

GENE-BT06

3.5" Subcompact Board

User's Manual 6th Ed

Last Updated: May 20, 2019

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Packing List

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

ltem		Quantity
•	GENE-BT06 with heat spreader	1

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

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.
- 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.
- 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 the 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

DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement



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. 产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

			有	毒有害物质耳	成元素	
部件名称	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
印刷电路板				0	0	0
及其电子组件	×	0	0	0	0	0
外部信号				0	0	0
连接器及线材	×	0	0	0	0	0
3: 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。						
<: 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。						

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

	Poisonous or Hazardous Substances or Elements					
Component	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	Х	0	0	0	0	0
Wires & Connectors for External Connections	Х	0	0	0	Ο	0

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.

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.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

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Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	3.5'' SubCompact Board
CPU	Intel® Atom™ E3845/E3825
CPU Frequency	Up to 2.0GHz
Chipset	Intel® Atom™ series Processor SoC
Memory Type	Onboard DDR3L 1066/1333
Max. Memory Capacity	Up to 4GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	Wide DC support 9~24V
Power Supply Type	AT/ATX
Power Consumption (Typical)	Intel® E3845, Onboard DDR3L 1600MHz 4G,
	0.64A@+12V
Dimension (L x W)	5.75" x 4" (146mm x 101.6mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (TBD)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000

Certification

CE/FCC

Display	
VGA/LCD Controller	Intel® Atom™ Processor SoC
Video Output	CRT+LVDS, HDMI+LVDS , CRT+HDMI
Backlight inverter supply	18/24-bit dual-channel LVDS LCD

I/O	
Ethernet	Intel® I211 (or 210), 10/100/1000Base-TX, RJ-45 x
	2
Audio	High definition audio interface
USB Port	USB2.0 x 3 , USB 3.0 x 1
Serial Port	RS-232 x 2 , RS-232/422/485 x 2
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	SATA 2.0 x 1
FDD Interface	_
SSD	mSATA (Half-size, shared with Mini-Card)
Expansion Slot	Mini-Card x 1 (Full-size)
DIO	8-bit
SIM	x 1
ТРМ	x 1
Touch	x 1

Chapter 2

Hardware Information

2.1 Dimensions







Standard Ver. - Solder Side





101.61 26.58 24.29 22.01 14.64 3.18 146.05 142.85 142.82 135.38 β GENE-BT06 REVALI_0_0 P/N1907BT0602 MADE IN TAIVAN 106.17 120.94 116.08 □ 0 116.05 105.16 000 104.76 101.73 92.46 ¢3.56 52.72 37.88 84.09 o 80.03 74.93 66.97 00000 59.27 86.03 0.0.0 53.34 52.89 41.97 ⁵0°° 00000 42.37 <u>35.36</u> (40.74 -⊕^{____}L 38.15 000 ama amamand 80 0000 28.84 (5) 30.00 74.49 <u>26.31</u> 21.17 16.37 60 23.11 19.34 33.00 <u>13.94</u> 8.89 <u>10.76</u> 8.89 ď, 0.00 76.49 65.44 63.41 50.59 98.38 77.48 91.60 50.02 38.14 28.86 20.41 11.08 3.41 0.00



Advanced Ver. - Solder Side



2.2 Jumpers and Connectors

Standard Ver. - Component Side





Standard Ver. - Solder Side



Advanced Ver. - Component Side





Advanced Ver. - Solder Side



2.3 Assembly Options

Option 1





3 5" Subcompa

Option 2



2.4 Block Diagram



Chapter 2 – Hardware Information

2.5 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
JP1	COM3 Pin8 Function Selection
JP2	COM2 Pin8 Function Selection
JP3	LVDS Port Operating VDD Selection
JP4	LVDS Port Backlight Inverter VCC Selection
JP5	LVDS Port Backlight Lightness Control Mode Selection
JP6	Auto Power Button Enable/Disable Selection
JP7	Front Panel Connector
JP8	Clear CMOS Jumper
JP9	Touch Screen 4/5/8-wire Mode Selection



2.5.4 LVDS Port Backlight Inverter VCC Selection (JP4)



2.5.1 COM3 Pin8 Function Selection (JP1)



+5V (Default)

1	2	3



VR Mode (Default)

2.5.6 Auto Power Button Enable/ Disable Selection (JP6)



Disable

1	2	3

Enable (Default)

* When disabled, the power button of JP7 (1-2) will be used to power on the system

2.5.7 Front Panel Connector (JP7)

1		2
3		4
5		6
7		8
9		10

Pin	Signal	Pin	Signal
1	PWR_BTN-	2	PWR_BTN+
3	HDD_LED-	4	HDD_LED+
5	SPEAKER-	6	SPEAKER+
7	PWR_LED-	8	PWR_LED+
9	H/W RESET-	10	H/W RESET+
2.5.8 Clear CMOS Jumper (JP8)			



Normal (Default)



2.5.9 Touch Screen 4,5,8 Wire Selection (JP9)



4/8 Wire Mode (Default)

1	2	3

5 Wires Mode

2.6 List of Connectors

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

Label	Function
CN1	Amplifier R-channel output
CN2	Amplifier L-channel output
CN3	+5VSB Output w/SMBus
CN4	Digital IO Port
CN5	External +5VSB Input
CN6	+5V Output for SATA HDD
CN7	SATA Port
CN8	External Power Input
CN9	Audio I/O Port
CN10	COM Port 4
CN11	LPC Port
CN12	COM Port 3
CN13	UIM Card Socket
CN14	MiniCard Slot (Half-Mini Card)
CN15	COM Port 2
CN16	SPI Debug Port
CN17	MiniCard Slot (Full-Mini Card)
CN18	USB 2.0 Port 3
CN19	USB 2.0 Port 2
CN20	COM Port 1 (Wafer)
CN21	LVDS Port
CN22	PS/2 Keyboard/Mouse Combo Port
CN23	Touch Screen Connector

CN24	LVDS Port Inverter / Backlight Connector
CN25	CPU FAN (Optional)
CN26	LAN (RJ-45) Port2
CN27	LAN (RJ-45) Port1
CN28	USB Ports 0 and 1
CN29	DP Port
CN30	COM Port 1 (D-SUB 9)
CN31	HDMI Port
CN32	Battery
CN33	VGA Port

2.6.1 Amplifier R-Channel Output (CN1)

Pin	Pin Name	Signal Type	Signal Level
1	SKR_R+	OUT	
2	SKR_R-	OUT	

2.6.2 Amplifier L-Channel Output (CN2)

Pin	Pin Name	Signal Type	Signal Level
1	SKR_L+	OUT	
2	SKR_L-	OUT	

2.6.3 +5VVB Output w/ SMBus (CN3)



Pin	Pin Name	Signal Type	Signal Level
1	SMB_DATA	I/O	+3.3V
2	GND	GND	
3	SMB_CLK	I/O	+3.3V
4	GND	GND	
5	PS_ON#	OUT	+3.3V
6	+5VSB	PWR	+5V
2.6.4 Digital I/O Port (CN4)

	5		1	
DIO0	1	⊠2	_	DIO1
DIO2		1	_	DIO3
DIO4	B	1	_	DIO5
DIO6		ø	_	DIO7
+5V	98	⊠ 10	_	GND
		. 4		

Pin	Pin Name	Signal Type	Signal Level
1	DIO0	I/O	+5V
2	DIO1	I/O	+5V
3	DIO2	I/O	+5V
4	DIO3	I/O	+5V
5	DIO4	I/O	+5V
6	DIO5	I/O	+5V
7	DIO6	I/O	+5V
8	DIO7	I/O	+5V
9	+5V	PWR	+5V
10	GND	GND	

2.6.5 External +5VSB Input (CN5)



Pin	Pin Name	Signal Type	Signal Level
1	PS_ON#	OUT	+3.3V
2	GND	GND	
3	+5VSB	PWR	+5V

2.6.6 +5V Output for SATA HDD (CN6)

Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	GND	GND	

T

+5V

GND

₽

₽

2.6.7 SATA Port 1 (CN7)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	GND	

2.6.8 External Power Input (CN8)

+12V GND			
Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+9 ~ 24V (or +12V)
2	GND	GND	

+ -

2.6.9 Audio I/O Port (CN9)

		1
1		MIC_L
	-	MIC_R
	-	- GND_AUDIO
	8	LINE_L_IN
	-	LINE_R_IN
		-GND_AUDIO
	=	LEFT_OUT
	-	- GND_AUDIO
	-	- RIGHT_OUT
10		+5V_AUDIO
	╵└───ſ	

