

## **GENESYS-KBU6**

3.5" Subcompact Board

User's Manual 1st Ed

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#### Packing List

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

ltem		Quantity
•	GENESYS-KBU6	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 product page on 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.
- 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.

#### China RoHS Requirements (CN)

#### 产品中有毒有害物质或元素名称及含量

**AAEON** System

QO4-381 Rev.A2

			有	毒有害物质或	戊元素	
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	0	0
及其电子组件	×	0	0	0	0	0
外部信号	~	0	0	0	0	0
连接器及线材	×	0	0	0	0	0
外壳	0	0	0	0	0	0
中央处理器	~	0	0	0	0	0
与内存	~	0	0	0	0	0
硬盘	×	0	0	0	0	0
液晶模块	×	0	0	0	0	0
光驱	×	0	0	0	0	0
触控模块	×	0	0	0	0	0
电源	×	0	0	0	0	0
电池	×	0	0	0	0	0
大手格依据 SI/T 11264 的规宁编制						

〇: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 GB/T 26572 标准规定 的限量要求以下。

×:表示该有害物质的某一均质材料超出了 GB/T 26572 的限量要求,然而该部件仍 符合欧盟指令 2011/65/EU 的规范。

环保使用期限(EFUP (Environmental Friendly Use Period)): 10 年 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。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

上述部件物质液晶模块、触控模块仅一体机产品适用。

#### Name and content of hazardous substances in product

AAEON System

QO4-381 Rev.A2

	Hazardous Substances					
Part Name	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
PCB Assemblies	×	0	0	0	0	0
Connector and		0	0	0	0	0
Cable	×	0	0	0	0	0
Chassis	0	0	0	0	0	0
CPU and Memory	×	0	0	0	0	0
Hard Disk	×	0	0	0	0	0
LCD Modules	×	0	0	0	0	0
CD-ROM/DVD-ROM	×	0	0	0	0	0
Touch Modules	×	0	0	0	0	0
Power	×	0	0	0	0	0
Battery	×	0	0	0	0	0

The table is prepared in accordance with the provisions of SJ/T 11364.

O : Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.

× : Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572. But this product still be

compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).

EFUP (Environment Friendly Use Period) value: 10 years. Notes:

1. This product defined period of use is under normal condition.

2. In above part, CPU/Memory/ Hard Disk/CD-ROM/DVD-ROM/ Power are optional.

3. In above part, LCD Modules/ Touch Modules are for all-in-one product model.

#### Table of Contents

Chapter 1 -	Product S	Specifications	1
1.1	Specifica	ations	2
Chapter 2 -	- Hardwar	e Information	4
2.1	Dimensi	ons	5
2.2	Jumpers	and Connectors	7
2.3	List of Ju	Impers	8
	2.3.1	Clear CMOS Jumper (JP1)	8
	2.3.2	mSATA/ Mini-Card Operating VCC Selection (JP5)	8
	2.3.3	Auto Power Button Enable/Disable Selection (JP7)	9
	2.3.4	COM2 Pin8 Function Selection (JP9)	9
	2.3.5	Front Panel Connector (JP10)	9
2.4	List of C	onnectors	10
	2.4.1	Battery (CN1)	11
	2.4.2	DVI-I (Digital and Analog) (CN3)	11
	2.4.3	DP Port (CN5)	12
	2.4.4	BIOS Debug Port (CN8)	13
	2.4.5	LAN (RJ-45) Port1 (CN9)	13
	2.4.6	LAN (RJ-45) Port2 (CN10)	14
	2.4.7	Mini-Card Slot (Full-Mini Card) (CN11)	15
	2.4.8	Micro SIM Card Socket (CN12)	17
	2.4.9	Mini-Card Slot (Half-Mini Card) (CN13)	17
	2.4.10	SATA Port 1 (CN14)	20
	2.4.11	+5V Output for SATA HDD (CN15)	20
	2.4.12	USB 3.0 Ports (CN18)	21
	2.4.13	USB 3.0 Ports (CN19)	22
	2.4.14	USB 2.0 Port (CN20)	23

		2.4.15	USB 2.0	) Port (CN21)	23
		2.4.16	COM P	ort 1 (CN25)	
		2.4.17	COM P	ort 2 (CN27)	25
		2.4.18	LPC Po	rt (CN29)	27
		2.4.19	Externa	l Power Input (CN30)	
	2.5	Block	Diagram		
	2.6	Hardv	vare Assem	bly Guide	
		2.6.1	Openin	g the System	
		2.6.2	RAM N	lodule Installation	
		2.6.3	Mini-Ca	ard Installation	
		2.6.4	Storage	e Drive Installation	
		2.6.5	Reattac	h Panel	
		2.6.6	Install V	Vall Mount Brackets	
		2.6.7	VESA N	lounting Kit	
Chapt	ter 3 -	AMI BI	OS Setup		
Chapt	<b>ter 3 -</b> 3.1	AMI BI Syster	I <mark>OS Setup</mark> m Test and I	nitialization	
Chapt	<b>ter 3 -</b> 3.1 3.2	AMI BI Syster AMI B	I <mark>OS Setup</mark> m Test and I SIOS Setup .	nitialization	
Chapt	<b>ter 3 -</b> 3.1 3.2 3.3	AMI BI Syster AMI B Setup	I <mark>OS Setup</mark> m Test and I IIOS Setup . submenu:	nitialization	
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup Setup	OS Setup n Test and I IOS Setup. submenu: submenu:	nitialization Main Advanced	
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup Setup 3.4.1	OS Setup n Test and I IOS Setup. submenu: submenu: CPU Co	nitialization Main Advanced onfiguration	
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup Setup 3.4.1 3.4.2	OS Setup n Test and I IOS Setup. submenu: submenu: CPU Co Trusted	nitialization Main Advanced onfiguration Computing	<b></b>
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup 3.4.1 3.4.2 3.4.3	OS Setup m Test and I IOS Setup . submenu: submenu: CPU Co Trusted SATA C	nitialization Main Advanced onfiguration Computing onfiguration	38 39 40 41 42 43 43 45 47
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup 3.4.1 3.4.2 3.4.3 3.4.4	OS Setup n Test and I IOS Setup . submenu: Submenu: CPU Co Trusted SATA C Hardwa	nitialization Main Advanced onfiguration Computing onfiguration	38 39 40 41 42 43 43 45 47 48
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup 3.4.1 3.4.2 3.4.3 3.4.3	OS Setup n Test and I NOS Setup . submenu: Submenu: CPU Co Trusted SATA C Hardwa 3.4.4.1	nitialization Main Advanced onfiguration Computing onfiguration are Monitor Smart Fan Mode Configuration	<b>38</b> 39 40 41 42 43 43 45 45 47 48 49
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup 3.4.1 3.4.2 3.4.3 3.4.3 3.4.4	OS Setup n Test and I NOS Setup . submenu: CPU Co Trusted SATA C Hardwa 3.4.4.1 SIO Co	nitialization Main Advanced onfiguration Computing onfiguration are Monitor Smart Fan Mode Configuration nfiguration	38 39 40 41 42 43 45 45 47 48 49 51
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup 3.4.1 3.4.2 3.4.3 3.4.3 3.4.4 3.4.5	OS Setup m Test and I IOS Setup . submenu: Submenu: CPU Co Trusted SATA C Hardwa 3.4.4.1 SIO Co 3.4.5.1	nitialization Main Advanced onfiguration Computing onfiguration are Monitor Smart Fan Mode Configuration figuration Serial Port 1 Configuration	38 39 40 41 42 43 43 45 47 48 49 51 52
Chapt	ter 3 - 3.1 3.2 3.3 3.4	AMI BI Syster AMI B Setup 3.4.1 3.4.2 3.4.3 3.4.4 3.4.5	OS Setup n Test and I IOS Setup . submenu: . CPU Co Trusted SATA C Hardwa 3.4.4.1 SIO Co 3.4.5.1 3.4.5.2	nitialization Main Advanced Onfiguration Computing onfiguration are Monitor Smart Fan Mode Configuration nfiguration Serial Port 1 Configuration Serial Port 2 Configuration	38   39   40   41   42   43   45   47   48   49   51   52   53

