	Disabled	Optimal Default, Failsafe Default
	Enabled	

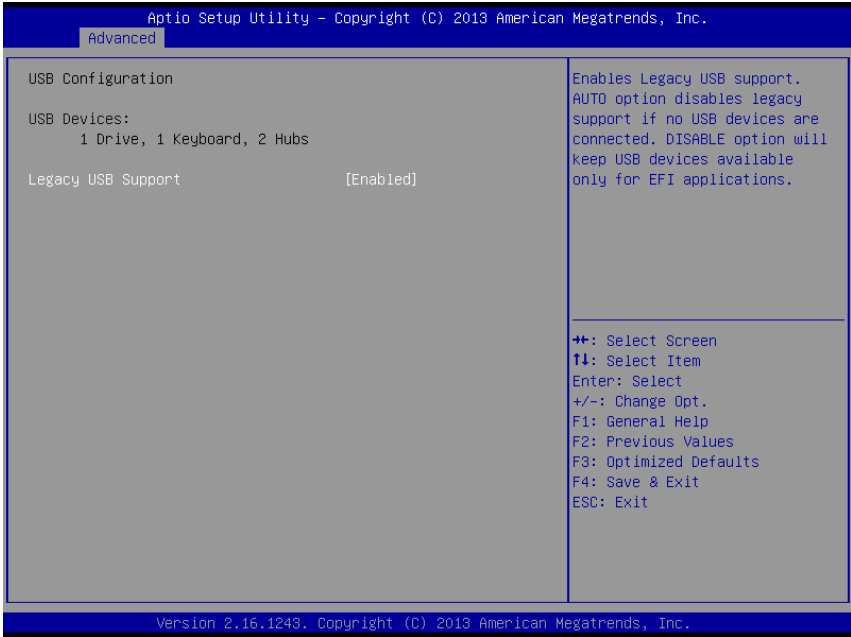
3.4.2 Advanced: IDE Configuration (IDE)



Options summary:

SATA Mode	IDE Mode	
	AHCI Mode	Optimal Default, Failsafe Default

3.4.3 Advanced: USB Configuration



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 (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 the 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 routing	FCH USB port 8/9	Optimal Default, Failsafe Default
	FCH USB port 0/1	

3.4.4 Advanced: On-Module H/W Monitor

The screenshot displays the 'Advanced' section of the Aptio Setup Utility. The title bar reads 'Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.' and the sub-header is 'Advanced'. The main content area is divided into two columns. The left column lists various hardware monitoring metrics, and the right column contains a legend for navigation keys.

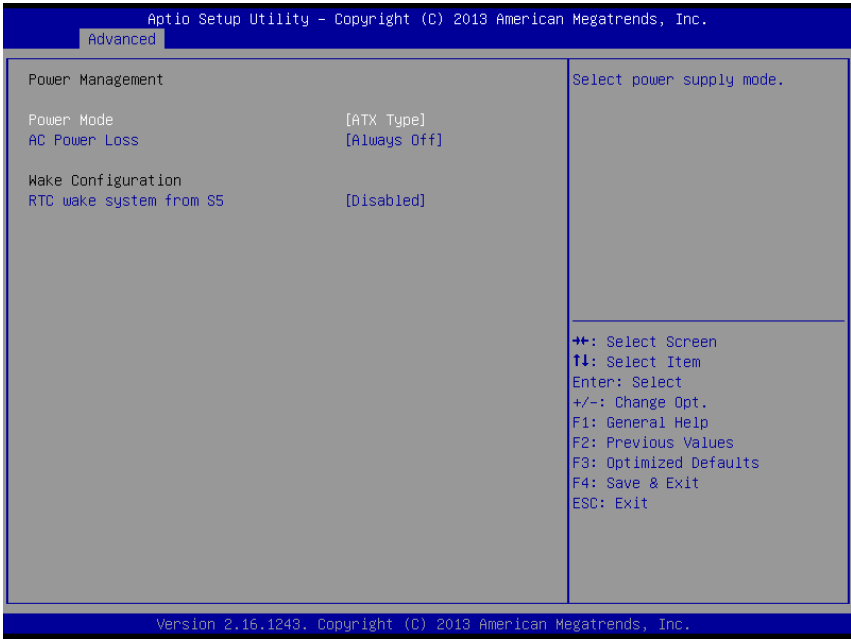
Pc Health Status	
CPU Temperature	: +69 %
SYS Temperature	: +44 %
CPU FAN Speed	: N/A
+12V	: +12.128 V
+5V	: +5.047 V
+3.3V	: +3.264 V
VMEM	: +1.366 V
5VSB	: +5.088 V
VDCORE	: +0.803 V

Legend:

- +/: Select Screen
- ↑↓: Select Item
- Enter: Select
- +/-: Change Opt.
- F1: General Help
- F2: Previous Values
- F3: Optimized Defaults
- F4: Save & Exit
- ESC: Exit

Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

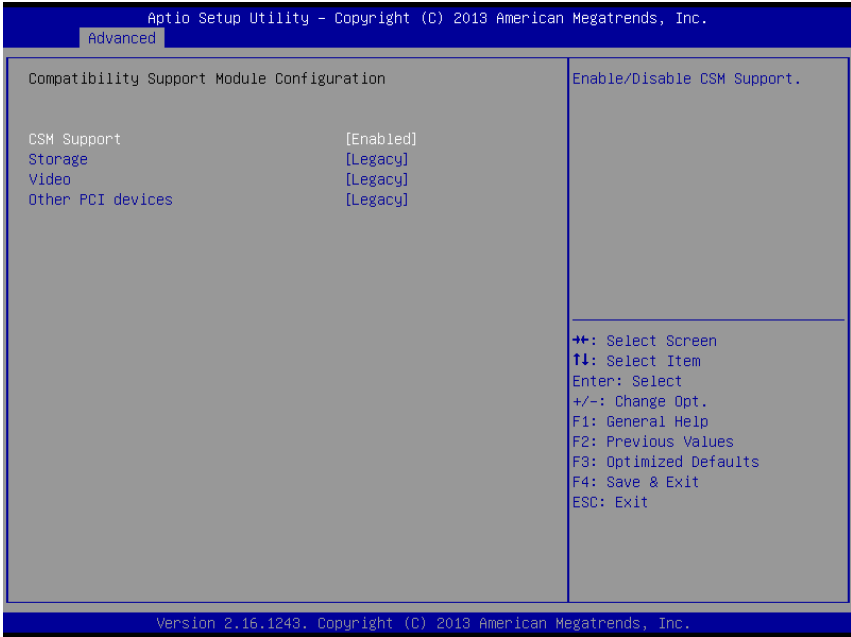
3.4.5 Advanced: Power Management



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.		
RTC wake system from S5	Disabled	Optimal Default, Failsafe Default
	Fixed Time	
	Dynamic Time	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified		