Pin	Pin Name	Signal Type	Signal Level
1	MIC_L	IN	
2	MIC_R	IN	
3	GND_AUDIO	GND	
4	LINE_L_IN	IN	
5	LINE_R_IN	IN	
6	GND_AUDIO	GND	
7	LEFT_OUT	OUT	
8	GND_AUDIO	GND	
9	RIGHT_OUT	OUT	

2.6.10 COM Port 4 (CN10)



Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±9V
5	TX	OUT	±9V
6	CTS	IN	
7	DTR	OUT	±9V
8	RI	IN	
9	GND	GND	

2.6.11 LCP Port (CN11)



Pin	Pin Name	Signal Type	Signal Level
1	LAD0	I/O	+3.3V
2	LAD1	I/O	+3.3V
3	LAD2	I/O	+3.3V
4	LAD3	I/O	+3.3V
5	+3.3V	PWR	+3.3V
6	LFRAME#	IN	
7	LRESET#	OUT	+3.3V
8	GND	GND	
9	LCLK	OUT	
10	LDRQ0	IN	
11	LDRQ1	IN	
12	SERIRQ	1/0	+3.3V

2.6.12 COM Port 3 (CN12)





RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±5V
5	TX	OUT	±5V
6	CTS	IN	
7	DTR	OUT	±5V
8	RI/+5V/+12V	IN/ PWR	+5V/+12V
9	GND	GND	



RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	NC		
3	RS422_TX+	OUT	±5V
4	NC		
5	RS422_RX+	IN	
6	NC		
7	RS422_RX-	IN	
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	



RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	NC		
3	RS485_D+	I/O	±5V
4	NC		
5	NC		
6	NC		
7	NC		
8	NC/+5V/+12V	PWR	+5V/+12V

9
* CO

GND

COM3 RS232/422/485 can be set by BIOS settings. Default is RS-232

* Function for pin 8 can be set by JP1

2.6.13 UIM Card Socket (CN13)

Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	
2	UIM_RST	IN	
3	UIM_CLK	IN	
4	GND	GND	
5	UIM_VPP	PWR	
6	UIM_DATA	1/0	

2.6.14 MiniCard Slot (Half-MiniCard) (CN14)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	NC		
9	GND	GND	
10	NC		

11	PCIE_REF_CLK-	DIFF	
12	NC		
13	PCIE_REF_CLK+	DIFF	
14	NC		
15	GND	GND	
16	NC		
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	

38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V

* CN14 can be selected for MiniCard or mSATA by changing BOM

* Only mSATA or CFast can be chosen on the motherboard

2.6.15 COM Port 2 (CN15)



RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	±5V
5	ТХ	OUT	±5V
6	CTS	IN	
7	DTR	OUT	±5V
8	RI/+5V/+12V	IN/ PWR	+5V/+12V
9	GND	GND	



RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	NC		
3	RS422_TX+	OUT	±5V
4	NC		
5	RS422_RX+	IN	
6	NC		
7	RS422_RX-	IN	

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8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	
		RS485_D- RS485_D- RS485_D+ NC NC NC NC NC NC S NC S NC S NC S NC S NC S NC S NC S NC S NC S NC S S S S S S S S S S S S S	

RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	NC		
3	RS485_D+	I/O	±5V
4	NC		
5	NC		
6	NC		
7	NC		
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

* COM2 RS232/422/485 can be set by BIOS settings. Default is RS-232

* Function for pin 8 can be set by JP2

2.6.16 BIOS Debug Port (CN16)

Pin	Pin Name	Signal type	Signal Level
1	SPI_MISO	OUT	
2	GND	GND	
3	SPI_CLK	IN	
4	+3.3VSB	PWR	+3.3V
5	SPI_MOSI	IN	
6	SPI_CS	IN	
7	NC		

2.6.17 MiniCard Slot (Full-MiniCard) (CN17)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	UIM_PWR	PWR	
9	GND	GND	
10	UIM_DATA	I/O	
11	PCIE_REF_CLK-	DIFF	
12	UIM_CLK	IN	
13	PCIE_REF_CLK+	DIFF	

14	UIM_RST	IN	
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	

41	+3.3VSB	PWR	+3.3V	
42	NC			
43	GND	GND		
44	NC			
45	NC			
46	NC			
47	NC			
48	+1.5V	PWR	+1.5V	
49	NC			
50	GND	GND		
51	NC			
52	+3.3VSB	PWR	+3.3V	

2.6.18 USB 2.0 Port 3 (CN18)

+5VSB	
USB3_D- USB3_D+	
GND	
GND	

Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB3_D-	DIFF	
3	USB3_D+	DIFF	
4	GND	GND	
5	GND	GND	

2.6.19 USB 2.0 Port 2 (CN19)

Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB2_D-	DIFF	
3	USB2_D+	DIFF	
4	GND	GND	
5	G ND	GND	

+5VSB

GND

GND

USB2 D-_

USB2_D+_

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2.6.20 LVDS Port (CN21)



\star LVDS LCD_PWR can be set to 3.3V or +5V by JP3

Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	

3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	
5	LVDS_A_CLK-	DIFF	
6	LVDS_A_CLK+	DIFF	
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	
9	LVDS_DA0-	DIFF	
10	LVDS_DA0+	DIFF	
11	LVDS_DA1-	DIFF	
12	LVDS_DA1+	DIFF	
13	LVDS_DA2-	DIFF	
14	LVDS_DA2+	DIFF	
15	LVDS_DA3-	DIFF	
16	LVDS_DA3+	DIFF	
17	DDC_DATA	I/O	+3.3V
18	DDC_CLK	I/O	+3.3V
19	LVDS_DB0-	DIFF	
20	LVDS_DB0+	DIFF	
21	LVDS_DB1-	DIFF	
22	LVDS_DB1+	DIFF	
23	LVDS_DB2-	DIFF	
24	LVDS_DB2+	DIFF	
25	LVDS_DB3-	DIFF	
26	LVDS_DB3+	DIFF	
27	LCD_PWR	PWR	+3.3V/+5V
28	GND	GND	
29	LVDS_B_CLK-	DIFF	

2.6.21 PS/2 Keyboard/ Mouse Combo Port (CN22)



Pin	Pin Name	Signal Type	Signal Level
1	KB_ DATA	I/O	+5V
2	KB_CLK	I/O	+5V
3	GND	GND	
4	+5VSB	PWR	+5V
5	MS_DATA	I/O	+5V
6	MS_CLK	I/O	+5V

2.6.22 Touch Screen Connector (CN23)



4 Wire			
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	

4 Wires

2	TOP	IN	
3	BOTTOM	IN	
4	LEFT	IN	
5	RIGHT	IN	
6	NC		
7	NC		
8	NC		
9	NC		

5 Wires



5 Wires				
Pin	Pin Name	Signal Type	Signal Level	
1	GND	GND		
2	UL(Y)	IN		
3	UR(H)	IN		
4	LL(L)	IN		
5	LR(X)	IN		
6	SENSE(S)	IN		
7	NC			
8	NC			
9	NC			

8 Wires



8 Wires				
Pin	Pin Name	Signal Type	Signal Level	
1	GND	GND		
2	TOP EXCITE	IN		
3	BOTTOM EXCITE	IN		
4	LEFT EXCITE	IN		
5	RIGHT EXCITE	IN		
6	TOP SENSE	IN		
7	BOTTOM SENSE	IN		
8	LEFT SENSE	IN		
9	RIGHT SENSE	IN		

* Touch mode can be set by JP9

2.6.23 LVDS Port Inverter/ Backlight Connector (CN24)



Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_CONTROL	OUT	
3	GND	GND	
4	GND	GND	
5	BKL_ENABLE	OUT	+5V

* LVDS BKL_PWR can be set to +5V or +12V by JP4

* LVDS BKL_CONTROL can be set by JP5

2.6.24 CPU FAN (CN25)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_POWER	PWR	+12V
3	FAN_TAC	IN	

2.6.25 LAN (RJ-45) Port 2 (CN26)



Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

2.6.26 LAN (RJ-45) Port 1 (CN27)

ACT/ LE	'LINK ED	SP L	EED ED
) 8 [] []		

Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

2.6.27 USB Port 0 and 1 (CN28)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USBO_D-	DIFF	
3	USB0_D+	DIFF	
4	GND	GND	
5	USB0_SSRX-	DIFF	
6	USB0_SSRX+	DIFF	
7	GND	GND	
8	USB0_SSTX-	DIFF	
9	USB0_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB1_D-	DIFF	
12	USB1_D+	DIFF	
13	GND	GND	