	3	8.4.5.4	Serial Port 4 Configuration	55
	3.4.6	USB C	onfiguration	56
	3.4.7	Digital	IO Port Configuration	57
	3.4.8	Power	Management	58
	3.4.9	Comp	atibility Support Module Configuration	60
3.5	Setup s	ubmenu:	Chipset	61
	3.5.1	Systen	n Agent (SA) Configuration	62
	3.5.2	Graph	ics Configuration	63
	3.5.3	lvds i	Panel Configuration	64
	3.5.4	PCH-I	O Configuration	66
3.6	Security	/		67
3.7	Setup S	Submenu	: Boot	68
	3.7.1	BBS Pi	riorities	69
3.8	Setup S	Submenu	: Save & Exit	70
Chapter 4	– Drivers	Installatio	on	71
4.1	Drivers	Downloa	ad and Installation	72
4.2	Note or	n EHCI		74
Appendix .	A - I/O Inf	formatior	٦	75
A.1	I/O Add	dress Ma	0	76
A.2	Memor	y Addres	s Map	
A.3	IRQ Ma	ipping Cł	nart	
Appendix	B – Electri	cal Speci	fications for I/O Ports	82
B.1	Electrica	al Specifi	cations for I/O Ports	
Appendix	C – List of	Mating	Connectors and Cables	
C.1	Connec	tor and (	Cable Specifications	85

# GENESYS-KBU

# Chapter 1

Product Specifications

#### 1.1 Specifications

System	
CPU	7th Generation Intel® Core™ i7/i5/i3/Celeron®
	Processor SoC
Chipset	7th Generation Intel® Processor SoC
System Memory	DDR4 1866/2133, SODIMM x 1
Display Interface	DVI-D, DP (default)
	DVI-I
Ethernet	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
I/O	USB 3.2 Gen 1 x 4 (rear I/O)
	USB 2.0 x 2 (internal option)
	RS-232 x 1
	RS-232/422/485 x 3 (optional)
Expansion	BIO x 1
	Mini-Card (half-size) x 2, default mSATA x 1
	Mini-Card (full size) x 1
Indicator	Power LED on power button
OS Support	Windows™ 10 Enterprise 64-bit
	Windows™ 7 Ultimate 32bit, 64-bit
	Ubuntu 18.04.2 kernel 4.18.0-15-generic

#### Power Supply

Power Requirement

12V with lockable DC jack

Mechanical	
Mounting	Wall mount kit (optional)
Dimensions (W x H x D)	170mm x 44.5mm x 137mm
Gross Weight	1.1 kg
Environmental	
Operating Temperature	32°F~ 122°F (0°C ~ 50°C), 0.5 m/s airflow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Storage Humidity	$0\% \sim 90\%$ relative humidity, non-condensing
Anti-Vibration	2 Grms/ 5 ~ 500Hz/ operation
Certification	CE/FCC Class A

# GENESYS-KBU(

# Chapter 2

Hardware Information

#### 2.1 Dimensions

#### System Dimensions:





#### Board Component Side



#### 2.2 Jumpers and Connectors

3.5" Subcompact Boarc





#### 2.3 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	Clear CMOS Jumper
JP5	mSATA/Mini-Card Operating VCC Selection
JP7	Auto Power Button Enable/Disable Selection
JP9	COM2 Pin8 Function Selection
JP10	Front Panel Connector

#### 2.3.1 Clear CMOS Jumper (JP1)

1	2	3

Normal	(Default)
--------	-----------



Clear CMOS

#### 2.3.2 mSATA/ Mini-Card Operating VCC Selection (JP5)

1	2	3

1 2 3 □ □ □

mSATA (Default)



#### 2.3.3 Auto Power Button Enable/Disable Selection (JP7)

Disable (Default)	Enable

Note: When disabled, use power button JP10 (1-2) to power on the system.

#### 2.3.4 COM2 Pin8 Function Selection (JP9)



+12V



Ring (Default)



```
+5V
```

#### 2.3.5 Front Panel Connector (JP10)

1		2
3		4
5		6
7		8
9		10

Pin	Pin Name	Pin	Pin Name
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+

#### 2.4 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	Battery
CN3	DVI-I (Digital and Analog)
CN5	DP Port
CN8	SPI Debug Port
CN9	LAN (RJ-45) Port1
CN10	LAN (RJ-45) Port2
CN11	Mini-Card Slot (Full-Mini Card)
CN12	Micro SIM Card Socket
CN13	Mini-Card Slot (Half-Mini Card)
CN14	SATA Port
CN15	+5V Output for SATA HDD
CN18	USB 3.0 Ports
CN19	USB 3.0 Ports
CN20	USB 2.0 Port
CN21	USB 2.0 Port
CN25	COM Port 1
CN27	COM Port 2
CN29	LPC Port
CN30	External Power Input

### 2.4.1 Battery (CN1)

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

#### 2.4.2 DVI-I (Digital and Analog) (CN3)

Pin	Pin Name	Signal Type	Signal Level
1	DVI_D2-	OUT	
2	DVI_D2+	OUT	
3	GND	GND	
4	VGA_DDC_CLK	I/O	
5	VGA_DDC_DAT	I/O	
6	SCL	I/O	
7	SDA	I/O	
8	VGA_VSYNC	OUT	
9	DVI_D1-	OUT	
10	DVI_D1+	OUT	
11	GND	GND	
12	NC		
13	NC		
14	+5V	PWR	+5V
15	GND	GND	
16	HPD	IN	
17	DVI_D0-	OUT	
18	DVI_D0+	OUT	
19	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
20	NC		
21	NC		
22	GND	GND	
23	DVI_CLK+	OUT	
24	DVI_CLK-	OUT	
C1	VGA_RED	OUT	
C2	VGA_GREEN	OUT	
C3	VGA_BLUE	OUT	
C4	VGA_HSYNC	OUT	

## 2.4.3 DP Port (CN5)

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	

Pin	Pin Name	Signal Type	Signal Level
15	DP_AUX+	DIFF	
16	GND	GND	
17	DP_AUX-	DIFF	
18	HPLG_DETECT	IN	
19	GND	GND	
20	+5V	I/O	+5V

## 2.4.4 BIOS Debug Port (CN8)

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		

#### 2.4.5 LAN (RJ-45) Port1 (CN9)



Pin	Pin Name	Signal Type	Signal level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	

GENESYS-KBU6

Pin	Pin Name	Signal Type	Signal level
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

#### LAN (RJ-45) Port2 (CN10) 2.4.6



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	

.

#### 2.4.7 Mini-Card Slot (Full-Mini Card) (CN11)

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

Pin	Pin Name	Signal Type	Signal level
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	

Pin	Pin Name	Signal Type	Signal level
51	NC		
52	+3.3VSB	PWR	+3.3V

#### 2.4.8 Micro SIM Card Socket (CN12)

Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	
2	UIM_RST	IN	
3	UIM_CLK	IN	
4	NC		
5	GND	GND	
6	UIM_VPP	PWR	
7	UIM_DATA	I/O	
8	NC		

#### 2.4.9 Mini-Card Slot (Half-Mini Card) (CN13)

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		

Pin	Pin Name	Signal Type	Signal Level
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-/mSATA_RX+	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+/mSATA_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-/mSATA_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+/mSATA_TX+	DIFF	
34	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
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

Note: CN13 can be selected for Mini-Card or mSATA by changing BIOS

Chapter 2 – Hardware Information

#### 2.4.10 SATA Port 1 (CN14)

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Pi	n 1	Pin	7

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	

#### 2.4.11 +5V Output for SATA HDD (CN15)



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

#### 2.4.12 USB 3.0 Ports (CN18)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	USB_SSRX-	DIFF	
6	USB_SSRX+	DIFF	
7	GND	GND	
8	USB_SSTX-	DIFF	
9	USB_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB_D-	DIFF	
12	USB_D+	DIFF	
13	GND	GND	
14	USB_SSRX-	DIFF	
15	USB_SSRX+	DIFF	
16	GND	GND	
17	USB_SSTX-	DIFF	
18	USB_SSTX+	DIFF	

#### 2.4.13 USB 3.0 Ports (CN19)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	USB_SSRX-	DIFF	
6	USB_SSRX+	DIFF	
7	GND	GND	
8	USB_SSTX-	DIFF	
9	USB_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB_D-	DIFF	
12	USB_D+	DIFF	
13	GND	GND	
14	USB_SSRX-	DIFF	
15	USB_SSRX+	DIFF	
16	GND	GND	
17	USB_SSTX-	DIFF	
18	USB_SSTX+	DIFF	

#### 2.4.14 USB 2.0 Port (CN20)

	83 - Baker - B		
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	GND	GND	

GND GND USB\_D+ USB\_D-+5VSB Ξ

#### 2.4.15 USB 2.0 Port (CN21)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	G ND	GND	
#### 2.4.16 COM Port 1 (CN25)

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	

-

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DCD DSR

RX

RTS

ТΧ CTS DTR

## 2.4.17 COM Port 2 (CN27)

	]
	DCD
	DSR
	RX
-	RTS
-	тх
-	CTS
-	DTR
	RI/+5V/+12V
	GND

#### 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-485

Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	NC		

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



#### RS-422

Note 1: COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

Note 2: Pin 8 function can be set by JP9.