3.4.6 Advanced: CSM Configuration



Options summary:

CSM Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable CSM Support		
Storage	Do not launch	Optimal Default, Failsafe Default
	UEFI	
	Legacy	
Controls the execution of UEFI and Legacy storage OpROM		
Video	Do not launch	Optimal Default, Failsafe Default
	UEFI	
	Legacy	
Controls the execution of UEFI and Legacy Video OpROM		
Other PCI devices	UEFI	Optimal Default, Failsafe Default
	Legacy	
Determines OpROM execution policy for devices other than Network, Storage, or Video		

3.4.7 Advanced: SIO Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.

Advanced

AMI SIO Driver Version : A5.05.03

Super IO Chip Logical Device(s) Configuration

- ▶ [*Active*] Serial Port 9
- ▶ [*Active*] Serial Port 10

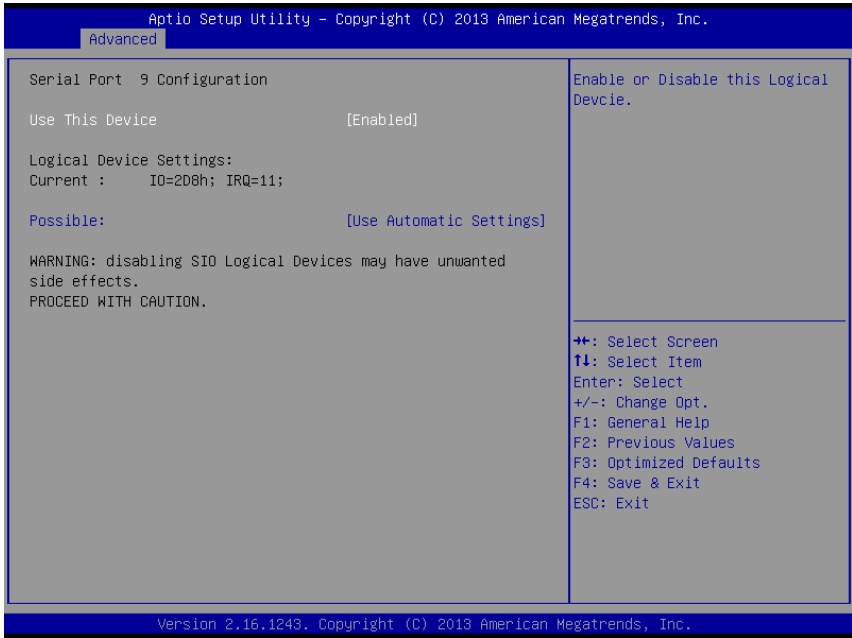
WARNING: Logical Devices state showing at the left side of the controll, reflects current Logical Device state.
Cahnges made during Setup Session will be shown after you restart the system.

View and Set Basic properties of the SIO Logical device.
Like IO Base, IRQ Range, DMA Channel and Device Mode.

⬆⬆: Select Screen
⬆⬆: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.16.1243. Copyright (C) 2013 American Megatrends, Inc.

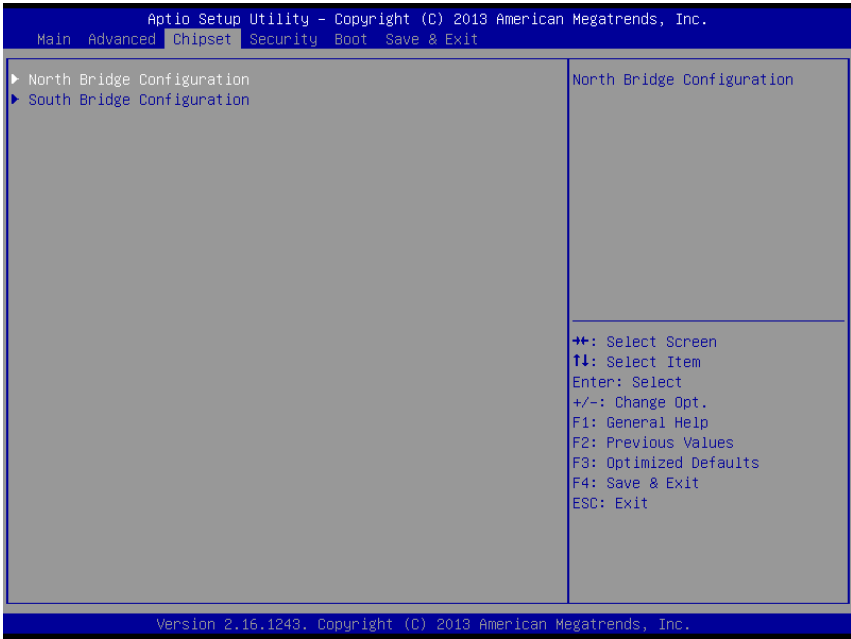
3.4.8 Advanced: Serial Port Configuration