* Only Port 0 supports USB 3.0

2.6.28 DP Port (CN29)

Pin	Pin Name	Signal Type	Signal Level
1	DP_D0+	DIFF	
2	GND	GND	

3	DP_D0-	DIFF	
4	DP_D1+	DIFF	
5	GND	GND	
6	DP_D1-	DIFF	
7	DP_D2+	DIFF	
8	GND	GND	
9	DP_D2-	DIFF	
10	DP_D3+	DIFF	
11	GND	GND	
12	DP_D3-	DIFF	
13	GND	GND	
14	GND	GND	
15	DP_AUX+	DIFF	
16	GND	GND	
17	DP_AUX-	DIFF	
18	HPLG_DETECT	IN	
19	GND	GND	
20	+5V	I/O	+5V

2.6.30 COM Port 1 (D-SUB 9) (CN30)



Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±9V

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4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	

* COM port 1 can be selected for D-SUB 9 or Wafer Box Connector by CN20

2.6.30 HDMI Port (CN31)



Pin	Pin Name	Signal Type	Signal Level
1	TMDS_DAT2+	DIFF	
2	GND	GND	
3	TMDS_DAT2-	DIFF	
4	TMDS_DAT1+	DIFF	
5	GND	GND	
6	TMDS_DAT1-	DIFF	
7	TMDS_DAT0+	DIFF	
8	GND	GND	
9	TMDS_DAT0-	DIFF	
10	TMDS_CLK+	DIFF	
11	GND	GND	
12	TMDS_CLK-	DIFF	
13	NC		
14	NC		

16
17
18
19

15	DDC_CLK	I/O	+5V
16	DDC_DATA	I/O	+5V
17	GND	GND	
18	+5V	I/O	+5V
19	HPLG_DETECT	IN	

2.6.31 Battery (CN32)

Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	3.3V
2	GND	GND	

2.6.32 VGA Port (CN33)



Pin	Pin Name	Signal Type	Signal Level
1	RED	OUT	
2	GREEN	OUT	
3	BLUE	OUT	
4	NC		
5	GND	GND	
6	RED_GND_RTN	GND	
7	GREEN_GND_RTN	GND	
8	BLUE_GND_RTN	GND	
9	+5V	PWR	+5V

10	CRT_PLUG#		
11	NC		
12	DDC_DATA	I/O	+5V
13	HSYNC	OUT	
14	VSYNC	OUT	
15	DDC_CLK	I/O	+5V

Chapter 3

AMI BIOS Setup

GENE-BTO6

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' Key to enter Setup

```
Aptio Setup Utility – Copyright (C) 2013 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
BIOS Information
                                                                Choose the system default
GENE-BT06 R1.0(GBT6AM10) (06/29/2015)
                                                                 language
BIOS Vendor
                                     American Megatrends
                                     5.009
Core Version
Compliancy
                                     UEFI 2.3; PI 1.2
                                     GBT6A 1.00 ×64
Project Version
Build Date and Time
                                    06/29/2015 10:16:44
System Date
                                     [Sun 01/01/2012]
System Time
                                     [01:44:31]
                                                                ↔+: Select Screen
Access Level
                                     Administrator
                                                                ↑↓: Select Item
                                                                Enter: Select
                                                                +/-: Change Opt.
                                                                F1: General Help
                                                                F2: Previous Values
                                                                F3: Optimized Defaults
                                                                F4: Save & Exit
                                                                ESC: Exit
               Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc
```

3.5" Subcompact Bd

3.4 Setup submenu: Advanced



3.4.1 Advanced: Power Management

Aptio Advanced	Setup Utility – Copyright ((C) 2013 American Megatrends,	Inc.
Power Management		Select powe	r supply mode.
Power Mode			
Power Mode Restore AC Power Lo:	[ATX Type] ss [Last State	9]	
ACPI Settings			
Enable ACPI Auto Co	nfiguration [Disabled]		
Enable Hibernation ACPI Sleep State Lock Legacy Resource Wake Configuration	[Enabled] [S3 (Susper es [Disabled]	nd to RAM)] ++: Select fl: Select Enter: Sele	Screen Item sct
Wake on Ring Wake on LAN ▶ S5 RTC Wake Setting	(Enabled) (Enabled) S	+/-: Unange F1: General F2: Previou F3: Optimiz F4: Save & ESC: Exit	upt. Help s Values ed Defaults Exit

Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.

Options summary:

Power Mode	АТХ Туре	Optimal Default, Failsafe Default	
	АТ Туре		
Select power supply	mode		
Restore AC Power	Power Off		
Loss	Power On		
	Last State	Optimal Default, Failsafe Default	
Select AC power state when power is re-applied after a power failure			
Enable ACPI Auto	Enable		
Configuration	Disable	Optimal Default, Failsafe Default	
Enables or Disables BIOS ACPI Auto Configuration			

Enable Hibernation	Enable	Optimal Default, Failsafe Default
	Disable	
Enables or Disables S	System ability to Hibernate	(OS/S4 Sleep State). This option may be
not effective with so	me OS	
ACPI Sleep State	Suspend Disabled	
	S3 only(Suspend to RAM)	Optimal Default, Failsafe Default
Select highest ACPI s	sleep state the System will e	enter when the Suspend button is
pressed		
Lock Legacy	Enable	
Resources	Disable	Optimal Default, Failsafe Default
Enables or Disables I	lock of Legacy Resources	
Wake on Ring	Enable	Optimal Default, Failsafe Default
	Disable	
Enabled/Disabled wa	ake from Ring	
Wake on LAN	Enable	Optimal Default, Failsafe Default
	Disable	
Enabled/Disabled wa	ake from LAN	
S5 RTC Wake		
Settings		
Enable system to wa	ke from S5 using RTC alarn	n.

3.4.1.1 Power Management: S5 RTC Wake Settings

Aptio Setup Utility - Advanced	Copyright (C) 2013 American	Megatrends, Inc.
Wake system with Fixed Time Wake up day Wake up hour Wake up minute Wake up second Wake system with Dynamic Time Wake up minute increase	[Enabled] 0 0 0 0 [Disabled] 1	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1242. 60	puright (C) 2013 American M	evatrends. Inc.

Options summary:

Wake system with Fixed Time	Enable			
	Disable	Optimal Default, Failsafe Default		
Enable or disable System wake on alarm event. Wake up time is setting by following				
settings.				
Wake up day	0-31			
Select 0 for daily system wake up 1-31 for which day of the month that you would like				
the system to wake up				
Wake up hour	0-23			
Wake up minute	0-59			
Wake up second	0-59			

Wake system with Dynamic Time	Enable			
	Disable	Optimal Default, Failsafe Default		
Enable or disable System wake on alarm event. Wake up time is current time + Increase				
minutes.				
Wake up minute increase	1-15			
3.4.2 Advanced: Super IO Configuration



Chapter 3 – AMI BIOS Setup

3.4.2.1 Super IO Configuration: Serial Port 1 Configuration

Aptio Setup Utility - Main	Copyright (C) 2013 America	n Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	(6667)
Change Settings	[Auto]	
		++: Select Screen
		t∔: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F2: Provinus Values
		F3: Optimized Defaults
		ESC: Exit
Version 2.16.1242. C	opyright (C) 2013 American	Megatrends, Inc.

3.4.2.2 Super IO Configuration: Serial Port 2 Configuration

Aptio Setup Utility - Main	Copyright	(C) 2013 American	Megatrends, Inc.
Serial Port 2 Configuration			Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2F8h;	IRQ=3;	(001)
Change Settings Working model	[Auto] [RS232]		
			<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.16.1242. C	opyright (C) 2013 American Me	egatrends, Inc.

3.4.2.3 Super IO Configuration: Serial Port 3 Configuration

Aptio Setup Utility - Main	Copyright	(C) 2013 American	Megatrends, Inc.
Serial Port 3 Configuration			Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3E8h;	IRQ=10;	
Change Settings Working model	[Auto] [RS232]		
			<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.16.1242. Co	opyright (C) 2013 American Mo	egatrends, Inc.

3.4.2.4 Super IO Configuration: Serial Port 4 Configuration

Aptio Setup Utility - Main	Copyright (C) 2013 American	Megatrends, Inc.
Serial Port 4 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2E8h; IRQ=10;	((()))
Change Settings	[Auto]	
		→+: Select Screen 1↓: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.16.1242. Co	puright (C) 2013 American Mu	egatrends. Inc.