### 2.4.18 LPC Port (CN29)

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	I/O	+3.3V

厄二

R R R R

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LAD0

LADU LAD1 -LAD2 -LAD3 -+3.3V -LFRAME# -

LRESET#

GND LCLK LDRQ0 LDRQ1

SERIRQ

### 2.4.19 External Power Input (CN30)

+12V GND

Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+9~+36V (or +12V)
2	GND	GND	

## 2.5 Block Diagram



#### 2.6 Hardware Assembly Guide

This section details the steps to installing your device's drive (HDD or SSD), RAM module, and Mini-Card modules (Half-Sized and Full-Sized mPCle/mSATA cards). Be sure to read instructions before assembly and ensure that you have the required parts before proceeding. If you need any support or assistance, please contact your AAEON representative, or visit the support page at AAEON.com to contact our team.

#### Before You Start

Before starting the assembly steps in this section, ensure the system is powered off (not in sleep or standby mode) and the power cable/adapter is disconnected from the system. Failure to do so can result in damage to the system and/or personal injury.

#### Parts List

Make sure you have the following parts before starting:

Item	Part Number	Quantity
GENESYS-KBU6 System	968MY00013	1
Large Thermal Pad (for HDD/SSD)	TH5GENE010	1
Small Thermal Pad (for RAM)	TH5GENE020	1
SATA Cable	170X000085	1
SATA Power Cable	1702150155	1
HDD Screws	S1D3004031	4
Zip ties	1992666607	3
SODIMM RAM Module DDR4 1866/2133 up to 16GB	-	1
mPCle mSATA Mini-Card (Half-Size)	-	1
mPCle Mini-Card (Full Size, Al Module)	-	1
2.5" Hard Drive or Solid-State Drive	-	1

## 2.6.1 Opening the System

**Step 1**: Remove the four screws from the front panel (with AAEON Logo) of the system. Then remove the two screws connecting the bottom panel to the rear panel.



**Step 3**: Slide the panel back slightly, then lift open from the rear. Note: There are several wires and cables connected to the front panel, be careful when lifting the panel.



**Step 1**: Install the memory RAM module. Insert at an angle (~30°) and then gently press down until it is secured in place (you will hear a click).



**Step 2**: Take the small thermal pad and remove the clear backing. Stick the pad to the drive mounting bracket. There are two notches marking where to place the thermal pad.



**Step 3**: Once you have placed the thermal pad, remove the backing from the exposed side.



Step 1: Remove both half-size and full-size mSATA mounting screws from the board.



Step 2: Insert your half-size Mini-Card (mSATA) module into the first mSATA slot. Insert

at an angle (~30°) then press down gently and secure with screw.



**Step 3**: Insert your full-size Mini-Card (mSATA) module into the second slot. Insert at an angle (~30°) then press down gently and secure with screw.



#### 2.6.4 Storage Drive Installation

**Step 1**: Remove the four screws from the bottom panel securing the drive mounting bracket, and remove the bracket from the system. Connect the SATA and SATA Power cables to the 2.5" storage drive. **Note**: Do not connect the cables to the board at this time.





**Step 2**: Insert the drive into the drive mounting bracket, with the label side out and the SATA cables on the same side as the RAM thermal pad. The drive mounting holes should line up as such: 2.5" SSD with the closest to the angle, 2.5" HDD with the holes further away. Secure the drive onto the mounting bracket with the four HDD screws. HDD Mount



SSD Mount 🗕



**Step 3**: Remove the clear backing from the large thermal pad and place onto the drive, gently pushing down to adhere to the drive. Then, remove the backing from the exposed side.



**Step 4**: Line up the large hole on the drive bracket with the VESA mount post on the bottom panel. Make sure the holes are lined up for the screws. Attach the adhesive backed mount to the bottom panel, then secure cables to the mount with a zip tie. Secure the assembly with screws. **Note**: Screws attach through the bottom panel side.







**Step 5**: Attach the SATA cable to the board SATA connector (CN14). Then attach the SATA Power cable to the board +5V output connector (CN15). See Chapter 2.2 for connector locations.





SATA Power (CN15) **Step 6**: For cable management, use a zip tie to attach the SATA and SATA Power cables to the loop on the top panel as shown. Be sure to cut any excess from the zip tie.



#### 2.6.5 Reattach Panel

**Step 1**: Being careful of cables, slide the tab on the bottom panel under the rear panel, lining up the holes. Press down gently and secure with two screws.





Step 2: Attach the four screws to the front panel.



### 2.6.6 Install Wall Mount Brackets

For this task, you need two wall mount brackets and four steel screws included in the wall mount kit.



Line up the brackets with the four open holes on the bottom panel of the system as shown, then secure brackets with the four screws.







The system is now ready to be mounted to a wall or surface.

For this task, you need the VESA bracket and two steel screws included in the VESA mount kit.



Insert screws into the two empty holes on the bottom panel of the system as shown.





The system can now be attached to the VESA bracket.



**Note**: This image is for illustrative purposes. It is recommended that you install the VESA bracket onto the mounting surface before attaching the system.

# 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 <Del> 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



## 3.4 Setup submenu: Advanced

Aptio Setup Utility – Copyright (C) 201 Main Advanced Chipset Security Boot Save & Exit	17 American Megatrends, Inc. t
<ul> <li>CPU Configuration</li> <li>Trusted Computing</li> <li>SATA Configuration</li> <li>Handware Monitor</li> <li>SIO Configuration</li> <li>USB Configuration</li> <li>Digital IO Port Configuration</li> <li>Power Management</li> <li>CSM Configuration</li> </ul>	CPU Configuration Parameters ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18.1263. Copyright (C) 2017	American Megatrends. Inc.

Advanced	tg – Copgright (C) 2017 America	an Megatrenus, Inc.
CPU Configuration		Enabled for Windows XP and Linux (OS optimized for
Туре	Intel(R) Core(TM) i7–7600U CPU @ 2.80GHz	Hyper–Threading Technology) and Disabled for other OS (OS
ID	0x806E9	not optimized for
Speed	2900 MHz	Hyper-Threading Technology).
L1 Data Cache	32 KB × 2	
L1 Instruction Cache	32 KB × 2	
L2 Cache	256 KB × 2	
L3 Cache	4 MB	
L4 Cache	N/A	
VMX	Supported	
SMX/TXT	Supported	
the second second lines		++: Select Screen
Astivo Presson Corpor	[Enabled]	Feton: Select
Intel (VMV) Vintualization	[HII] [Epobled]	there select
Technology	[Ellapieu]	F1: General Help
C states	[Enabled]	E2: Previous Values
Intel(R) SpeedStep(tm)	[Enabled]	E3: Optimized Defaults
Turbo Mode	[Enabled]	F4: Save & Exit
		ESC: Exit

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Options Summary					
Hyper-Threading	Disabled				
	Enabled	Optimal Default, Failsafe Default			
Enabled for Windows XP	and Linux (OS optimized for	or Hyper-Threading Technology)			
and Disabled for other O	S (OS not optimized for Hy	per-Threading Technology).			
Active Processor Cores	All	Optimal Default, Failsafe Default			
	1				
Number of cores to enab	Number of cores to enable in each processor package.				
Intel (VMX) Virtualization	Disabled				
Technology	Enabled	Optimal Default, Failsafe Default			
When enabled, a VMM c	an utilize the additional har	dware capabilities provided by			
Vanderpool Technology.					
CPU C states	Disabled	Optimal Default, Failsafe Default			
	Enabled				
Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not					
100% utilized.					