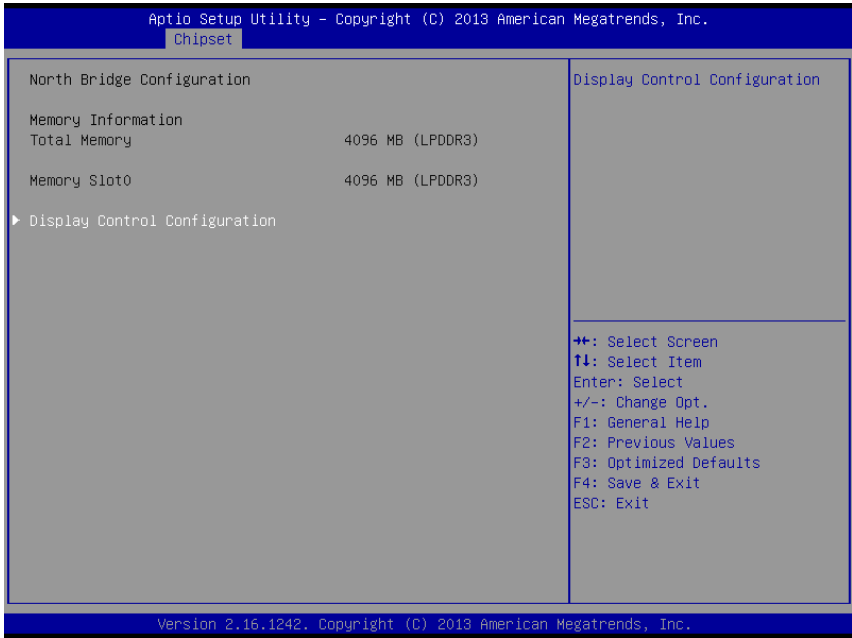
Options summary:

Use This Device	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Serial Port (COM)		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2D8; IRQ=11;	
	IO=2C8; IRQ=11;	
Select an optimal setting for IO device		

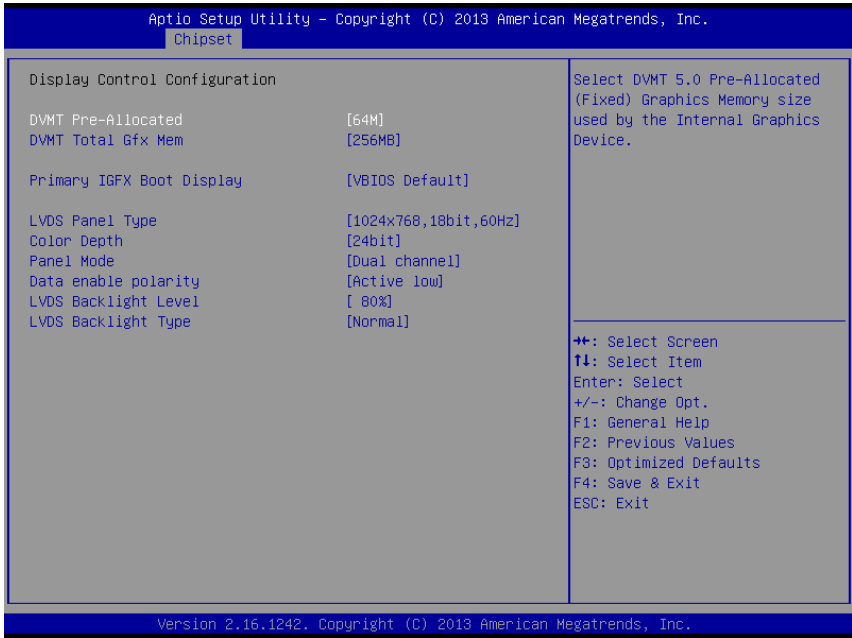
3.5 Setup submenu: Chipset



3.5.1 Chipset: North Bridge Configuration



3.5.1.1 North Bridge Configuration: Display Control Configuration



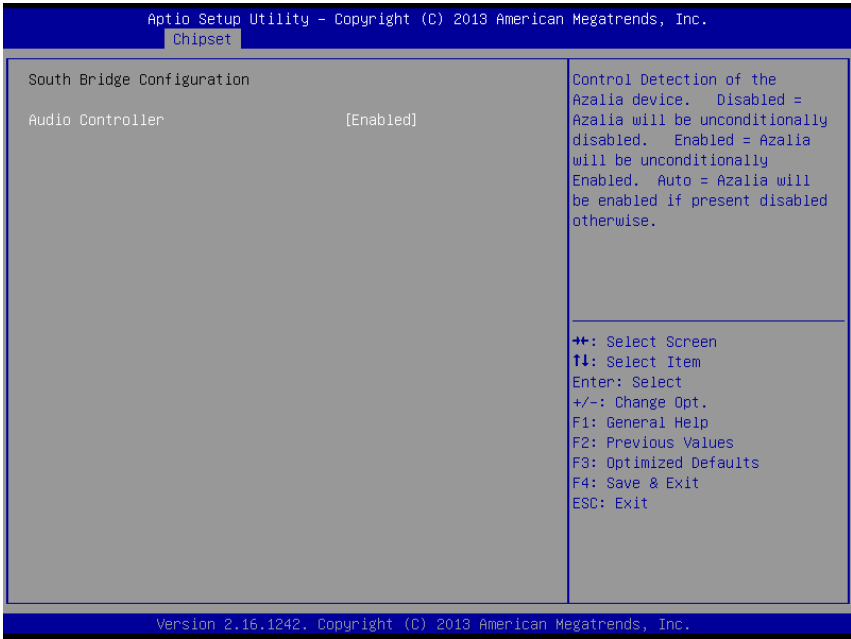
Options summary:

DVMT Pre-Allocated	64M	Optimal Default, Failsafe Default
	96M	
	128M	
	160M ...	
	512M	
DVMT Total Gfx Mem	128MB	Optimal Default, Failsafe Default
	256MB	
	Max	
Primary IGFX Boot Display	VBIOS Default	Optimal Default, Failsafe Default
	CRT	
	LVDS	
	DP/HDMI	

Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display		
Secondary IGFX Boot Display	Disabled	Optimal Default, Failsafe Default
	CRT	
	LVDS	
	DP/HDMI	
Select Secondary Display Device		
LVDS Panel Type	640x480,60Hz	Optimal Default, Failsafe Default
	800x480,60Hz	
	800x600,60Hz	
	1024x600,60Hz	
	1024x768,60Hz	
	1280x768,60Hz	
	1280x1024,60Hz	
	1366x768,60Hz	
	1440x900,60Hz	
	1600x1200,60Hz	
	1920x1080,60Hz	
	1920x1200,60Hz	
	1280x800,60HZ	
1024x600,80HZ		
Color Depth	24bit	Optimal Default, Failsafe Default
	18bit	
Panel Mode	Single Channel	Optimal Default, Failsafe Default
	Dual Channel	
Data enable polarity	Active Low	Optimal Default, Failsafe Default
	Active High	
LVDS Backlight Type	Normal	Optimal Default, Failsafe Default
	Inverted	
LVDS Backlight Level	100%	Optimal Default, Failsafe Default
	90%	
	80%	
	70%	

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

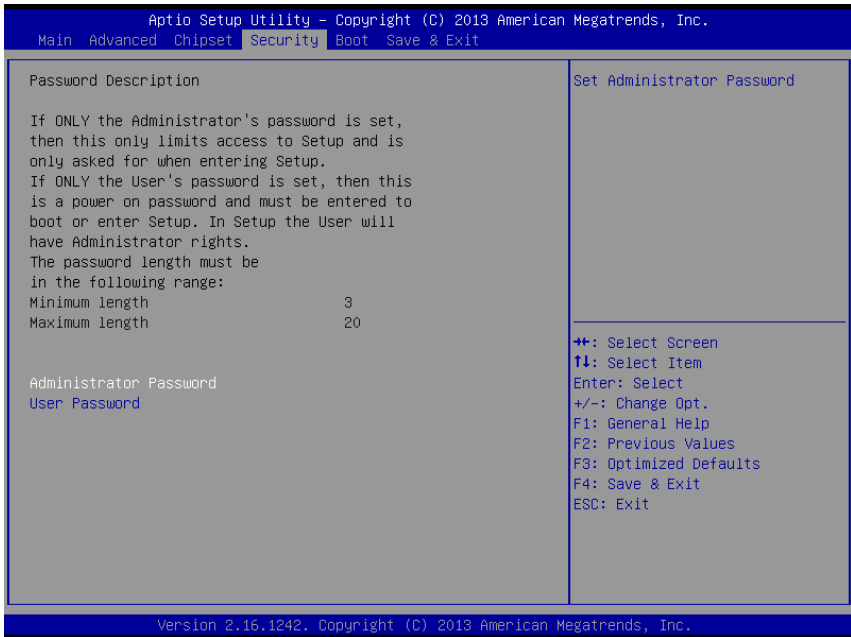
3.5.2 Chipset: South Bridge Configuration



Options summary:

Audio Controller	Enabled	Optimal Default, Failsafe Default
	Disabled	

3.6 Setup submenu: Security



Change User/Administrator Password

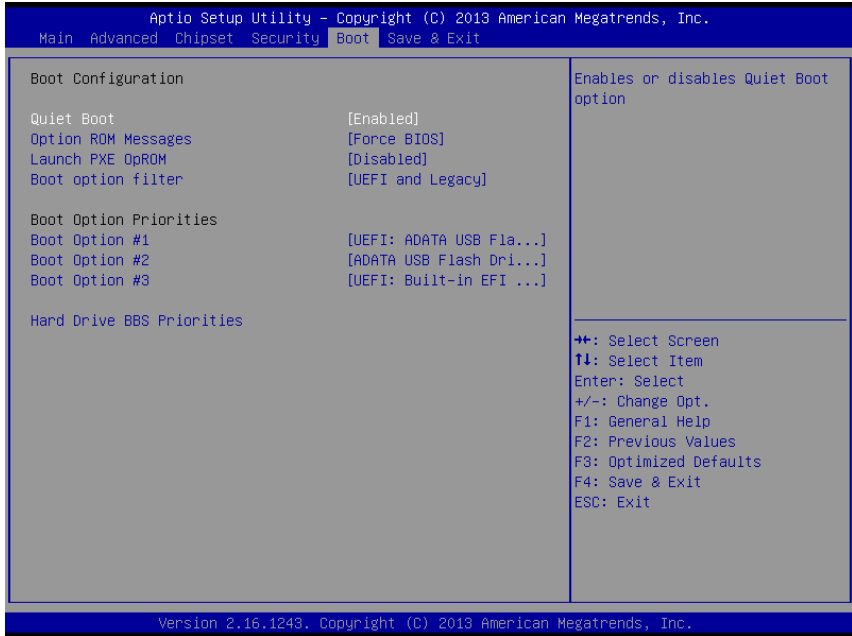
You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility.

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.

3.7 Setup submenu: Boot

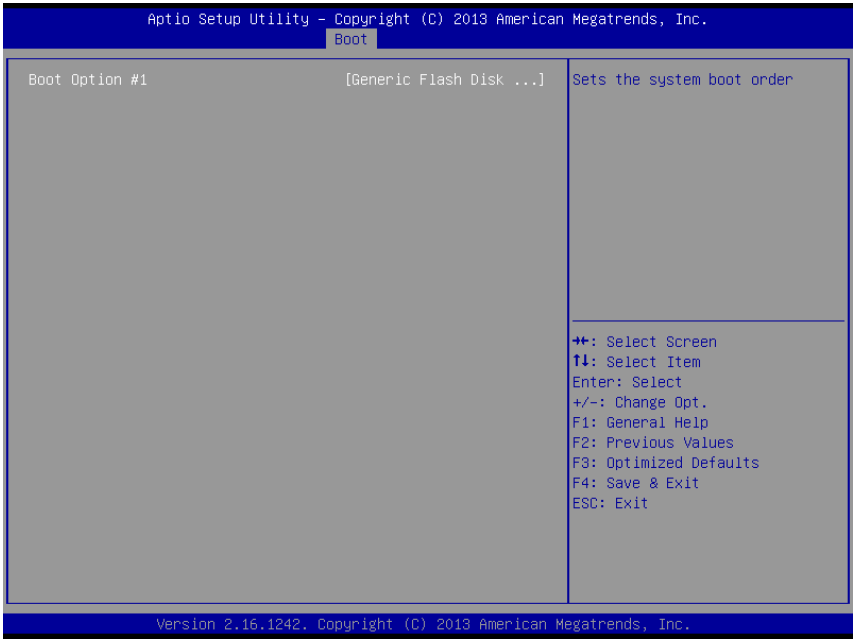


Options summary:

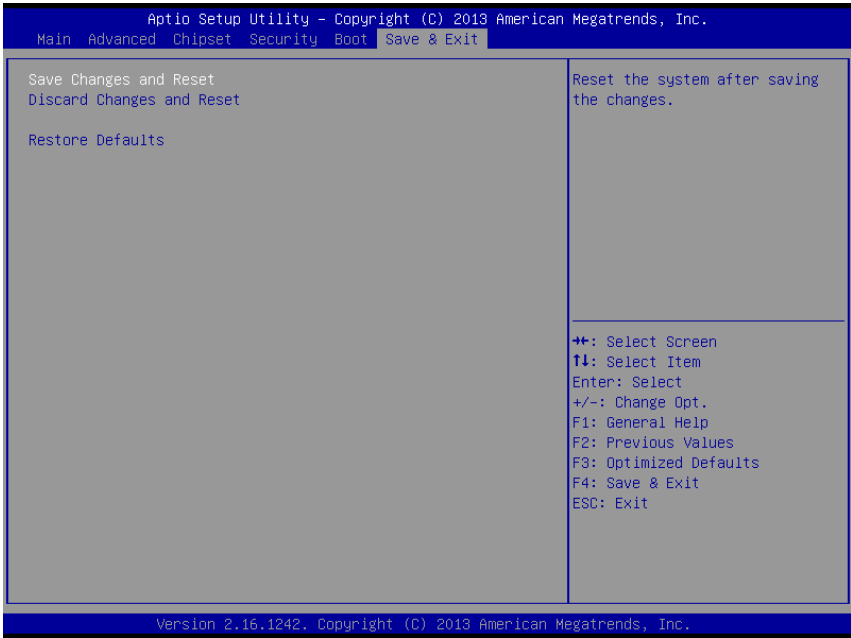
Quiet Boot	Disabled	Default
	Enabled	
En/Disable showing boot logo.		
Option ROM Messages	Force BIOS	Default
	Keep Current	
Set display mode for Option ROM		
Launch PXE OpROM	Disabled	Default
	Enabled	
En/Disable Legacy Boot Option		
Boot option filter	UEFI and Legacy	Default
	Legacy only	
	UEFI only	

This option controls Legacy/UEFI ROMs priority

3.7.1 Boot: Hard Drive BBS Priorities



3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Driver Download/Installation

Drivers for the COM-BYTC2 can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/p/modulescom-express-modules-com-bytc2>

Download the driver(s) you need and follow the steps below to install them.

Step 1 – Install Chipset Driver

1. Open the **Step1 - Chipset** folder followed by **SetupChipset.exe**
2. Follow the instructions
3. Drivers will be installed automatically

Step 2 – Install Graphics Driver

1. Open the **Step2 - Graphics** 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 Network Driver

1. Open the **Step3 - Network** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install xHCI Driver

1. Open the **STEP4 - xHCI** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

Step 5 – Install Intel Sideband Fabric Device Driver

1. Open the **STEP5 –Intel Sideband Fabric Device** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

Step 6 – Install TPM Driver

1. Open the **STEP6 - TPM** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

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 BRAMLDRReg //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