Options summary:

Serial Port	Disabled	
	Enabled	Default
Allows BIOS to En/Disable correspond serial port.		
Change Settings	Auto	Default
(Serial Port 1)	IO=3F8h; IRQ=4;	
	IO=3F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	

GENE-BT06

	10-2E9b.	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
Allows BIOS to Select	t Serial Port resource.	
Change Settings	Auto	Default
(Serial Port 2)	10=2F8h; 1RQ=3;	
	IO=3F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=3E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
Working model	RS232	Default
	RS422	
	RS485	
Select Working mode	el	
Change Settings	Auto	Default
(Serial Port 3)	10=3E8h; IRQ=7;	
	IO=3F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=3E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	

	IO=2E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F0h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E0h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
Working model	RS232	Default
	RS422	
	RS485	

Select Working model

Change Settings	Auto	Default
(Serial Port 4)	10=2E8h; IRQ=7;	
	IO=3F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=3E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E8h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2F0h;	
	IRQ=3,4,5,6,7,9,10,11,12;	
	IO=2E0h;	
	IRQ=3,4,5,6,7,9,10,11,12;	

3.4.2.5 Super IO Configuration: Smart Fan Function

Smart Fan Function	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enabled or Disabled Smart Fan		

3.4.2.6 Super IO Configuration: Smart Fan Mode Configuration

Smart Fan Mode Configuration		Smart Fan Mode Select
Fan 1 Smart Fan Control Temperature 1 Temperature 2 Temperature 3 Duty Cycle 1 Duty Cycle 1 Duty Cycle 2 Duty Cycle 3 Duty Cycle 4	[Auto Duty-Cycle Mode] 60 50 40 30 85 70 60 50	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Fan 1 Smart Fan Control	Manual RPM	
	Mode	
	Manual Duty	
	Mode	
	Auto RPM Mode	
	Auto Duty-Cycle	Optimal Default, Failsafe Default
	Mode	
Smart Fan Mode Select		

3.4.3 Advanced: Digital IO

Main	Aptio Setup Utility – Copyright (C) 2013	American Megatrends, Inc.
Disit-1 TO		
Digital IO		Heip for Digital ID
Pin O		
Level	(Low)	
Pin 1		
Туре	[Output]	
Level	(Low)	
Pin 2		
Туре	[Output]	
Level	[Low]	
Pin 3		
Туре	[Output]	
Level	[LOW]	++: Select Screen
Pin 4	[Outwitt]	I∔: Select item
Type	[UUTput]	Enter: Select
Level Din E	[LUW]	+/-: Change upt.
	[Output]	F1: General netp
Level	[output]	F2: Optimized Defaults
Pin 6	[200]	F4: Save & Evit
Tune	[Output]	ESC: Exit
Level	[Low]	LOOP EARC
Pin 7	[200]	
Тире	[Output]	
	Version 2.16.1242. Copyright (C) 2013 Am	merican Megatrends, Inc.

Pin 0~7	Input	
	Output	Optimal Default, Failsafe Default
Set DIO Port 0~7 as	Input or Output	
Output Level	Low	Optimal Default, Failsafe Default
	Hi	
Set GPIO Level when used as Output		

3.4.4 Advanced: H/W Monitor

3.4.4 Advanced: CPU Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2013 America	n Megatrends, Inc.
CPU Configuration		Socket specific CPU Information
▶ Socket 0 CPU Information		
CPU Speed 64-bit	1334 MHz Supported	
Intel Virtualization Technology	[Enabled]	
		++: Select Screen ↑↓: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.16.1242. C	opyright (C) 2013 American	Megatrends, Inc.

Intel Virtualization	Disabled	
Technology	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by		
Vander pool Technology		

3.4.4.1 CPU Configuration: Socket 0 CPU Information

A; Main	otio Setup Utility –	Copyright (C) 2013 America	n Megatrends, Inc.
Socket 0 CPU In Intel(R) Atom(Th CPU Signature Microcode Patch Max CPU Speed Min CPU Speed Processor Cores Intel HT Techno. Intel VT-x Techn L1 Data Cache L1 Code Cache L2 Cache L3 Cache	formation 4) CPU E3825 @ 1.33GH logy hology	2 30679 901 1330 MHz 533 MHz 2 Not Supported Supported 24 kB x 2 32 kB x 2 1024 kB x 1 Not Present	++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.16.1242. Co	pyright (C) 2013 American	Megatrends, Inc.

3.4.5 Advanced: IDE Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2013 America	an Megatrends, Inc.
IDE Configuration		Enable / Disable Serial ATA
Serial-ATA (SATA)		
SATA Speed Support SATA ODD Port SATA Mode	[Gen2] [No ODD] [AHCI Mode]	
Serial-ATA Port O SATA PortO HotPlug	[Enabled] [Disabled]	
Serial-ATA Port 1 SATA Port1 HotPlug	[Enabled] [Disabled]	++: Select Screen
SATA PortO Not Present		t↓: Select Item Enter: Select +/-: Change Ont
SATA Port1 Not Present		F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Serial-ATA(SATA)	Enabled	Default
	Disable	
SATA Speed Support	Gen1	
	Gen2	Default
SATA ODD Port	Port0 ODD	
	Port1 ODD	
	No ODD	Default
SATA Mode	IDE	
	АНСІ	Default

IDE: Configure SATA controllers as legacy IDE		
AHCI: Configure SATA controllers to operate in AHCI mode		
Serial-ATA Port0/1 Enabled Default		
	Disable	
SATA Port0/1 HotPlug	Enabled	
	Disable	Default

3.4.6 Advanced: CSM Configuration

Aptio Setu Advanced	p Utility – Copyright (C) 2013 Ameri	can Megatrends, Inc.
Compatibility Support Mo	dule Configuration	Enable/Disable CSM Support.
CSM16 Module Version	07.75	
Boot option filter Option ROM execution	[UEFI and Legacy]	
Storage Video Other PCI devices	[Legacy] [Legacy] [UEFI]	<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

CSM Support	Disable	
	Enabled	Default
Boot option filter	UEFI and Legacy	Default
	Legacy only	
	UEFI only	
Storage & Video	Do not launch	
	UEFI	
	Legacy	Default
Other PCI devices	UEFI	Default
	Legacy	

3.4.7 Advanced: Trusted Computing

Aptio Setup Utilit Main	y – Copyright (C) 2013 (American Megatrends, Inc.
Configuration Security Device Support	[Disabled]	Enables or Disables BIOS support for security device. O.S. will not show Security
Current Status Information NO Security Device Found		INTIA interface will not be available.
		++: Select Screen
		Fit: Select Trem Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.16.1242	. Copyright (C) 2013 Ame	erican Megatrends, Inc.

Options summary:

Security Device Support	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enabled or Disabled BIOS Support for Security device. O.S. will not show Security		

Device. TCG EFI protocol and INT1A interface will not be available

3.4.8 Advanced: USB Configuration

USB Configuration Enables Legacy USB support. USB Module Version 8.11.01 USB Devices: 1 Drive, 1 Mouse, 2 Hubs Legacy USB Support [Enabled] USB Mass Storage Driver Support [Enabled] ++: Select Screen 1: Select Item 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Aptio Setup Utility - Advanced	Copyright (C) 2013 American	Megatrends, Inc.
USB Module Version 8.11.01 USB Devices: 1 Drive, 1 Mouse, 2 Hubs Legacy USB Support [Enabled] USB Mass Storage Driver Support [Enabled] **: Select Screen 11: Select Item Enter: Select */-: Change Opt. 5: Optimized Defaults F4: Save & Exit ESC: Exit	USB Configuration		Enables Legacy USB support.
USB Devices: 1 Drive, 1 Mouse, 2 Hubs Legacy USB Support [Enabled] USB Mass Storage Driver Support [Enabled] ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	USB Module Version	8.11.01	support if no USB devices are
Legacy USB Support [Enabled] USB Mass Storage Driver Support [Enabled]	USB Devices: 1 Drive, 1 Mouse, 2 Hubs		keep USB devices available only for EFI applications.
++: Select Screen ++: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Legacy USB Support USB Mass Storage Driver Support	[Enabled] [Enabled]	
++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
			<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
Enables BIOS Support for Leg	jacy USB Support. V	Vhen enabled, USB can be functional
in legacy environment like DC	DS.	
AUTO option disables legacy	support if no USB c	levices are connected
USB Mass Storage Driver	Disabled	
Support	Enabled	Optimal Default, Failsafe Default
Enable/Disable USB Mass Sto	rage Driver Suppor	t
Device Name (Emulation	Auto	Optimal Default, Failsafe Default
Device Marrie (Emulation	Αυιο	Optimai Defauit, Falisale Defauit

Туре)	Floppy	
	Forced FDD	
	Hard Disk	
	CDROM	
If Auto. USB devices less than	530MB will be emu	lated as Floppy and remaining as
Floppy and remaining as hard	l drive. Forced FDD	option can be used to force a HDD
formatted drive to boot as FD	D(Ex. ZIP drive)	

3.4.9 Advanced: Touch Device

Main	Aptio Setup Utility – Copyright	(C) 2013 American	Megatrends, Inc.
Touch Device	[Enable]		Help for Touch Device
			++: Select Screen †↓: Select Item Enter: Select
			+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
			F4: Save & Exit ESC: Exit
	Version 2.16.1242. Copyright () 2013 American M	egatrends. Inc.