Options Summary			
Intel(R) SpeedStep(tm)	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Allows more than two frequency ranges to be supported.			
Turbo Mode	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means			
enabled, unless max turbo ratio is bigger than 16 - SKL A0 W/A			

Aptio Setup Utility – Advanced	Copyright (C) 2017 American	Megatrends, Inc.
TPM20 Device Found Security Device Support Active PCR banks Available PCR bank SHA-1 PCR Bank SHA256 PCR Bank Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType Device Select	<pre>[Enable] SHA-1,SHA256 SHA-1,SHA256 [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [TT6_2] [1.3] [TTS] [Auto]</pre>	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INTIA interface will not be available. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Options Summary		
Security Device	Disable	
Support	Enable	Optimal Default, Failsafe Default
Enables or Disables E	BIOS support for security device	
O.S. will not show Se	curity Device. TCG EFI protocol	and INT1A interface will not be
available.		
SHA-1 PCR Bank	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable SHA-1 PCR Bank		
SHA256 PCR Bank	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable SHA256 PCR Bank		
Pending operation	None	Optimal Default, Failsafe Default
	TPM Clear	
Schedule an Operation for the Security Device. NOTE: Your Computer will reboot		
during restart in order to change state of Security Device.		

Options Summary		
Platform Hierarchy	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable Pl	atform Hierarchy	
Storage Hierarchy	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable St	orage Hierarchy	
Endorsement	Disable	
Hierarchy	Enable	Optimal Default, Failsafe Default
Enable or Disable Er	dorsement Hierarchy	
TPM2.0 UEFI Spec	TCG_2	Optimal Default, Failsafe Default
Version	TCG_1_2	
Select the TCG2 Spe	c Version Support, TCG_1_2: Th	e compatible mode for
Win8/Win10, TCG_2:	Support new TCG2 protocol ar	nd event format for Win10 or later
Physical Presence	1.2	
Spec Version	1.3	Optimal Default, Failsafe Default
Select to Tell O.S. to	support PPI Spec Version 1.2 or	r 1.3. Note some HCK tests might
not support 1.3.		
Device Select	TPM 1.2	
	TPM 2.0	
	Auto	Optimal Default, Failsafe Default
TPM 1.2 will restrict s	upport to TPM 1.2 device, TPM	2.0 will restrict support to TPM 2.0
devices, Auto will su	pport both with the default set 1	to TPM 2.0 devices if not found,
TPM 1.2 device will b	e enumerated.	

## 3.4.3 SATA Configuration

Aptio Setup U Advanced	tility – Copyright (C) 2017 An	merican Megatrends, Inc.
SATA Controller(s)	[Enabled]	Enable/Disable SATA Device.
Serial ATA Port Port MSATA Port Port Hot Plug	Empty [Enabled] Empty [Enabled] [Disabled]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.18	1263 Conuright (C) 2017 Amer	rican Megatrends Inc

Options Summary		
SATA Controller(s)	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or disable SAT	TA Device.	
SATA Mode	AHCI Mode	Optimal Default, Failsafe Default
	RAID Mode	
Determines how SAT	A controller(s) operate.	
Port 0	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SA	TA Port.	
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port a	as Hot Pluggable.	

## 3.4.4 Hardware Monitor

Aptio Setup	Utility – Copyright (C) 2017 American	n Megatrends, Inc.
Advanced		-
CPU Temperature System Temperature CPU Fan Speed VORE VMEM +12V +5V +5VSB +3.3V	: +37 % : +34 % : 5928 RPM : +0.608 V : +11.224 V : +12.320 V : +5.213 V : +5.040 V : 43.360 V	Output PWM mode (push pull) to control 4-wire fans. Linear fan application circuit to control 3-wire fan speed by fan's power terminal. Output PWM mode (open drain) to control Intel 4-wire fans.
Smart Fan FANI Output Mode > Smart Fan Configuration	[Enabled] [Linear Fan Application]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Options Summary			
Smart Fan	Enabled	Enable or Disable Smart Fan	
	Disabled		
FAN1 Output Mode	Output PWM mode (push pull)		
	Linear Fan Application	Optimal Default, Failsafe Default	
	Output PWM mode (open drain)		
Output PWM mode (push pull) to control 4-wire fans.			
Linear fan application circuit to control 3-wire fan speed by fan's power terminal.			
Output PWM mode (open drain) to control Intel 4-wire fans.			

Note: Optional support for PWM mode is available on request.

## 3.4.4.1 Smart Fan Mode Configuration

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

## Fan Mode: [Auto Duty]

Options Summary		
Fan Mode	Manual Duty	
	Auto Duty	Optimal Default, Failsafe Default
Smart Fan Mode Select		
Duty Cycle	Auto fan speed control. Fan speed will follow different	
Temperature	temperature by different du	ty cycle 60-100



#### Fan Mode: [Manual Duty]

Options Summary		
Manual Duty Mode	60	Optimal Default, Failsafe Default
Manual mode fan control, user can write expected duty cycle (PWM fan type) 60-100		

## 3.4.5 SIO Configuration

Aptio Setup Utility – Copyright (C) 2017 American Advanced	Megatrends, Inc.
AMI SIO Driver Version : A5.07.03 Super IO Chip Logical Device(s) Configuration > [*Active*] Serial Port 1 > [*Active*] Serial Port 2 > [*Active*] Serial Port 3 > [*Active*] Serial Port 4	View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.
WARNING: Logical Devices state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

## 3.4.5.1 Serial Port 1 Configuration

Serial Port 1 Cor	nfiguration	Enable or Disable this Logica Device.
Logical Device Set Current : IO=3	ttings: 3F8h; IRQ=4;	
Possible:	[Use Autom	atic Settings]
PROCEED WITH CAUTI	ION.	++: Select Screen t1: Select Item

Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Se	erial Port (COM)	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8; IRQ=4;	
	IO=2F8; IRQ=3;	
Select an optimal se	tting for IO device	

## 3.4.5.2 Serial Port 2 Configuration

Serial Port 2 Configuration		Enable or Disable this Logica
		DEVICE.
Logical Device Settings: Current : IO=2F8h; IRQ=3;		
Possible:	[Use Automatic Settings]	
Mode :	[RS232]	
WARNING: Disabling SIO Logical De side effects. PROCEED WITH CAUTION.	vices may have unwanted	++: Select Screen fi: Select Item Enter: Select
		<pre>File Select File General Help F2: Previous Values F3: Optimized Defaults F3: Optimized Defaults</pre>
		ESC: Exit

<b>Options Summary</b>		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable S	Serial Port (COM)	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8; IRQ=3;	
	IO=3F8; IRQ=4;	
Mode:	RS232	UART RS232, 422, 485 selection
	RS422	
	RS485	
Select an optimal s	etting for IO device	

## 3.4.5.3 Serial Port 3 Configuration

Serial Port 3 Configuration		Enable or Disable this Logica
Logical Device Settings: Current : IO=3E8h; IRQ=11;		
Possible:	[Use Automatic Settings]	
Mode :	[RS232]	
WARNING: Disabling SIO Logical De side effects. PROCEED WITH CAUTION.	evices may have unwanted	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable S	erial Port (COM)	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3E8; IRQ=11;	
	IO=2E8; IRQ=11;	
Mode:	RS232	UART RS232, 422, 485 selection
	RS422	
	RS485	
Select an optimal se	etting for IO device	

## 3.4.5.4 Serial Port 4 Configuration

Serial Port 4 Configuration		Enable or Disable this Logic Device.
Logical Device Settings: Current : IO=2E8h; IRQ=11;		
Possible:	[Use Automatic Settings]	
Mode :	[RS232]	
WARNING: Disabling SIO Logical De side effects.	vices may have unwanted	
PROCEED WITH CAUTION.		++: Select Screen
		Enter: Select
		+/-: Change Opt.
		F1: General Help F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit FSC: Exit

<b>Options Summary</b>		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable S	Serial Port (COM)	
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2E8; IRQ=11;	
	IO=3E8; IRQ=11;	
Mode:	RS232	UART RS232, 422, 485 selection
	RS422	
	RS485	
Select an optimal s	etting for IO device	

Aptio Setup Utility Advanced	– Copyright (C) 2013 American	Megatrends, Inc.
USB Configuration		Enables Legacy USB support.
USB Devices: 1 Drive, 1 Keyboard, 1 Mouse	, 2 Hubs	support if no USB devices are connected. DISABLE option will keep USB devices available
Legacy USB Support		only for EFI applications.
		++: Select Screen
		T∔: Select Item Enter: Select +/=: Change Ont
		F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2 16 1242	Conuright (C) 2013 American M	levatrends Inc

Options Summary		
Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
Enables BIOS Support for Leg	gacy USB Support. V	Vhen enabled, USB can be functional
in legacy environment like DC	DS.	