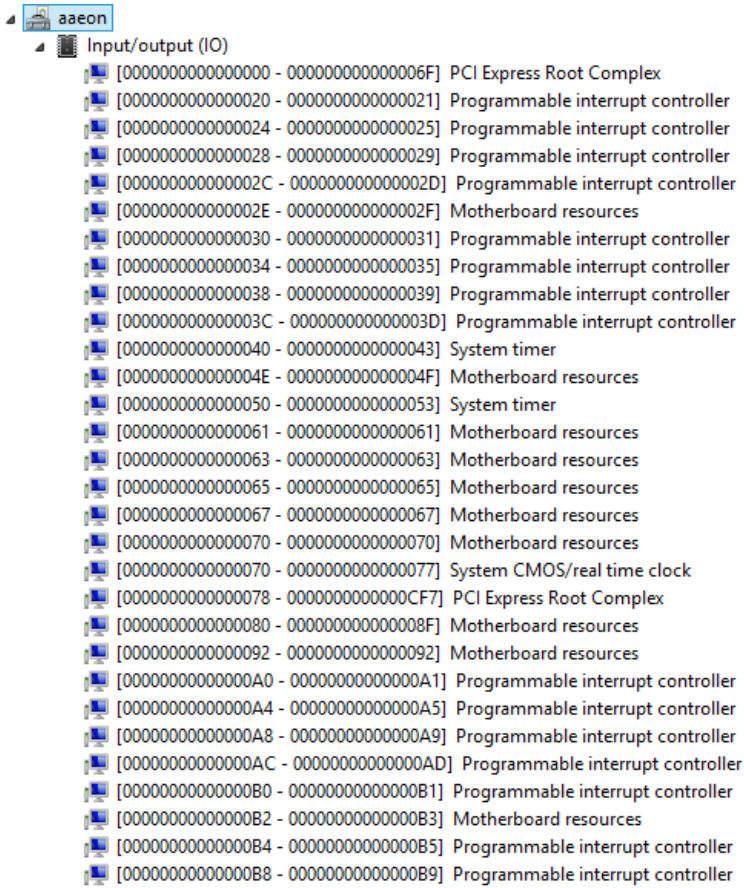
    IOWriteByte(EcBRAMIndex, 0x13 + OPReg);
    Return      IOReadByte(EcBRAMData, Value);
}
*****

```





















Appendix B

I/O Information

B.1 I/O Address Map



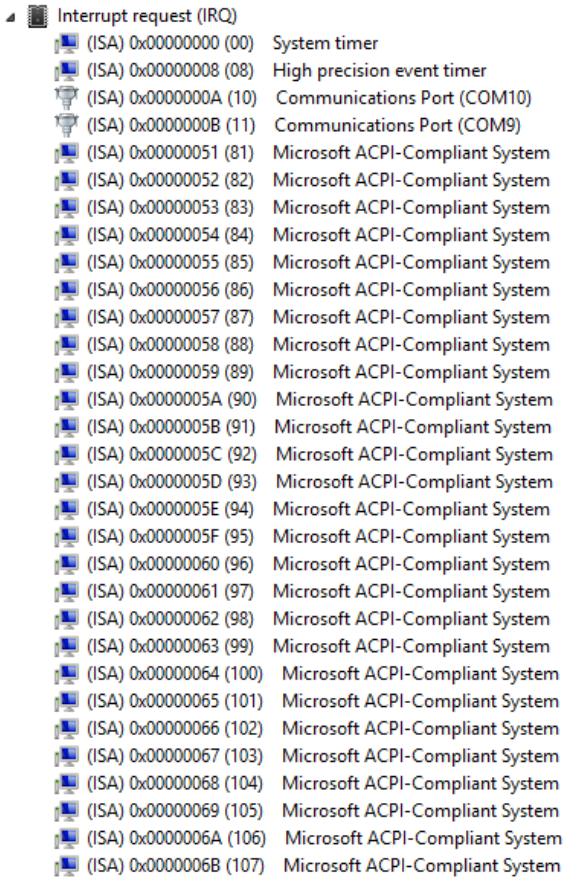
Address Range	Device Name
[0000000000000000 - 000000000000006F]	PCI Express Root Complex
[0000000000000020 - 0000000000000021]	Programmable interrupt controller
[0000000000000024 - 0000000000000025]	Programmable interrupt controller
[0000000000000028 - 0000000000000029]	Programmable interrupt controller
[000000000000002C - 000000000000002D]	Programmable interrupt controller
[000000000000002E - 000000000000002F]	Motherboard resources
[0000000000000030 - 0000000000000031]	Programmable interrupt controller
[0000000000000034 - 0000000000000035]	Programmable interrupt controller
[0000000000000038 - 0000000000000039]	Programmable interrupt controller
[000000000000003C - 000000000000003D]	Programmable interrupt controller
[0000000000000040 - 0000000000000043]	System timer
[000000000000004E - 000000000000004F]	Motherboard resources
[0000000000000050 - 0000000000000053]	System timer
[0000000000000061 - 0000000000000061]	Motherboard resources
[0000000000000063 - 0000000000000063]	Motherboard resources
[0000000000000065 - 0000000000000065]	Motherboard resources
[0000000000000067 - 0000000000000067]	Motherboard resources
[0000000000000070 - 0000000000000070]	Motherboard resources
[0000000000000070 - 0000000000000077]	System CMOS/real time clock
[0000000000000078 - 00000000000000CF7]	PCI Express Root Complex
[0000000000000080 - 000000000000008F]	Motherboard resources
[0000000000000092 - 0000000000000092]	Motherboard resources
[00000000000000A0 - 00000000000000A1]	Programmable interrupt controller
[00000000000000A4 - 00000000000000A5]	Programmable interrupt controller
[00000000000000A8 - 00000000000000A9]	Programmable interrupt controller
[00000000000000AC - 00000000000000AD]	Programmable interrupt controller
[00000000000000B0 - 00000000000000B1]	Programmable interrupt controller
[00000000000000B2 - 00000000000000B3]	Motherboard resources
[00000000000000B4 - 00000000000000B5]	Programmable interrupt controller
[00000000000000B8 - 00000000000000B9]	Programmable interrupt controller

	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000002C8 - 00000000000002CF]	Communications Port (COM10)
	[00000000000002D8 - 00000000000002DF]	Communications Port (COM9)
	[00000000000003B0 - 00000000000003BB]	Intel(R) HD Graphics
	[00000000000003C0 - 00000000000003DF]	Intel(R) HD Graphics
	[0000000000000400 - 000000000000047F]	Motherboard resources
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
	[0000000000000500 - 00000000000005FE]	Motherboard resources
	[0000000000000600 - 000000000000061F]	Motherboard resources
	[0000000000000680 - 000000000000069F]	Motherboard resources
	[0000000000000D00 - 000000000000FFFF]	PCI Express Root Complex
	[000000000000C000 - 000000000000CFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Exp
	[000000000000D000 - 000000000000DFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Exp
	[000000000000E000 - 000000000000E01F]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform
	[000000000000E020 - 000000000000E03F]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI -
	[000000000000E040 - 000000000000E043]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI -
	[000000000000E050 - 000000000000E057]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI -
	[000000000000E060 - 000000000000E063]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI -
	[000000000000E070 - 000000000000E077]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI -
	[000000000000E080 - 000000000000E087]	Intel(R) HD Graphics

































B.2 Memory Address Map

































- Memory
 - [0000000000A0000 - 0000000000BFFFF] Intel(R) HD Graphics
 - [0000000000A0000 - 0000000000BFFFF] PCI Express Root Complex
 - [0000000000C0000 - 0000000000DFFFF] PCI Express Root Complex
 - [0000000000E0000 - 0000000000FFFFFF] PCI Express Root Complex
 - [0000000080000000 - 00000000D0A16FFE] PCI Express Root Complex
 - [00000000C0000000 - 00000000CFFFFFFF] Intel(R) HD Graphics
 - [00000000D0000000 - 00000000D03FFFFFF] Intel(R) HD Graphics
 - [00000000D0400000 - 00000000D07FFFFFF] Intel(R) PRO/1000 PL Network Connection
 - [00000000D0400000 - 00000000D08FFFFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor P
 - [00000000D0800000 - 00000000D081FFFF] Intel(R) PRO/1000 PL Network Connection
 - [00000000D0900000 - 00000000D091FFFF] Intel(R) I210 Gigabit Network Connection
 - [00000000D0900000 - 00000000D09FFFFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor P
 - [00000000D0920000 - 00000000D0923FFF] Intel(R) I210 Gigabit Network Connection
 - [00000000D0A00000 - 00000000D0A0FFFF] Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Mic
 - [00000000D0A10000 - 00000000D0A13FFF] Intel(R) Celeron(R)/Pentium(R) HD Audio - 0F04
 - [00000000D0A14000 - 00000000D0A1401F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor F
 - [00000000D0A16000 - 00000000D0A167FF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor F
 - [00000000E0000000 - 00000000EFFFFFFF] Motherboard resources
 - [00000000E00000D0 - 00000000E00000DB] Intel(R) Sideband Fabric Device
 - [00000000FED00000 - 00000000FED003FF] High precision event timer
 - [00000000FED01000 - 00000000FED01FFF] Motherboard resources
 - [00000000FED03000 - 00000000FED03FFF] Motherboard resources
 - [00000000FED04000 - 00000000FED04FFF] Motherboard resources
 - [00000000FED08000 - 00000000FED08FFF] Motherboard resources
 - [00000000FED1C000 - 00000000FED1CFFF] Motherboard resources
 - [00000000FEE00000 - 00000000FEEFFFFFFF] Motherboard resources
 - [00000000FEF00000 - 00000000FEFFFFFFF] Motherboard resources
 - [00000000FF000000 - 00000000FFFFFFFF] Intel(R) 82802 Firmware Hub Device

































B.3 IRQ Mapping Chart



































































Interrupt request (IRQ)	
(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000008 (08)	High precision event timer
(ISA) 0x0000000A (10)	Communications Port (COM10)
(ISA) 0x0000000B (11)	Communications Port (COM9)
(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) 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
 (ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
 (ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
 (ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
 (ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
 (ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
 (ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