Touch Device	Disable	
	Enable	Default
Help for Touch Device		

Aptio Setup Main Advanced Chipset	Utility – Copyright (C) 2013 Amer Security Boot Save & Exit	ican Megatrends, Inc.
▶ North Bridge ▶ South Bridge		North Bridge Parameters
		<pre> ++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.	16.1242. Copyright (C) 2013 Americ	an Megatrends, Inc.

3.5.1 Chipset: Host Bridge

Aptio Setup Utili Chipset	ty – Copyright (C) 2013 Amer	rican Megatrends, Inc.
Primary Boot Display–HDMI	[VBIOS Default]	Select the Video Device which
▶ IGD – LCD Control		This has no effect if external
Memory Information		Secondary boot display selection will appear based on
Total Memory	2048 MB (LPDDR3)	your selection. VGA modes will be supported
Memory Slot0	2048 MB (LPDDR3)	only on primary display
		++: Select Screen
		↑↓: Select Item Enter: Select
		+/–: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit
Version 2.16.124	2. Copyright (C) 2013 Americ	an Megatrends. Inc.

Primary Boot Display	VBIOS Default	Default
	CRT	
	DP/HDMI	
	LVDS	

3.5.1.1 Host Bridge: IGD - LCD Control

Aptio Setu Chipset	o Utility – Copyright (C) 2013 Americar	Megatrends, Inc.
IGD - LCD Control LVDS Panel Type Color Depth Backlight Type Backlight Level	[Enabled] [1024x768] [18-Bit] [Normal] [80%]	Enable/Disabled this panel
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

LVDS	Disabled	
	Enabled	Default
Enable or Disable LVDS	interface	
Panel Type	640x480	
	800x480	
	800x600	
	1024x600	
	1024x768	Default
	1280x768	
	1280x1024	
	1366x768	

	1440x900		
	1600x1200		
	1920x1080		
	1920x1200		
Select panel resolu	tion.		
Color Depth	18-Bit	Default	
	24-Bit		
	36-Bit		
	48-Bit		
Select color depth	of the panel		
Backlight Type	Normal	Default	
	Inverted		
	Inventeu		
Select Backlight co	ntrol type.		
Select Backlight co Inverted: Brightest	ntrol type. for low PWM duty cycle an	d low voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f	ntrol type. for low PWM duty cycle an for high PWM duty cycle an	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30% 40%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30% 40% 50%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30% 40% 50% 60%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30% 40% 50% 60% 70%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30% 40% 50% 60% 70% 80%	d low voltage. d high voltage.	
Select Backlight co Inverted: Brightest Normal: Brightest f Backlight Level	ntrol type. for low PWM duty cycle an for high PWM duty cycle an 0% 10% 20% 30% 40% 50% 60% 70% 80% 90%	d low voltage. d high voltage.	

3.5.2 Chipset: South Bridge

Chipset	
Azalia HD Audio	Azalia HD Audio Options
 USB Contiguration PCI Evanage Configuration 	
CI Express contriguiación	
	++: Select Screen
	T↓: Select Item
	Enter: Select
	E1: General Heln
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Exit
	ESC: Exit

3.5.2.1 South Bridge: Azalia HD Audio



Audio Controller	Disabled		
	Enabled	Default	
Control Detection of the Azalia device.			
Disabled = Azalia will be unconditionally disabled.			
Enabled = Azalia will be unconditionally Enabled.			
Auto = Azalia will be enabled if present disabled otherwise.			
Azalia HDMI codec	Disabled		
	Enabled	Default	
Enable/Disable internal HDMI codec for Azalia			
HDMI Port	Disabled		

	Enabled	Default
Enable/Disable HDMI Port		

3.5.2.2 South Bridge: USB Configuration



USB OTG Support	PCI mode		
	Disabled	Default	
Enable/Disable USB OTG Support			
XHCI Mode	Enabled		
	Disabled		
	Auto	Default	
	Smart Auto		
Mode of operation of XHCI controller			
USB Per Port Control	Enabled	Default	
	Disabled		

Control each of the USB ports (0~3).		
Enable: Enable USB per port		
Disable: Use USB port X settings		
USB Port0/1/2/3	Enabled	Default
	Disabled	
Enable/Disable USB Port0/1/2/3		

3.5.2.3 South Bridge: PCI Express Configuration



PCI Express Root Port	Enabled	Optimal Default, Failsafe Default	
0/1/2/3	Disabled		
Enabling/Disabling the PCI Express root ports			
Hot Plug	Disabled		
	Enabled	Default	
Enabling/Disabling the PCI Express Hot Plug			
Speed	Auto	Default	
	Gen2		
	Gen1		
Configure PCIe Port Speed			

3.6 Setup submenu: Security

Aptio Setup Utility Main Advanced Chipset Securit	– Copyright (C) 2013 American y Boot Save & Exit	Megatrends, Inc.
Password Description		Set Administrator Password
If ONLY the Administrator's passw then this only limits access to S only asked for when entering Setu If ONLY the User's password is se is a power on password and must b boot or enter Setup. In Setup the have Administrator rights. The password length must be in the following range: Minimum length	ord is set, etup and is p. t, then this e entered to User will	
Maximum length	20	↔: Select Screen t∔: Select Item
Administrator Password User Password		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242.	Copyright (C) 2013 American M	egatrends, Inc.

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

Aptio Setup Utility – (Main Advanced Chipset Security	Copyright (C) 2013 American <mark>Soot </mark> Save & Exit	Megatrends, Inc.
Boot Configuration Launch i210/i211 PXE OpROM	[Disabled]	Launch PXE Option Rom
Quiet Boot	[Enabled]	
Boot Option Priorities Boot Option #1 Boot Option #2 Boot Option #3 Hand Drive BBS Priorities	[UEFI: Built-in EFI] [UEFI: ADATA USB Fla] [ADATA USB Flash Dri]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Co	oyright (C) 2013 American Mo	egatrends, Inc.

Launch i210/i211 PXE	Disabled	Default
OpROM	Enabled	
Launch PXE Option Rom		
Quiet Boot	Disabled	
	Enabled	Default
En/Disables Quiet Boot option		

3.8 Setup submenu: Exit

Aptio Setup Utility – Copyright (C) 2013 American Main Advanced Chipset Security Boot <mark>Save & Exit</mark>	Megatrends, Inc.
Save Changes and Reset Discard Changes and Reset	Reset the system after saving the changes.
Save Options	
Restore Defaults Save as User Defaults Restore User Defaults	
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Ma	egatrends, Inc.

Chapter 4

Drivers Installation

GENE-BTO

Drivers for the GENE-BT06 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/p/3and-half-inches-subcompact-boards-gene-bt06 Download the driver(s) you need and follow the steps below to install them.

Step 1 - Install Chipset Driver

- 1. Open the Step 1 Chipset folder and select your OS
- 2. Open the SetupChipset.exe in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

Step 2 – Install Graphics Driver

- 1. Open the Step 2 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 LAN Driver

- 1. Click on the Step 3 LAN 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 Audio Driver

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

Step 5 – Install TXE Driver (Windows 8.1/10 only)

- 1. Open the Step 5 TXE Device folder and select your OS
- 2. Open the SetupTXE.exe file in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

Step 6 - Install PenMount Touch 6000 Driver

- 1. Open the Step 6 PenMount Touch 6000 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 7 – Install TPM Driver

- Open the Step 7 TPM folder followed by Atmel TPM Driver Installer
 3.0.3.15.exe
- 2. Follow the instructions
- 3. Drivers will be installed automatically

Step 8 - Install MBI Driver (Optional, Windows 8.1/10 only)

- 1. Open the Step 8 MBI (Optional) 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 9 - Install USB 3.0 Driver (Windows 7 only)

- 1. Open the Step 9 USB 3.0 folder followed by Setup.exe
- 2. Follow the instructions
- 3. Drivers will be installed automatically

Step 10 – Install Serial Port Driver (Optional)

For Windows 7:

1. Change User Account Control settings to Never notify



2. Reboot and log in as administrator



3. Run patch.bat as administrator

Organize 🔻 🛛 🛅 Open	Print	New folder				•	=	(
👉 Favorites	Name	<u>^</u>		Date modified	Туре	Size		
Desktop	🔒 Vista a	md64	1	10/21/2011 8:28 AM	File folder			
📕 Downloads	Vista_X	86	1	10/21/2011 8:28 AM	File folder			
📃 Recent Places	\rm win7_a	imd64	1	10/21/2011 8:28 AM	File folder			
]) win7_>	(86	1	10/21/2011 8:28 AM	File folder			
詞 Libraries	🗼 xp_x86		1	10/21/2011 8:28 AM	File folder			
Documents	🕼 pa	Open		2/16/2010 11:04	Windows Batch F	ile	1 KB	
J Music		Edit						
E Pictures		Print						
Videos Videos		Run as administrator						
Computer		Troubleshoot compatibility						
A Local Disk (C)		Restore previous versions						
Local Disk (D:)		Send to						
New Volume (E:)								
		Cut						
🖣 Network		Сору						
		Create shortcut						
		Delete						
patch	Date	Rename		eated: 10/21/2011 8	28 AM			
Windows Batch	File	Deservation						

For Windows 8:

1. Open the Apps Screen, right click on the **Command Prompt** tile and select

Run as Administrator



- To install the driver (patch.bat), you will first have to locate the file in command prompt. To do that, go to the folder in which the file resides by entering cd (file path) eg: if the file is in a folder named abc in c drive, enter cd c:\abc (screenshot for reference only)
- You are now at the folder where the file is located. Enter the patch.bat to open and install the drivers.