AUTO option disables legacy support if no USB devices are connected

## 3.4.7 Digital IO Port Configuration



 Options Summary

 DIO Port\*
 Output

 Input
 Input

 Set DIO as Input or Output
 Output Level

 High
 Optimal Default, Failsafe Default

 Low
 Set output level when DIO pin is output

## 3.4.8 Power Management

°ower Management		Select system power mode.
Power Mode Power Saving(ERP) Control Restore AC Power Loss	(ATX Type) (Disabled) (Always Off)	
Wake Events RTC wake system from S5 Resume from PCIE Resume from LAN/RI	[Disabled] [Enabled] [Enabled]	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F0: Optimized Opforite</pre>
		F3: Uptimized Defaults F4: Save & Exit ESC: Exit

Options Summary				
Power Mode	АТХ Туре	Optimal Default, Failsafe Default		
	АТ Туре			
Select system power	r mode.			
Power Saving(ERP)	Disabled	Optimal Default, Failsafe Default		
Control	Enabled			
Configure power mo	ode for power saving function	٦.		
Restore on Power	Last State	Optimal Default, Failsafe Default		
Loss	Power On			
	Power Off			
Select power state w	when power is re-applied afte	r a power failure.		
RTC wake system	Disabled	Optimal Default, Failsafe Default		
from S5	Fixed Time			
Enable or disable Sy	stem wake on alarm event. V	Vhen enabled, System will wake on the		
hr::min::sec specified				
Resume from PCIE	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable/Disable Resu	ime from PCIE			

Options Summary		
Resume from	Disabled	
LAN/RI	Enabled	Optimal Default, Failsafe Default
Enable/Disable Resume from LAN/RI		
## 3.4.9 Compatibility Support Module Configuration

Advanced		
Compatibility Support Module	Configuration	This option controls
		Legacy/DEF1 KOMS priority
Option ROM execution Storage Video	[Legacy] [Legacy]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
Boot option filter	UEFI and Legacy	Optimal Default, Failsafe Default
	Legacy only	
	UEFI only	
This option controls	Legacy/UEFI ROMs priority	
Storage	Do not launch	
	UEFI	
	Legacy	Optimal Default, Failsafe Default
Controls the execution of UEFI and Legacy Storage OpROM		
Video	Do not launch	
	UEFI	
	Legacy	Optimal Default, Failsafe Default
Controls the execution	on of UEFI and Legacy Video	Oprom

## 3.5 Setup submenu: Chipset

Aptio Setup Utility – Copyright (C) 2016 Ameri Main Advanced <mark>Chipset</mark> Security Boot Save & Exit	ican Megatrends, Inc.
▶ System Agent (SA) Configuration ▶ PCH-IO Configuration	System Agent (SA) Parameters
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) 2016 America	an Megatrends, Inc.

## 3.5.1 System Agent (SA) Configuration

Chipset	ity – Copyright (C) 2017	American Megatrends, Inc.
System Agent Bridge Name Memory Configuration Memory Frequency	Kabylake 2133 MHz	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
Max TOLUD Graphics Configuration	[Dynamic]	of installed graphic controller
		tt: Calent Crosen
		11: Select Trem Enter: Select +/-: Change Opt. F1: General Helo
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
Max TOLUD	Dynamic	Optimal Default, Failsafe Default
	1 GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB	
	3.25 GB	
	3.5 GB	
Maximum Value of T	OLUD Dynamic assignment wou	uld adjust TOLUD automatically
based on largest MM	110 length of installed graphic c	ontroller.

## 3.5.2 Graphics Configuration

Graphics Configuration	Select the Video Device which will be activated during POST
Primary IGFX Boot Display • LVDS Panel Configuration	<ul> <li>will be activated during PUSI This has no effect if externa graphics present.</li> <li>Secondary boot display selection will appear based o your selection.</li> <li>VGA modes will be supported only on primary display</li> <li>**: Select Screen 14: Select Item Enter: Select +/-: Change Opt.</li> <li>F1: General Help</li> <li>F2: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F4: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>

Options Summary					
Primary IGFX Boot	VBIOS Default	Optimal Default, Failsafe Default			
Display	DVI				
	CRT/DP				
	LVDS				
Select the Video Device which will be activated during POST. This has no effect if					
external graphic present.	external graphic present.				
Secondary boot display selection will appear based on your selection.					
Secondary IGFX Boot	Disabled	Optimal Default, Failsafe Default			
Display	DDI1/DP				
	DDI2/VGA				
	LVDS/eDP				
Select Secondary Display Device					

## 3.5.3 LVDS Panel Configuration

VDS Panel Configuration		Enable/Disabled this panel
LVDS Panel Type Color Depth Backlight Type Backlight Level Backlight PWM Freq	[Enabled] [1024x760060H2] [18-Bit] [Normal] [ 80%] [ 220H2]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
LVDS	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disabled this pane	<u>e</u> ].	
LVDS Panel Type	640x480,18bit,60Hz	
	800x480,18bit,60Hz	
	800x600,18bit,60Hz	
	1024x600,18bit,60Hz	
	1024x768,18bit,60Hz	Optimal Default, Failsafe Default
	1024x768,24bit,60Hz	
	1280x768,24bit,60Hz	
	1280x1024,48bit,60Hz	
	1366x768,24bit,60Hz	
	1440x900,48bit,60Hz	
	1600x1200,48bit,60Hz	
	1920x1080,48bit,60Hz	
	1920x1200,48bit,60Hz	

Options Summary		
Select LCD panel used k	by Internal Graphics Dev	vice by selecting the appropriate setup
item.		
Color Depth	18-bit	Optimal Default, Failsafe Default
	24-bit	
	36-bit	
	48-bit	
Select panel type		
Backlight Type	Normal	Optimal Default, Failsafe Default
	Inverted	
Select backlight control	signal type	
Backlight Level	0%	
	10%	
	20%	
	30%	
	40%	
	50%	
	60%	
	70%	
	80%	Optimal Default, Failsafe Default
	90%	
	100%	
Select backlight control	level	
Backlight PWM Freq	100Hz	
	200Hz	
	220Hz	Optimal Default, Failsafe Default
	500Hz	
	1KHz	
	2.2KHz	
	6.5KHz	
Select PWM frequency	of backlight control sign	al

## 3.5.4 PCH-IO Configuration

Chipset	tg − copgright (c) 2017	Himerican Megatrenus, Inc.
PCH-IO Configuration		Control Detection of the
		Disabled = HDA will be
PCI Express Root Port 5	[Enabled]	Enabled = HDA will be
PCIe Speed	[Auto]	unconditionally enabled
		Auto = HDA will be enabled if
Half-MiniCard Slot Function	[SATA]	present, disabled otherwise.
		14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary				
HD Audio	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Control Detection of	the HD-Audio device.			
Disabled = HDA will	be unconditionally disabled			
Enabled = HDA will	be unconditionally enabled			
Auto = HDA will be	enabled if present, disabled (	otherwise.		
PCI Express Root	Enabled	Optimal Default, Failsafe Default		
Port 5	Disabled			
Control the PCI Expr	Control the PCI Express Root Port.			
PCIe Speed	Auto	Optimal Default, Failsafe Default		
	Gen1			
	Gen2			
	Gen3			
Configure PCIe speed.				
Half-MiniCard Slot	SATA	Optimal Default, Failsafe Default		
	PCIe			
Select function enabled for Half-MiniCard(CN13) slot				



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## Change User/Administrator Password

You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, and press Enter. In the dialog box, enter your password (must be between 3 and 20 letters or numbers). Press Enter and retype your password to confirm. Press Enter again to set the password.

## Removing the Password

Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

### 3.7 Setup Submenu: Boot

Aptio Setup Utility – Copyright (C) 2016 American Megatrends, Inc. Main Advanced Chipset Security <mark>Boot</mark> Save & Exit					
Boot Configuration Quiet Boot Launch PXE ROM	[Enabled] [Disabled]	Enables or disables Quiet Boot option			
Boot Option Priorities Boot Option #1 Boot Option #2	[UEFI: SanDisk, Partition 1] [SanDisk]				
Hard Drive BBS Priorities					
		++: Select Screen 14: Select Item Enter: Select +/-: Change Ont			
		Fi: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			

Options Summary					
Quiet Boot	Disabled				
	Enabled	Optimal Default, Failsafe Default			
Enable or Disable showing	boot logo.				
Launch PXE OpROM	Launch PXE OpROM Disabled Optimal Default, Failsafe Default				
Enabled					
Controls the execution of UEFI and Legacy PXE OpROm					

## 3.7.1 BBS Priorities

Aptio Setup	Utility – Copyright (C) 2013 Americar Boot	n Megatrends, Inc.
Boot Option #1	[Generic Flash Disk]	Sets the system boot order
		<pre>++: Select Screen 11: Select Item Enter: Select 4/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.1	16.1242. Copyright (C) 2013 American ⊧	legatrends, Inc.