 (ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System
 (ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
 (ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
 (ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
 (ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System

































 (ISA) 0x0000010C (268)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010D (269)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010F (271)	Microsoft ACPI-Compliant System
 (ISA) 0x00000110 (272)	Microsoft ACPI-Compliant System
 (ISA) 0x00000111 (273)	Microsoft ACPI-Compliant System
 (ISA) 0x00000112 (274)	Microsoft ACPI-Compliant System
 (ISA) 0x00000113 (275)	Microsoft ACPI-Compliant System
 (ISA) 0x00000114 (276)	Microsoft ACPI-Compliant System
 (ISA) 0x00000115 (277)	Microsoft ACPI-Compliant System
 (ISA) 0x00000116 (278)	Microsoft ACPI-Compliant System
 (ISA) 0x00000117 (279)	Microsoft ACPI-Compliant System
 (ISA) 0x00000118 (280)	Microsoft ACPI-Compliant System
 (ISA) 0x00000119 (281)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011A (282)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011B (283)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011C (284)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011D (285)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011E (286)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011F (287)	Microsoft ACPI-Compliant System
 (ISA) 0x00000120 (288)	Microsoft ACPI-Compliant System
 (ISA) 0x00000121 (289)	Microsoft ACPI-Compliant System
 (ISA) 0x00000122 (290)	Microsoft ACPI-Compliant System
 (ISA) 0x00000123 (291)	Microsoft ACPI-Compliant System
 (ISA) 0x00000124 (292)	Microsoft ACPI-Compliant System
 (ISA) 0x00000125 (293)	Microsoft ACPI-Compliant System
 (ISA) 0x00000126 (294)	Microsoft ACPI-Compliant System
 (ISA) 0x00000127 (295)	Microsoft ACPI-Compliant System
 (ISA) 0x00000128 (296)	Microsoft ACPI-Compliant System
 (ISA) 0x00000129 (297)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012A (298)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012B (299)	Microsoft ACPI-Compliant System

































 (ISA) 0x0000012C (300)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012D (301)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012E (302)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012F (303)	Microsoft ACPI-Compliant System
 (ISA) 0x00000130 (304)	Microsoft ACPI-Compliant System
 (ISA) 0x00000131 (305)	Microsoft ACPI-Compliant System
 (ISA) 0x00000132 (306)	Microsoft ACPI-Compliant System
 (ISA) 0x00000133 (307)	Microsoft ACPI-Compliant System
 (ISA) 0x00000134 (308)	Microsoft ACPI-Compliant System
 (ISA) 0x00000135 (309)	Microsoft ACPI-Compliant System
 (ISA) 0x00000136 (310)	Microsoft ACPI-Compliant System
 (ISA) 0x00000137 (311)	Microsoft ACPI-Compliant System
 (ISA) 0x00000138 (312)	Microsoft ACPI-Compliant System
 (ISA) 0x00000139 (313)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013A (314)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013B (315)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013C (316)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013E (318)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
 (ISA) 0x00000140 (320)	Microsoft ACPI-Compliant System
 (ISA) 0x00000141 (321)	Microsoft ACPI-Compliant System
 (ISA) 0x00000142 (322)	Microsoft ACPI-Compliant System
 (ISA) 0x00000143 (323)	Microsoft ACPI-Compliant System
 (ISA) 0x00000144 (324)	Microsoft ACPI-Compliant System
 (ISA) 0x00000145 (325)	Microsoft ACPI-Compliant System
 (ISA) 0x00000146 (326)	Microsoft ACPI-Compliant System
 (ISA) 0x00000147 (327)	Microsoft ACPI-Compliant System
 (ISA) 0x00000148 (328)	Microsoft ACPI-Compliant System
 (ISA) 0x00000149 (329)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014A (330)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014B (331)	Microsoft ACPI-Compliant System






































 (ISA) 0x0000014C (332)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014D (333)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014E (334)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014F (335)	Microsoft ACPI-Compliant System
 (ISA) 0x00000150 (336)	Microsoft ACPI-Compliant System
 (ISA) 0x00000151 (337)	Microsoft ACPI-Compliant System
 (ISA) 0x00000152 (338)	Microsoft ACPI-Compliant System
 (ISA) 0x00000153 (339)	Microsoft ACPI-Compliant System
 (ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
 (ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System
 (ISA) 0x00000156 (342)	Microsoft ACPI-Compliant System
 (ISA) 0x00000157 (343)	Microsoft ACPI-Compliant System
 (ISA) 0x00000158 (344)	Microsoft ACPI-Compliant System
 (ISA) 0x00000159 (345)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015A (346)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015B (347)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015C (348)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015D (349)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015E (350)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
 (ISA) 0x00000160 (352)	Microsoft ACPI-Compliant System
 (ISA) 0x00000161 (353)	Microsoft ACPI-Compliant System
 (ISA) 0x00000162 (354)	Microsoft ACPI-Compliant System
 (ISA) 0x00000163 (355)	Microsoft ACPI-Compliant System
 (ISA) 0x00000164 (356)	Microsoft ACPI-Compliant System
 (ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
 (ISA) 0x00000166 (358)	Microsoft ACPI-Compliant System
 (ISA) 0x00000167 (359)	Microsoft ACPI-Compliant System
 (ISA) 0x00000168 (360)	Microsoft ACPI-Compliant System
 (ISA) 0x00000169 (361)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016B (363)	Microsoft ACPI-Compliant System

 (ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016D (365)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
 (ISA) 0x00000170 (368)	Microsoft ACPI-Compliant System
 (ISA) 0x00000171 (369)	Microsoft ACPI-Compliant System
 (ISA) 0x00000172 (370)	Microsoft ACPI-Compliant System
 (ISA) 0x00000173 (371)	Microsoft ACPI-Compliant System
 (ISA) 0x00000174 (372)	Microsoft ACPI-Compliant System
 (ISA) 0x00000175 (373)	Microsoft ACPI-Compliant System
 (ISA) 0x00000176 (374)	Microsoft ACPI-Compliant System
 (ISA) 0x00000177 (375)	Microsoft ACPI-Compliant System
 (ISA) 0x00000178 (376)	Microsoft ACPI-Compliant System
 (ISA) 0x00000179 (377)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017A (378)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017B (379)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017E (382)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017F (383)	Microsoft ACPI-Compliant System
 (ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