	🖬 🛛 🚽 Administrator: Command Prompt 🚽 🗖 💌
iomputer	Coleron 1020E performance] Egu-=5670cl A AMD Windows Driver] 3dmark vantage.jpg 3dmark vantage.jpg A2011 x829.jpg 3d2011 R8793.jpg 3dmark vantage.jpg d2014 x829.jpg 3d2011 R8793.jpg 3dmark vantage.jpg d2018 GTX688.jpg 1HBA-Q87A 1.01 performance] 1HBA-Q87A 1.01 performance] 9 File(s) 32,832,081 bytes 3d Dirk(s)
Network	::>>>> imba-q87a ::\IMBA-q87A>dir/w Volume in drive G is KINGSTON Volume Serial Number is 54P5-PE9C Directory of G:\IMBA-Q87A
oyele Bin	.] [] [Step5 - LAN] [Step2 - UGA] Step8 - TPM] [Step1 - INF] [Step9 - RST] [Step7 - UART] Step3 - USB3.0] [Step4 - AUDIO] [Step6 - ME] 0 File(s) 0 bytes 11 Dir(s) 480.239.616 bytes free ::\IMBA-Q87A\cd step7 - UART ::\IMBA-Q87A\cd step7 - UART>patch
ntrol Panel	

- 4. Reboot after installation completes.
- To confirm the installation, go to Device Manager, expand the Ports (COM & LPT) tree and double click on any of the COM ports to open its properties. Go to the Driver tab, select Driver Details and click on serial.sys, you should see its provider as Windows (R) Win 7 DDK Provider.



For Windows 10:

1. You will need administrator rights to install the drivers. To get it, first go to

Computer Management in Control Panel and double-click on

Administrator

Computer Management (Local	Name	Full Name	Description	
System Tools	aaeon		<i>N</i> N	
> 🕒 Task Scheduler	Administrator		Built-in account for administering	
> Event Viewer	🛃 DefaultAcco		A user account managed by the s	
Accal Users and Groups Outers Groups Oroups Oroups Oroups Oroups Outer Manager Storage Disk Management Services and Applications	🐮 Guest		Built-in account for guest access t	

2. In the dialog box, **uncheck** the **Account is disabled** option to enable

administrator account.

Computer Management (Local	Name	Full Name	Description			Actions
System Tools	🛃 aaeon					Users
> 🛃 Event Viewer	Administrator		Built-in account for administeri	ing	_	More Actions
> 👸 Shared Folders	Guest	Administrator Propertie	5	?	×	Administrator
 Groups Performance Device Manager Storage Storage Services and Applications 		General Member Of P Administrator Full name: Description: E User must change Password never exp Account is daabled Account is locked ou OK	The secount for administering the omputer/domain assword at next logon password real additional assword at next logon assword at next logon assword at next logon assword at next logon as a state of the second as a state o	Неір		More Actions

Restart and sign in as the administrator (not password-protected by default)



 Go back to the Windows 10 Serial Port drivers directory and run patch.bat as administrator.

Home Share View	plication Tools Win10_64		<u></u>		×
→ ✓ ↑ 📑 > EPIC-BT07 > Step9	9 - Serial Port (optional) > Win10	_64 > ~ (5 Search Win10_64		P
Quick access Name	^	Date modified	Туре	Size	
🛄 Desktop 🛛 🖈 🔜 win10_ame	d64	7/9/2015 8:51 PM	File folder		
Downloads Documents Documents Pictures Pictures Picture Pictu	n t as administrator	7/10/2015 1:27 AM	Windows Batch File	1 KB	
EPIC-BT07 Shar Music Restr	re with >				
Videos Send OneDrive Cut	d to				
This PC Paste Network Crea	e ite shortcut	-			
Dele Rena	ame				
Prop	perties				

Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Registers

Table 1 : Watch dog relative IO address					
	Default Value	Note			
I/O Base Address	0xA00	I/O Base address for Watchdog operation. This address is assigned by SIO LDN7, register 0x60-0x61.			

Table 2 : Watchdo	og relative re	egister table		
Register	Offset	BitNum	Value	Note
Watchdog	0x00	7	1	Enable/Disable
WDTRST#				time out output via WDTRST#
Enable				0: Disable
				1: Enable
Pulse Width	0x05	0:1	01	Width of Pulse signal
				00: 1ms (do not use)
				01: 25ms
				10: 125ms
				11: 5s
				Pulse width is must longer than
				16ms.
Signal Polarity	0x05	2	0	0: low active
				1: high active
				Must set this bit to 0
Counting Unit	0x05	3	0	Select time unit.
				0: second
				1: minute
Output Signal	0x05	4	1	0: Level

\exists
D.

Туре				1: Pulse
				Must set this bit to 1
Watchdog	0x05	5	1	0: Disable
Timer Enable				1: Enable
Timeout Status	0x05	6	1	1: timeout occurred. Write a 1 to
				clear timeout status
Timer Counter	0x06			Time of watchdog timer
				(0~255)

A.2 Watchdog Sample Program

operation relative definition (Please reference to Table 1) #define WDTAddr 0xA00 // WDT I/O base address Void WDTWriteByte(byte Register, byte Value); byte WDTReadByte(byte Register); Void WDTSetReg(byte Register, byte Bit, byte Val); // Watch Dog relative definition (Please reference to Table 2) #define DevReg 0x00 // Device configuration register #define WDTRstBit 0x80 // Watchdog WDTRST# (Bit7) #define WDTRstVal 0x80 // Enabled WDTRST# #define TimerReg 0x05 // Timer register #define PSWidthBit 0x00 // WDTRST# Pulse width (Bit0:1) #define PSWidthVal 0x01 // 25ms for WDTRST# pulse #define PolarityBit 0x02 // WDTRST# Signal polarity (Bit2) #define PolarityVal 0x00 // Low active for WDTRST# #define UnitBit 0x03 // Unit for timer (Bit3) #define ModeBit 0x04 // WDTRST# mode (Bit4) #define ModeVal 0x01 // 0:level 1: pulse #define EnableBit 0x05 // WDT timer enable (Bit5) #define EnableVal 0x01 // 1: enable **#define** StatusBit 0x06 // WDT timer status (Bit6) #define CounterReg 0x06 // Timer counter register **********

VOID Main(){

// Procedure : AaeonWDTConfig

// (byte)Timer : Counter of WDT timer.(0x00~0xFF)

}

// (boolean)Unit : Select time unit(0: second, 1: minute).
AaeonWDTConfig(Counter, Unit);
// Procedure : AaeonWDTEnable
// This procudure will enable the WDT counting.
WDTSetBit(TimerReg, PSWidthBit, PSWidthVal);
// Watchdog WDTRST# Enable
WDTSetBit(DevReg, WDTRstBit, WDTRstVal);

VOID WDTClearTimeoutStatus(){ WDTSetBit(TimerReg, StatusBit, 1);