## 3.8 Setup Submenu: Save & Exit

Aptio Setup Utility – Copyright (C) 2016 Ameri Main Advanced Chipset Security Boot <mark>Save &amp; Exit</mark>	can Megatrends, Inc.
Save Changes and Reset Discard Changes and Reset Restore Defaults	Reset the system after saving the changes.
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.17.1255. Copyright (C) 2016 America	

## Chapter 4

Drivers Installation

### 4.1 Drivers Download and Installation

Drivers for the GENESYS-KBU6 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/p/3-and-half-inches-subcompact-boards-GENESYS-kbu6 Download the driver(s) you need and follow the steps below to install them.

#### Step 1 – Install Chipset Drivers

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

#### Step 2 - Install Graphics Drivers

- 1. Open the Step2 Graphic folder followed by Setup.exe
- 2. Follow the instructions
- 3. Drivers will be installed automatically

#### Step 3 – Install LAN Drivers

- 1. Click on the Step3 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 Drivers

- 1. Open the Step4 Audio folder followed by Setup.exe
- 2. Follow the instructions
- 3. Drivers will be installed automatically

#### Step 5 – Install PenMount Touch 6000 Driver

- 1. Open the Step 5 PenMount Touch 6000 folder followed by Setup.exe
- 2. Follow the instructions
- 3. Drivers will be installed automatically

#### Step 6 – Install Serial Port Drivers (Optional)

- Click on the Step 6 Serial Port Driver (Optional) folder followed by setup.exe
- 2. Follow the instructions
- 3. Drivers will be installed automatically

## 4.2 Note on EHCI

With the EHCI controller no longer available on the 6<sup>th</sup> Gen Intel<sup>®</sup> Core<sup>™</sup> platforms or later, it is recommended to install Windows 7 through a SATA bus, i.e. SATA DVD-ROM, or patch the EHCI driver onto an installation media for Windows 7. More information can be found in the links below.

#### Windows 7 USB 3.0 Creator Utility

Read me

For input devices, please use an add-on standard EHCI controller expansion card, such as PCIe to USB 2.0 conversion card.