 (ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
 (ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
 (ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
 (ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System
 (ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
 (ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
 (ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
 (ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
 (ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System

 (ISA) 0x0000018C (396)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018D (397)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018E (398)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018F (399)	Microsoft ACPI-Compliant System
 (ISA) 0x00000190 (400)	Microsoft ACPI-Compliant System
 (ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
 (ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
 (ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
 (ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
 (ISA) 0x00000195 (405)	Microsoft ACPI-Compliant System
 (ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
 (ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
 (ISA) 0x00000198 (408)	Microsoft ACPI-Compliant System
 (ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System

 (ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AE (430)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B4 (436)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B6 (438)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B8 (440)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B9 (441)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BE (446)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BF (447)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C0 (448)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C1 (449)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C2 (450)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C3 (451)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C4 (452)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C5 (453)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C6 (454)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C8 (456)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C9 (457)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CA (458)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CB (459)	Microsoft ACPI-Compliant System

 (ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CE (462)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CF (463)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D0 (464)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D1 (465)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D2 (466)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D3 (467)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D4 (468)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D5 (469)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D6 (470)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D7 (471)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D8 (472)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D9 (473)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DA (474)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DB (475)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DC (476)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DD (477)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DE (478)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DF (479)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E0 (480)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E1 (481)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E2 (482)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E3 (483)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E4 (484)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E7 (487)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E8 (488)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System

	(ISA) 0x000001EC (492)	Microsoft ACPI-Compliant System
	(ISA) 0x000001ED (493)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EE (494)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
	(PCI) 0x00000004 (04)	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control
	(PCI) 0x00000010 (16)	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Roc
	(PCI) 0x00000011 (17)	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Roc
	(PCI) 0x00000012 (18)	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Roc
	(PCI) 0x00000012 (18)	PCI standard PCI-to-PCI bridge
	(PCI) 0x00000013 (19)	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	(PCI) 0x00000013 (19)	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Roc
	(PCI) 0x00000016 (22)	Intel(R) Celeron(R)/Pentium(R) HD Audio - 0F04
	(PCI) 0xFFFFFFF6 (-10)	Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
	(PCI) 0xFFFFFFF7 (-9)	Intel(R) HD Graphics
	(PCI) 0xFFFFFFF8 (-8)	Intel(R) PRO/1000 PL Network Connection
	(PCI) 0xFFFFFFF9 (-7)	Intel(R) I210 Gigabit Network Connection
	(PCI) 0xFFFFF7FA (-6)	Intel(R) I210 Gigabit Network Connection
	(PCI) 0xFFFFF7FB (-5)	Intel(R) I210 Gigabit Network Connection
	(PCI) 0xFFFFF7FC (-4)	Intel(R) I210 Gigabit Network Connection
	(PCI) 0xFFFFF7FD (-3)	Intel(R) I210 Gigabit Network Connection
	(PCI) 0xFFFFF7FE (-2)	Intel(R) I210 Gigabit Network Connection

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)	GPA2
GPI1 Pin Status	0x00(Note6)	1(Note8)	(Note16)	GPA3
GPI2 Pin Status	0x00(Note6)	2(Note9)	(Note17)	GPA4
GPI3 Pin Status	0x00(Note6)	3(Note10)	(Note18)	GPA5
GPO0 Pin Status	0x00(Note6)	4(Note11)	(Note19)	GPJ0
GPO1 Pin Status	0x00(Note6)	5(Note12)	(Note20)	GPJ1
GPO2 Pin Status	0x00(Note6)	6(Note13)	(Note21)	GPJ2
GPO3 Pin Status	0x00(Note6)	7(Note14)	(Note22)	GPJ3

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);
}
*****

```


Appendix D

Notes for Users

D.1 Notes for Users

Please observe the following items to ensure optimal performance:

eDP limitation

Display Default: CRT + LVDS

If you want to use the onboard eDP, please contact AAEON tech support for the BIOS that support onboard eDP. Due to the limitation, eDP works only on major OS and no display in DOS environment.

BIOS CSM Mode Suggestion

It is suggested to set CSM mode to GOP for Windows based OS environment

It is suggested to set CSM mode to Legacy for DOS environment

With the EHCI controller no longer available on the latest Intel® platforms, it is recommended to install Windows 7 through a SATA bus, eg. SATA DVD ROM, or refer to the following link to create a USB installer:

<https://downloadcenter.intel.com/download/25476/Windows-7-USB-3-0-Creator-Utility>