Appendix B

I/O Information

I/O Address Map B.1

\exists
pact B

a 🚔 aaeon-	-PC
🔺 📕 Inp	out/output (IO)
- 1	[00000000000000 - 0000000000006F] PCI bus
	[000000000000020 - 0000000000000021] Programmable interrupt controller
	[000000000000024 - 0000000000000025] Programmable interrupt controller
	[00000000000028 - 000000000000029] Programmable interrupt controller
	[0000000000002C - 0000000000002D] Programmable interrupt controller
-19	[0000000000002E - 0000000000002F] Motherboard resources
	[000000000000030 - 000000000000031] Programmable interrupt controller
	[00000000000034 - 00000000000035] Programmable interrupt controller
	[00000000000038 - 00000000000039] Programmable interrupt controller
	[0000000000003C - 0000000000003D] Programmable interrupt controller
	[000000000000040 - 0000000000000043] System timer
	[0000000000004E - 0000000000004F] Motherboard resources
	[000000000000050 - 0000000000000053] System timer
	[000000000000060 - 000000000000060] Standard PS/2 Keyboard
	[000000000000061 - 000000000000061] Motherboard resources
	[00000000000063 - 00000000000063] Motherboard resources
@	[00000000000064 - 00000000000064] Standard PS/2 Keyboard
	[000000000000065 - 000000000000065] Motherboard resources
	[000000000000067 - 000000000000067] Motherboard resources
	[000000000000070 - 000000000000000] Motherboard resources
	[0000000000000070 - 0000000000000077] System CMOS/real time clock
	[00000000000078 - 00000000000CF7] PCI bus
	[000000000000080 - 0000000000008F] Motherboard resources
	[000000000000092 - 000000000000092] Motherboard resources
-19	[0000000000000A0 - 000000000000A1] Programmable interrupt controller
	[000000000000A4 - 000000000000A5] Programmable interrupt controller
	[000000000000A8 - 000000000000A9] Programmable interrupt controller
	[000000000000AC - 00000000000AD] Programmable interrupt controller
	[0000000000000B0 - 000000000000B1] Programmable interrupt controller
	[00000000000082 - 00000000000083] Motherboard resources

🚛 [000000000000088 - 000000000000089] Programmable interrupt controller
III [0000000000000BC - 000000000000BD] Programmable interrupt controller
[0000000000002E8 - 000000000002EF] Communications Port (COM4)
📲 [0000000000003B0 - 000000000003BB] Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Ce
[00000000000003C0 - 000000000003DF] Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Ce
19 [00000000000000000 - 00000000000000000
19 [00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[00000000000000000 - 00000000000CFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processo
1 [0000000000000000 - 00000000000 FFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processo
[0000000000000000000000000000000000000
[0000000000000000000000000000000000000
Interrupt request (IRQ)

Þ

B.2 Memory Address Map

4	Memory
	I0000000000000000 - 0000000000000000000
	-19 [00000000000000 - 0000000000BFFFF] PCI bus
	- 🚛 [00000000000000000 - 00000000000000000
	📲 [0000000C0000000 - 0000000CFFFFFF] Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Ce
	📲 [0000000000000000 - 0000000003FFFFF] Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Ce
	[00000000000000000 - 00000000004FFFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processo
	🚛 [0000000000500000 - 0000000005FFFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processoi
	📲 [0000000D0600000 - 0000000D061FFFF] Intel(R) I210 Gigabit Network Connection #2
	[00000000000000000 - 0000000006FFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processo
	📲 🔮 [0000000000620000 - 000000000623FFF] Intel(R) I210 Gigabit Network Connection #2
	📲 [00000000D0700000 - 0000000D071FFFF] Intel(R) I210 Gigabit Network Connection
	📲 [0000000000700000 - 0000000007FFFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processo
	📲 [00000000D0720000 - 0000000D0723FFF] Intel(R) I210 Gigabit Network Connection
	🔤 🖟 [0000000000800000 - 00000000080FFFF] Intel(R) USB 3.0 eXtensible Host Controller
	📖 [000000000081F000 - 00000000081FFFF] SDA Standard Compliant SD Host Controller
	- 😋 [0000000000820000 - 0000000008207FF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processo
	[00000000000821000 - 000000000821FFF] SDA Standard Compliant SD Host Controller
	- 🚛 [00000000FED01000 - 00000000FED01FFF] Motherboard resources
	IO000000FED04000 - 0000000FED04FFF] Motherboard resources
	📲 [0000000FED1C000 - 0000000FED1CFFF] Motherboard resources
	I0000000FEF00000 - 00000000FEFFFFF] Motherboard resources
	[00000000FF000000 - 00000000FFFFFFF] Intel(R) 82802 Firmware Hub Device

B.3 IRQ Mapping Chart

a 📗 Interrupt request (IRQ)

1	(ISA) 0x00000000 (00)	System timer
	(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
1	(ISA) 0x00000003 (03)	Communications Port (COM2)
	(ISA) 0x00000004 (04)	Communications Port (COM1)
	(ISA) 0x00000008 (08)	High precision event timer
	(ISA) 0x0000000A (10)	Communications Port (COM3)
1	(ISA) 0x0000000A (10)	Communications Port (COM4)
3	(ISA) 0x0000000C (12)	PS/2 Compatible Mouse
1	(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
1	(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
1	(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
1	(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
	(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
1	(ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
	(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
	(ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
1	(ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
1	(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
1	(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
I	(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) 0x000006D (109)	Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
<u>19</u> (ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System

	(ISA)	0x00000088 (136)
	(ISA)	0x00000089 (137)
	(ISA)	0x000008A (138)
	(ISA)	0x0000008B (139)
	(ISA)	0x0000008C (140)
	(ISA)	0x0000008D (141)
	(ISA)	0x0000008E (142)
	(ISA)	0x0000008F (143)
	(ISA)	0x00000090 (144)
	(ISA)	0x00000091 (145)
	(ISA)	0x00000092 (146)
	(ISA)	0x00000093 (147)
	(ISA)	0x00000094 (148)
	(ISA)	0x00000095 (149)
	(ISA)	0x00000096 (150)
	(ISA)	0x00000097 (151)
	(ISA)	0x00000098 (152)
	(ISA)	0x00000099 (153)
	(ISA)	0x0000009A (154)
-1	(ISA)	0x0000009B (155)
	(ISA)	0x0000009C (156)
1	(ISA)	0x0000009D (157)
	(ISA)	0x0000009E (158)
	(ISA)	0x0000009F (159)
	(ISA)	0x000000A0 (160)
-19	(ISA)	0x000000A1 (161)
	(ISA)	0x000000A2 (162)
-19	(ISA)	0x000000A3 (163)
-1	(ISA)	0x000000A4 (164)
	(ISA)	0x000000A5 (165)
	(ISA)	0x000000A6 (166)
	(ISA)	0x000000A7 (167)

Microsoft ACPI-Compliant System 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
(PCI) 0x00000005 (05) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control
(PCI) 0x0000000B (11) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Trusted Execution
(PCI) 0x00000010 (16) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root
(PCI) 0x00000011 (17) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Rooi
(PCI) 0x00000012 (18) SDA Standard Compliant SD Host Controller
(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 - Root
-1 (PCI) 0x00000016 (22) High Definition Audio Controller
(PCI) 0xFFFFFFF1 (-15) Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFF2 (-14) Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFF3 (-13) Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFF4 (-12) Intel(R) I210 Gigabit Network Connection #2
PCI) 0xFFFFFF5 (-11) Intel(R) I210 Gigabit Network Connection #2
📲 (PCI) 0xFFFFFF6 (-10) Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFFF7 (-9) Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFF8 (-8) Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFF9 (-7) Intel(R) I210 Gigabit Network Connection
(PCI) UXFFFFFFA (-0) Intel(R) I210 Gigabit Network Connection
(Cu) VALTETE (-3) Intel(R) I210 Olgabit Network Connection (Cu) VALTETE (-3) Intel(R) I210 Glashit Network Connection
(C) 0xFFFFFFD (-3) Intel(R) USB 3.0 eXtensible Host Controller
(PCI) 0xFFFFFFE (-2) Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor
Memory

Appendix C

Mating Connectors

C.1 List of Mating Connectors and Cables

Connector	Franction	Mating C	Connector	Available	
Label	Function	Vendor	Model no	Cable	
CN1	Amplifier right channel output	Molex	51021-0200	N/A	N/A
CN2	Amplifier left channel output	Molex	51021-0200	N/A	N/A
CN3	External +5VSB Power output and PS_ON#	Catch Electronics	2418HJ-06	N/A	N/A
CN4	Digital I/O Connector	Neltron	2026B-10	N/A	N/A
CN5	External +5VSB Power Input and PS_ON#	JST	PHR-3	ATX Cable	170220020B
CN6	+5Vout Connector	JST	PHR-2	2 Pins For HDD Power	1702150155
CN8	+9~24V Vin Connector	N/A	N/A	Power Cable	1702002010
CN9	Audio Connector	Molex	51021-1000	Audio Cable	1709100254
CN10	COM Port 4 Connector	Molex	51021-0900	Serial Port Cable	1701090150
CN12	COM Port 3 Connector	Molex	51021-0900	Serial Port Cable	1701090150
CN15	COM Port 2 Connector	Molex	51021-0900	Serial Port Cable	1701090150
CN18	USB Port Connector	Molex	51021-0500	USB Wafer Cable	1700050207
CN19	USB Port Connector	Molex	51021-0500	USB Wafer Cable	1700050207