# Appendix A

I/O Information

## A.1 I/O Address Map

File       Action       View       Help         Image: Section       Image: Section       Image: Section       Image: Section         Image: Section       Image: Section       Image: Section       Image: Section       Image: Section         Image: Section       Image: Sect	🚔 Device Manager	- 0 ×
Image:	<u>File Action View H</u> elp	
Important         Important         PCIEspress Root Complex           Important         (000000000000000000000000000000000000		
Input/output(0)         Imput/output(0)           Imput/output(0)         Imput(0)	✓	
[000000000000000000000000000000000000	V Input/output (IO)	
[000000000020]         000000000000000000000000000000000000	[0000000000000000 - 00000000000CF7] PCI Express Root Complex	
[000000000024 - 00000000002] Programmable interrupt controller           [0000000000024 - 000000000022] Programmable interrupt controller           [0000000000024 - 000000000003]           [0000000000024 - 000000000003]           [0000000000034 - 000000000003]           [0000000000034 - 00000000003]           [000000000035 - 000000000003]           [000000000036 - 000000000033]           [000000000036 - 000000000033]           [000000000036 - 000000000033]           [000000000036 - 000000000033]           [000000000036 - 000000000033]           [000000000004 - 0000000000033]           [000000000004 - 0000000000033]           [000000000004 - 0000000000033]           [000000000004 - 0000000000033]           [000000000004 - 0000000000033]           [000000000004 - 0000000000033]           [000000000004 - 0000000000034]           [000000000004 - 0000000000035]           [000000000004 - 0000000000036]           [000000000004 - 0000000000037]           [000000000004 - 0000000000038]           [000000000004 - 0000000000038]           [000000000004 - 0000000000047]           [000000000004 - 0000000000047]           [000000000004 - 0000000000047]           [000000000004 - 0000000000047]           [000000000004 - 0000000000047]           [000000000047 - 00000	[0000000000000020 - 000000000000021] Programmable interrupt controller	
[000000000028]         0000000000029         Programmable interrupt controller           [0000000000026]         000000000000000000000000000000000000	[0000000000000024 - 000000000000025] Programmable interrupt controller	
[000000000022 - 000000000022] Programmable interrupt controller           [0000000000023 - 000000000003] Programmable interrupt controller           [000000000003 - 00000000003] Programmable interrupt controller           [000000000034 - 000000000033] Programmable interrupt controller           [000000000034 - 000000000033] Programmable interrupt controller           [000000000034 - 000000000033] Programmable interrupt controller           [00000000004 - 000000000035] System timer           [00000000004 - 000000000035] System timer           [00000000004 - 000000000035] System timer           [00000000004 - 00000000006] Motheboard resources           [00000000006 - 00000000006] Programmable interrupt controller           [000000000006 - 000000000006] Programmable interrupt controller	[0000000000000028 - 000000000000029] Programmable interrupt controller	
[000000000025 - 000000000027]         Metheboard resources           [000000000026 - 000000000037]         Programmable interrupt controller           [000000000037 - 000000000037]         Programmable interrupt controller           [000000000037 - 000000000037]         Programmable interrupt controller           [000000000037 - 0000000000037]         System timer           [000000000037 - 0000000000037]         System timer           [000000000036 - 0000000000037]         System timer           [000000000006 - 0000000000037]         System timer           [000000000006 - 0000000000037]         System timer           [00000000006 - 000000000006 ]         Standard PS/2 Keyboard           [00000000006 - 000000000006 ]         Standard PS/2 Keyboard           [00000000006 - 000000000006 ]         Standard PS/2 Keyboard           [00000000006 - 000000000007 ]         Metheboard resources           [000000000006 - 000000000007 ]         Metheboard resources           [000000000006 - 000000000007 ]         Metheboard resources           [000000000007 - 000000000007 ]         Metheboard resources           [0000000000007 - 000000000007 ]         Metheboard resources           [0000000000007 - 000000000007 ]         Metheboard resources           [0000000000007 - 0000000000007 ]         Programmable interupt controller           [00000000000000	[00000000000002C - 00000000000002D] Programmable interrupt controller	
[00000000003]         000000000003]         Programmable interrupt controller           [00000000003]         00000000003]         Programmable interrupt controller           [00000000003]         00000000003]         Programmable interrupt controller           [00000000004]         00000000003]         Programmable interrupt controller           [00000000004]         00000000003]         System timer           [00000000004]         000000000004]         System timer           [00000000004]         000000000004]         System timer           [00000000006]         000000000006]         Standard PS/Z Kybeard           [00000000006]         000000000006]         Metheboard resources           [00000000006]         000000000006]         Metheboard resources           [000000000006]         000000000006]         Metheboard resources           [000000000007]         000000000006]         Metheboard resources           [000000000007]         000000000007]         Metheboard resources           [000000000007]         000000000000000000000000000000000000	[00000000000002E - 0000000000002F] Motherboard resources	
[0000000000034]         000000000000000000000000000000000000	[000000000000000000 - 000000000000000] Programmable interrupt controller	
[000000000038]         0000000000039]         Programmable interrupt controller           [000000000004]         0000000000033         System timer           [000000000004]         0000000000033         System timer           [000000000004]         0000000000033         System timer           [000000000006]         0000000000033         System timer           [000000000006]         0000000000033         System timer           [000000000006]         0000000000033         System timer           [00000000006]         0000000000063         Standard PS/2 Kyeboard           [00000000006]         0000000000063         Metheboard resources           [000000000006]         0000000000063         Metheboard resources           [000000000007]         0000000000073         Metheboard resources           [000000000007]         0000000000073         Metheboard resources           [000000000007]         000000000073         Metheboard resources           [000000000007]         0000000000073         Metheboard resources           [000000000007]         0000000000073         Metheboard resources           [000000000007]         0000000000073         Metheboard resources           [000000000007]         00000000000073         Programmable interupt controller           [0000	[0000000000000034 - 00000000000035] Programmable interrupt controller	
[0000000000036] C - 0000000000039] Programmable interrupt controller           [000000000004] C - 000000000004F           [000000000004] C - 000000000004F           [000000000006] C - 000000000006F           [00000000006] C - 000000000006F           [00000000006] C - 000000000006F           [00000000006] C - 000000000006F           [00000000006] C - 00000000006F           [00000000006] C - 00000000000F           [000000000007] C - 00000000000F           [000000000007] C - 00000000000F           [000000000007] C - 000000000000F           [000000000000	[0000000000000038 - 00000000000039] Programmable interrupt controller	
[0000000000040]         000000000000000000000000000000000000	[000000000000003C - 00000000000003D] Programmable interrupt controller	
ID000000000004         000000000000000000000000000000000000	[00000000000000000 - 000000000000043] System timer	
[000000000005]         000000000000000000000000000000000000	[00000000000004E - 000000000004F] Motherboard resources	
0000000000068 - 000000000000	[00000000000000000000 - 000000000000000	
[00000000006]         000000000006]           [00000000006]         00000000006]           [00000000006]         00000000006]           [00000000006]         00000000006]           [00000000006]         00000000006]           [00000000006]         00000000006]           [000000000006]         000000000007]           [00000000006]         000000000007]           [00000000007]         00000000007]           [00000000007]         00000000007]           [00000000007]         00000000007]           [00000000007]         00000000007]           [00000000007]         00000000007]           [00000000007]         00000000007]           [000000000007]         000000000007]           [000000000007]         000000000000000000000000000000000000	(00000000000000000 - 00000000000000] Standard PS/2 Keyboard	
[000000000063 - 000000000063]         Metherboard resources           [0000000000064 - 000000000065]         Standard PSZ Keybaard           [0000000000064 - 000000000067]         Metherboard resources           [0000000000070 - 000000000077]         Metherboard resources           [000000000077 - 0000000000077]         Metherboard resources           [000000000077 - 000000000077]         Metherboard resources           [000000000077 - 0000000000077]         System CMOS/real time clock           [000000000007 - 000000000007]         Metherboard resources           [000000000007 - 000000000003]         Metherboard resources           [0000000000004 - 000000000003]         Programmable interrupt controller           [0000000000004 - 00000000000000000000000	[0000000000000001 - 0000000000000001] Motherboard resources	
Improvement	[0000000000000063 - 0000000000000063] Motherboard resources	
(D000000000065 - 0000000000065)         Motheboard resources           (D00000000007 - 000000000077)         Motheboard resources           (D00000000007 - 000000000077)         Motheboard resources           (D00000000007 - 0000000000077)         Motheboard resources           (D00000000007 - 0000000000077)         Motheboard resources           (D000000000007 - 00000000000077)         Motheboard resources           (D00000000000007 - 00000000000077)         Programmable interrupt controller           (D000000000000000000000000000000000000	(00000000000000064 - 00000000000064] Standard PS/2 Keyboard	
(D000000000007 - 0000000000077         Motheboard resources           (D00000000007 - 0000000000077         System (MOS/real time clock           (D00000000007 - 0000000000077         System (MOS/real time clock           (D00000000007 - 0000000000077         Motheboard resources           (D000000000000000000000000000000000000	[00000000000000065 - 00000000000065] Motherboard resources	
00000000000070 - 0000000000077         Motherboard resources           00000000000070 - 0000000000077         System CMOS/real time clock           00000000000070 - 0000000000077         Motherboard resources           00000000000092 - 00000000000077         Motherboard resources           00000000000092 - 0000000000077         Programmable interrupt controller           0000000000004 - 00000000000077         Programmable interrupt controller           00000000000004 - 0000000000000000000000	[00000000000000067 - 000000000000067] Motherboard resources	
(D000000000077) - 0000000000077         System CMOS/real time clock           (D000000000072) - 00000000000021         Motheboard resources           (D000000000004) - 0000000000021         Interrupt controller           (D00000000004) - 0000000000021         Programmable interrupt controller           (D00000000004) - 0000000000024         Programmable interrupt controller           (D00000000004) - 0000000000043         Programmable interrupt controller           (D00000000004) - 000000000043         Programmable interrupt controller           (D00000000004) - 0000000000043         Programmable interrupt controller           (D00000000004) - 0000000000053         Programmable interrupt controller           (D00000000004) - 0000000000053         Programmable interrupt controller           (D000000000068) - 0000000000053         Programmable interrupt controller           (D000000000058) - 0000000000053         Programmable interrupt controller           (D000000000058) - 0000000000053         Programmable interrupt controller           (D000000000058) - 00000000000053         Programmable interrupt controller           (D00000000000058) - 000000000000053 <td>[000000000000000070 - 000000000000070] Motherboard resources</td> <td></td>	[000000000000000070 - 000000000000070] Motherboard resources	
(0000000000088) - 00000000000088)         Motherboard resources           (00000000000082) - 00000000000082         Motherboard resources           (0000000000004) - 000000000000A1         Programmable interrupt controller           (0000000000004) - 00000000000A1         Programmable interrupt controller           (000000000000000000000000000000000001         Programmable interrupt controller           (000000000000000000000000000000000000	[00000000000000070 - 000000000000077] System CMOS/real time clock	
0000000000092 - 000000000000000000000000	[000000000000000000 - 000000000000000] Motherboard resources	
[0000000000040-000000000000000000000000	[0000000000000092 - 00000000000092] Motherboard resources	
0000000000004.4         000000000000000000000000000000000000	[000000000000000000 - 000000000000001] Programmable interrupt controller	
[0000000000048-00000000043]         Programmable interrupt controller           [0000000000068-0000000008]         Programmable interrupt controller           [0000000000088-0000000008]         Programmable interrupt controller           [0000000000088-00000000008]         Programmable interrupt controller           [0000000000088-00000000008]         Programmable interrupt controller           [0000000000088-00000000008]         Programmable interrupt controller           [00000000000088-000000000008]         Programmable interrupt controller           [0000000000088-000000000008]         Programmable interrupt controller           [00000000000088-000000000008]         Programmable interrupt controller           [0000000000088-000000000008]         Programmable interrupt controller           [00000000000000088-00000000000008]         Programmable interrupt controller           [000000000000088-000000000008]         Programmable interrupt controller           [0000000000000088-000000000000008]         Program	[00000000000000004 - 000000000000005] Programmable interrupt controller	
I000000000000000000000000000000000000	[0000000000000008 - 00000000000009] Programmable interrupt controller	
IO00000000000086       000000000000000000000000000000000000	[00000000000000AC - 000000000000AD] Programmable interrupt controller	
[0000000000082 - 000000000083] Motherboard resources     [0000000000084 - 000000000085] Programmable interrupt controller     [00000000000085 - 0000000000085] Programmable interrupt controller     [00000000000085 - 0000000000005] Programmable interrupt controller     [00000000000055 - 0000000000005] Programmable interrupt controller     [0000000000055 - 0000000000005] Programmable interrupt controller     [00000000000055 - 0000000000055] Programmable interrupt controller     [00000000000055 - 0000000000055] Programmable interrupt controller     [0000000000055 - 0000000000055] Programmable interrupt controller	[00000000000000000 - 000000000000001] Programmable interrupt controller	
I00000000000084       000000000000000000000000000000000000	[000000000000082 - 00000000000083] Motherboard resources	
[00000000000088 - 0000000000009] Programmable interrupt controller     [00000000000086 - 00000000000085] Programmable interrupt controller     [000000000000286 - 0000000000002EF] Communications Port (COM4)	[0000000000000084 - 00000000000085] Programmable interrupt controller	
[0000000000086 - 0000000000085] Programmable interrupt controller     1000000000000258 - 0000000000025F] Communications Port (COM4)	[0000000000000088 - 0000000000000089] Programmable interrupt controller	
1000000000002E8 - 00000000002EF1 Communications Port (COM4)	[00000000000000BC - 00000000000BD] Programmable interrupt controller	
	7 [000000000002E8 - 00000000002EE] Communications Port (COM4)	
	P 100000000025 - 000000000221   Communications For (Comm)	