CN20	COM Port 1 Connector	Molex	51021-0900	Serial Port Cable	1701090150
CN21	LVDS Connector	HIROSE	DF13-30DS- 1.25C	N/A	N/A
CN22	P/S2 KB/MS Connector	JST	PHDR-06VS	P/S2 KB/MS Cable	1700060157
CN23	Touch Screen Connector	JST	SHR-9V-S-B	N/A	N/A
CN24	LVDS Inverter Connector	JST	PHR-5	N/A	N/A
CN25	CPU Fan Connector	Molex	22-01-2035	N/A	N/A

Appendix D

Electrical Specifications for I/O Ports

D.1 Electrical Specifications for I/O Ports

1/0	Reference	Signal name	Rate output
Digital IO Port	CN4	+5V	+5V/1A
+5V Output for SATA HDD	CN6	+5V	+5V/1A
Audio I/O Port	CN9	+5V	+5V/1A
LPC Port	CN11	+3.3V	+3.3V/0.5A
COM Port 3	CN12	+5V/+12V	+5V/1A or +12V/1A
MiniCard Slot (Half-MiniCard)	CN14	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
COM Port 2	CN15	+5V/+12V	+5V/1A or +12V/1A
Mini-Card Slot (Full-MiniCard)	CN17	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
USB 2.0 Ports 3	CN18	+5VSB	+5V/0.5A (per channel)
USB 2.0 Ports 2	CN19	+5VSB	
LVDS Port	CN21	+3.3V/+5V	+3.3V/2A or +5V/2A

PS/2 Keyboard/Mouse Combo Port	CN22	+5VSB	+5V/1A
LVDS Port Inverter / Backlight Connector	CN24	+5V/+12V	+5V/1.5A or +12V/1.5A
CPU FAN	CN25	+12V	+12V/0.5A
USB Ports 0 and 1	CN28	+5VSB	+5V/1A (per channel)
DP port	CN29	+3.3V	+3.3V/1A
HDMI Port	CN31	+5V	+5V/1A
VGA Port	CN33	+5V	+5V/1A (reserved)

Appendix E

Digital I/O Ports

E.1 Digital I/O Register

Bit Name R/W Reset Default Description Bit Name R/W Reset Default Description 00h: Select FDC device configuration registers. 03h: Select Parallel Port device configuration registers. 04h: Select Hardware Monitor device configuration registers. 04h: Select KBC device configuration registers. 05h: Select GPIO device configuration registers. 06h: Select GPIO device configuration registers.	1.1.2 Logic Device Number Register (LDN) — Index 0/h							
00h: Select FDC device configuration registers. 03h: Select Parallel Port device configuration registers. 04h: Select Hardware Monitor device configuration registers. 05h: Select KBC device configuration registers. 06h: Select GPIO device configuration registers.	Bit	Name	R/W	Reset	Default	Description		
7-0 LDN R/W LRESET# 00h 07h: Select WDT device configuration registers. 0Ah: Select PME, ACPI and ERP device configuration registers. 10h: Select UART1 device configuration registers. 11h: Select UART2 device configuration registers. 12h: Select UART3 device configuration registers. 13h: Select UART4 device configuration registers. 14h: Select UART5 device configuration registers. 15h: Select UART6 device configuration registers. 15h: Select UART6 device configuration registers. 15h: Select UART6 device configuration registers.	7-0	LDN	R/W	LRESET#	00h	00h: Select FDC device configuration registers. 03h: Select Parallel Port device configuration registers. 04h: Select Hardware Monitor device configuration registers. 05h: Select KBC device configuration registers. 06h: Select KBC device configuration registers. 07h: Select WDT device configuration registers. 0Ah: Select VMDT device configuration registers. 0Ah: Select UART, device configuration registers. 10h: Select UART1 device configuration registers. 11h: Select UART2 device configuration registers. 12h: Select UART3 device configuration registers. 13h: Select UART4 device configuration registers. 13h: Select UART5 device configuration registers. 13h: Select UART5 device configuration registers. 15h: Select UART6 device configuration registers.		

7.1.2 Logic Device Number Register (LDN) — Index 07h

GPIO5 Output Enable Register — Index A0h

Bit	Name	R/W	Reset	Default	Description		
7	CDIO57 OF	BAA	DEOFT	0	0: GPI057 is in input mode.		
Ľ	GF1037_0E	10.00	LREGET#		1: GPI057 is in output mode.		
6	CRIOSE OF	B.M.	DECET		0: GPIO56 is in input mode.		
0	GPI056_OE		LRESET#	0	1: GPIO56 is in output mode.		
5	CRIOSE OF	BAA		_	0: GPIO55 is in input mode.		
	GPI055_OE	FK/ V V	VV LRESET#	0	1: GPIO55 is in output mode.		
4	GPIO54_OE	DAM	R/W LRESET#	0	0: GPIO54 is in input mode.		
		R/W			1: GPIO54 is in output mode.		
2	GPIO53_OE		BAA	D/W LDFOFT#		0: GPIO53 is in input mode.	
3		FK/ VV	ILRESET#		1: GPIO53 is in output mode.		
2	GPIO52_OE				DEOFT#	0	0: GPIO52 is in input mode.
2			/WV LRESET#	0	1: GPIO52 is in output mode.		
4		BAA	R/W LRESET#		0: GPIO51 is in input mode.		
Ľ '	GPI051_OE	FC/ V V		0	1: GPIO51 is in output mode.		
	GPIO50_OE R/W LRESET#		0: GPIO50 is in input mode.				
0		GPIO50_OE R	GPI050_OE R/W	GPIUDU_UE R/W LRESET	LRESET#	0	1: GPIO50 is in output mode.

Bit	Name	R/W	Reset	Default	Description		
7	GPIO57_DATA		LRESET#		0: GPIO57 outputs 0 when in output mode.		
'				'	1: GPIO57 outputs 1 when in output mode.		
6		BAA	DEOFT	1	0: GPIO56 outputs 0 when in output mode.		
6	GPIO56_DATA	R/W	LRESET#	'	1: GPIO56 outputs 1 when in output mode.		
6		D MA		1	0: GPIO55 outputs 0 when in output mode.		
5	GPI055_DATA	R/W	LRESET#		1: GPIO55 outputs 1 when in output mode.		
	GPIO54_DATA	R/W	LRESET#	1	0: GPIO54 outputs 0 when in output mode.		
4					1: GPIO54 outputs 1 when in output mode.		
2		BAA	DEOFT	1	0: GPIO53 outputs 0 when in output mode.		
l °	GPI053_DATA	R/W	LRESEI#		1: GPIO53 outputs 1 when in output mode.		
2		D MA		1	0: GPIO52 outputs 0 when in output mode.		
2	GPI052_DATA		W LRESET#		1: GPIO52 outputs 1 when in output mode.		
4		Бли	R/W LRESET#	1	0: GPIO51 outputs 0 when in output mode.		
L ' .	GPI051_DATA	FK/W			1: GPIO51 outputs 1 when in output mode.		
		BM	DEOFT		0: GPIO50 outputs 0 when in output mode.		
	GPIO50_DATA	SPI050_DATA R/W	VV LRESET#		1: GPIO50 outputs 1 when in output mode.		

GPIO5 Output Data Register — Index A1h (This byte could be also written by base address + 5)

GPIO5 Pin Status Register — Index A2h (This byte could be also read by base address + 5)

Bit	Name	R/W	Reset	Default	Description
7	GPIO57_ST	R	-	-	The pin status of GPI057/WGATE#/DSR6#.
6	GPIO56_ST	R	-	-	The pin status of GPI056/HDSEL#/DTR6#.
5	GPIO55_ST	R			The pin status of GPI055/STEP#/CTS6#.

4	GPIO54_ST	R	-	-	The pin status of GPIO54/DIR#/RI6#.
3	GPIO53_ST	R	-	-	The pin status of GPIO53/WDATA#/DCD6#.
2	GPIO52_ST	R	-	-	The pin status of GPIO52/DRVA#/SOUT6.
1	GPIO51_ST	R	-	-	The pin status of GPIO51/MOA#/SIN6.
0	GPIO50_ST	R	-	-	The pin status of GPIO50/DENSEL#/RTS6#.

E.2 Digital I/O Sample Code (4 in 4 out, 2 low 2 high)

Outportb(0x2E,0x87); //enter configuration Outportb(0x2E,0x87);

Outportb(0x2E,0x07); //set LDN Outportb(0x2F,0x06);

Outportb(0x2E,0xA0); //GPIO set 5 register Outportb(0x2F,0xF0);

Outportb(0x2E,0xA1); //GPIO output data register Outportb(0x2F,0x30);

Outportb(0x2E,0xAA); //exit configuration