1	- T	[000000000002F8 - 000000000002FF]	Communications Port (COM2)
ę	-	[000000000003B0 - 000000000003BB]	Intel(R) HD Graphics 620
ę	an i	[000000000003C0 - 000000000003DF]	Intel(R) HD Graphics 620
1	7	[000000000003E8 - 000000000003EF]	Communications Port (COM3)
7	9	[00000000003F8 - 000000000003FF]	Communications Port (COM1)
1		[0000000000004D0 - 0000000000004D1]	Programmable interrupt controller
1		[00000000000680 - 00000000000069F]	Motherboard resources
1		[000000000000A00 - 00000000000A0F]	Motherboard resources
1		[000000000000A10 - 000000000000A1F]	Motherboard resources
1		[000000000000A20 - 00000000000A2F]	Motherboard resources
1		[000000000000D00 - 0000000000FFFF]	PCI Express Root Complex
1		[00000000000164E - 00000000000164F]	Motherboard resources
1		[000000000001800 - 0000000000018FE]	Motherboard resources
1		[00000000001854 - 000000000001857]	Motherboard resources
1		[00000000000D000 - 0000000000DFFF]	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #4 - 9D13
1		[0000000000000000 - 00000000000EFFF]	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #3 - 9D12
1	34	[00000000000F000 - 0000000000F03F]	Intel(R) HD Graphics 620
1		[00000000000F040 - 00000000000F05F]	Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
1		[00000000000F060 - 00000000000F07F]	Standard SATA AHCI Controller
	-	[00000000000F080 - 00000000000F083]	Standard SATA AHCI Controller
1	-	[0000000000F090 - 0000000000F097]	Standard SATA AHCI Controller
1		[0000000000FF00 - 0000000000FFFE]	Motherboard resources
1		[00000000000FFFF - 00000000000FFFF]	Motherboard resources
1		[0000000000FFFF - 0000000000FFFF]	Motherboard resources
1		[0000000000FFFF - 0000000000FFFF]	Motherboard resources

## A.2 Memory Address Map

Device Manager	-	ð >
e <u>Action</u> <u>View</u> <u>H</u> elp		
ESKTOP-2172CS1		
> 🞽 Input/output (IO)		
> Interrupt request (IRQ)		
✓ Memory		
I00000000000000 - 000000000BFFFF] Intel(R) HD Graphics 620		
[000000000000000000000000000000000000		
[00000000000000 - 0000000DFFFFFF] PCI Express Root Complex		
[00000000000000 - 00000000CFFFFFF] Intel(R) HD Graphics 620		
[00000000DE000000 - 0000000DEFFFFF] Intel(R) HD Graphics 620		
[00000000DF000000 - 0000000DF01FFF] Intel(R) I210 Gigabit Network Connection		
[00000000DF000000 - 0000000DF0FFFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #4 - 9D13		
[0000000DF020000 - 0000000DF023FFF] Intel(R) I210 Gigabit Network Connection		
[00000000DF100000 - 0000000DF11FFFF] Intel(R) I210 Gigabit Network Connection #2		
[00000000DF100000 - 0000000DF1FFFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #3 - 9D12		
[00000000DF120000 - 00000000DF123FFF] Intel(R) I210 Gigabit Network Connection #2		
[00000000DF210000 - 0000000DF21FFF] Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)		
[00000000DF228000 - 0000000DF229FFF] Standard SATA AHCI Controller		
[00000000DF22A000 - 0000000DF22A0FF] Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23		
Carrow Controller (000000000000000000000000000000000000		
Controller (0000000DF22C000 - 00000000DF22C0FF) Standard SATA AHCI Controller		
[00000000DF22D000 - 0000000DF22DFFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31		
[0000000DFFE0000 - 0000000DFFFFFF] Motherboard resources		
[0000000000000000 - 00000000EFFFFFF] Motherboard resources		
[0000000FD00000 - 0000000FDABFFF] Motherboard resources		
[0000000FD000000 - 0000000FFFFFF] PCI Express Root Complex		
[00000000FDAC0000 - 0000000FDACFFFF] Motherboard resources		
[00000000FDAD0000 - 0000000FDADFFF] Motherboard resources		
[00000000FDAE0000 - 0000000FDAEFFF] Motherboard resources		
[00000000FDAF0000 - 0000000FDAFFFF] Motherboard resources		
[00000000FDB00000 - 0000000FDFFFFF] Motherboard resources		
[00000000FE000000 - 00000000FE01FFF] Motherboard resources		
[0000000FE028000 - 0000000FE028FFF] Motherboard resources		
[00000000FE029000 - 0000000FE029FFF] Motherboard resources		
[0000000FE030000 - 0000000FE033FFF] High Definition Audio Controller		
[00000000FE036000 - 0000000FE03BFFF] Motherboard resources		

[00000000FE03D000 - 00000000FE3FFFFF] Motherboard resources
[00000000FE400000 - 0000000FE40FFF] High Definition Audio Controller
[00000000FE410000 - 00000000FE7FFFFF] Motherboard resources
[00000000FED00000 - 0000000FED003FF] High precision event timer
[00000000FED10000 - 00000000FED17FFF] Motherboard resources
[00000000FED18000 - 00000000FED18FFF] Motherboard resources
[00000000FED19000 - 00000000FED19FFF] Motherboard resources
[00000000FED20000 - 00000000FED3FFFF] Motherboard resources
[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
[00000000FED90000 - 00000000FED93FFF] Motherboard resources
[00000000FEE00000 - 00000000FEEFFFF] Motherboard resources
[00000000FF000000 - 00000000FFFFFFF] Legacy device
[00000000FF000000 - 00000000FFFFFFF] Motherboard resources

## A.3 IRQ Mapping Chart

🚔 Device Manager		-	0	×
<u>File</u> <u>Action</u> <u>View</u> <u>H</u> elp				
🗢 🔶 🔟 📓 🔟 🥀				
Interrupt request (IRQ)				-
(ISA) 0x00000000 (00)	System timer			
(ISA) 0x00000001 (01)	Standard PS/2 Keyboard			
(ISA) 0x00000003 (03)	Communications Port (COM2)			
(ISA) 0x00000004 (04)	Communications Port (COM1)			
(ISA) 0x00000008 (08)	System CMOS/real time clock			
(ISA) 0x0000000B (11)	Communications Port (COM3)			
(ISA) 0x0000000B (11)	Communications Port (COM4)			
(ISA) 0x0000000C (12)	PS/2 Port Compatible Pointing Device			

(PCI) 0x000000B (11)	Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31
(PCI) 0x0000000B (11)	Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
(PCI) 0x00000010 (16)	High Definition Audio Controller
(PCI) 0xFFFFFFF0 (-16)	Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFFF1 (-15)	Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFFF2 (-14)	Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFFF3 (-13)	Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFFF4 (-12)	Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFFF5 (-11)	Intel(R) I210 Gigabit Network Connection
(PCI) 0xFFFFFFF6 (-10)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFFF7 (-9)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFF8 (-8)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFFF9 (-7)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFFFA (-6)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFFB (-5)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFFFFC (-4)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
(PCI) 0xFFFFFFD (-3)	Intel(R) HD Graphics 620
(PCI) 0xFFFFFFFE (-2)	Standard SATA AHCI Controller
Memory	

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## Appendix B

Electrical Specifications for I/O Ports

#### Electrical Specifications for I/O Ports B.1

I/O Port	Reference	Signal Name	Rate Output
DVI Port	CN3	+5V	+5V/1A (reserved)
DP port	CN5	+3.3V	+3.3V/1A
Mini-Card Slot (Full-Mini Card)	CN11	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
Mini-Card Slot (Half-Mini Card)	CN13	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
+5V Output for SATA HDD	CN15	+5V	+5V/1A
USB 3.0 Ports	CN18	+5VSB	+5V/1A (per channel)
USB 3.0 Ports	CN19	+5VSB	+5V/1A (per channel)
USB 2.0 Ports	CN20	+5VSB	+5V/0.5A (per channel)
USB 2.0 Ports	CN21	+5VSB	+5V/0.5A (per channel)
Digital IO Port	CN24	+5V	+5V/1A
COM Port 2	CN27	+5V/+12V	+5V/0.5A or +12V/0.5A
LPC Port	CN29	+3.3V	+3.3V/0.5A
CPU FAN	CN36	+12V	+12V/0.5A

## Appendix C

List of Mating Connectors and Cables

## C.1 Connector and Cable Specifications

Connector Label	Function	Mating Connector Vendor Model no.		Available Cable	Cable P/N
CN1	External RTC Connector	Molex	51021-0200	Battery Cable	175011901C
CN14	SATA Connector	Molex	88750-5318	SATA Cable	170X000085
CN15	+5Vout Connector	JST	PHR-2	2 Pins for HDD Power	1702150155
CN20	USB Port Connector	Molex	51021-0500	USB Wafer Cable	1709080254
CN21	USB Port Connector	Molex	51021-0500	USB Wafer Cable	1709080254
CN25	COM Port 1 Connector	Molex	51021-0900	Serial Port Cable	1701090201
CN27	COM Port 2 Connector	Molex	51021-0900	Serial Port Cable	1701090201
CN30	+9~24V Vin Connector	N/A	N/A	Power Cable	1702030200